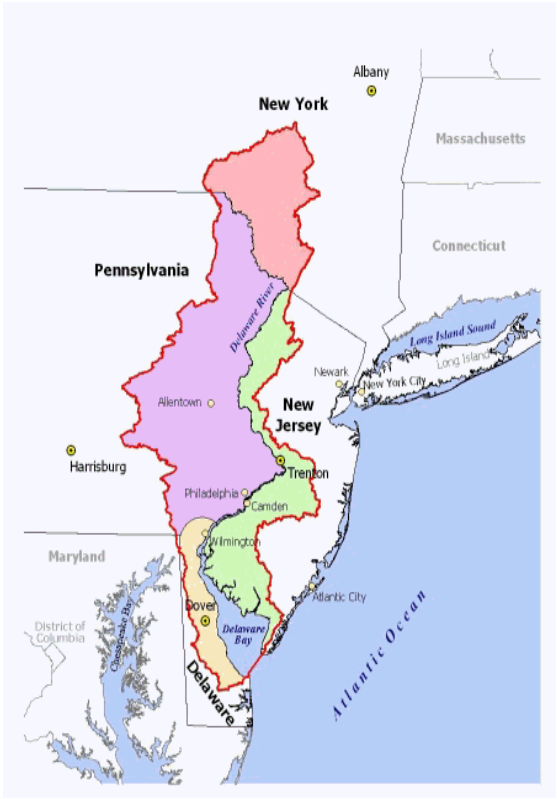
Testimony of Carol R. Collier
Executive Director, Delaware River Basin Commission

Before the
Committee on Financial Services
U.S. House of Representatives

August 15, 2006

Good morning Mr. Chairman and members of the Committee. I am Carol R. Collier, Executive Director of the Delaware River Basin Commission (DRBC). Thank you for this opportunity to speak to you today about the need to reduce flood vulnerability and damages in the Delaware River Basin, a very important topic not only to the Commonwealth of Pennsylvania, but to the entire interstate basin community.

I hope to concisely present the DRBC's role in ongoing flood loss reduction efforts, highlight some needs, offer a few recommendations, and then I will be glad to take questions.



Basin Background

Before I get started, however, I think it might prove useful to provide an overview of the Delaware River Basin. The Delaware is the longest un-dammed river east of the Mississippi, extending 330 miles from the Catskill Mountains of New York State to the mouth of the Delaware Bay where it meets the Atlantic Ocean. The river is fed by 216 tributaries, the largest being the Schuylkill and Lehigh rivers in Pennsylvania.

In all, the basin contains 13,539 square miles, draining parts of Pennsylvania (6,422 square miles or 50.3 percent of the basin's total land area); New Jersey (2,969 square miles, or 23.3%); New York (2,362 square miles, 18.5%); and Delaware (1,004 square miles, 7.9%). Included in the total area number is the 782 square-mile Delaware Bay, which lies roughly half in New Jersey and half in Delaware.

The natural drainage area of the Delaware River Basin crosses many man-made boundaries in addition to the four state lines already mentioned: 25 congressional districts, two Federal Emergency Management Agency (FEMA) regions, two Environmental Protection Agency (EPA) regions, five U.S. Geological Survey (USGS) offices, two National Weather Service (NWS) local forecast offices, 42 counties, and

838 municipalities. As I will discuss later, coordination of efforts is a critical need for flood loss reduction.

Nearly 15 million people (approximately five percent of the nation's population) rely on the waters of the Delaware River Basin for drinking and industrial use, but the watershed drains only four-tenths of one percent of the total continental U.S. land area. The 15 million figure includes about seven million people in the New York City area and northern New Jersey who live outside the basin. New York City gets roughly half its water from three large reservoirs located on tributaries in the upper Delaware region and the City of Philadelphia gets 100% of its water supply directly from the Delaware and Schuylkill rivers.

Congress and the President have included three reaches of the Delaware in the National Wild and Scenic Rivers System. One section extends 73 miles from the confluence of the river's East and West branches at Hancock, N.Y. downstream to Milrift, Pa.; the second is a 40-mile stretch from just south of Port Jervis, N.Y. downstream to the Delaware Water Gap near Stroudsburg, Pa. Both were added in 1978. The Lower Delaware Wild and Scenic Rivers Act, signed into law on November 1, 2000, added a 38.9-mile section of the main stem Delaware (and about 28 miles of selected tributaries) to the national system, linking the Delaware Water Gap and Washington Crossing, Pa., just upstream of Trenton, N.J. The Maurice River in New Jersey (a Delaware Bay tributary) and the White Clay Creek in Pennsylvania and Delaware (which flows into the Christina River, a tributary to the Delaware) also have been included in the national system. According to the National Park Service's web site, the U.S. has 3.5 million miles of rivers, but only 11,303 river miles (just over one-quarter of one percent) are included in the National Wild and Scenic Rivers System. *Given this fact, I believe it is truly noteworthy that about 153 miles, or three-quarters of the non-tidal Delaware River above Trenton, N.J., is now included in the National Wild and Scenic Rivers System.* Additionally, the Delaware Estuary -- the Delaware Bay and tidal reach of the Delaware River -- has been included in the National Estuary Program, a project set up to protect estuarine systems of national significance.

The DRBC is an interstate/federal compact agency with a mission to manage water resources without regard to political boundaries. There are five Commissioners – the governors of the four basin states and a two-star general in the U.S. Army Corps of Engineers who was appointed by the President as the federal government's representative. DRBC has regulatory, as well as management, planning and resource development authorities. The Compact creating the DRBC in 1961 marked the first time in our nation's history that the federal government and a group of states joined together as equal partners in a river basin planning, development and regulatory agency.

Commission programs include water quality protection, water supply allocation, regulatory review (permitting), water conservation initiatives, watershed planning, drought management, flood loss reduction, and recreation.

Three Delaware River Main Stem Floods in Two Years

As thousands of property owners and emergency responders are painfully aware, the Delaware River Basin has recently experienced three major floods -- September 2004, April 2005 and June 2006 -- over a period of less than two years.

Each flood event has been analyzed by the National Weather Service, which has found that the flooding was primarily the result of unusually heavy rain and/or snowmelt in the long, but relatively narrow watershed. During the most recent flood event in June 2006, rainfall totals at some locations in the western and northern portions of the basin totaled more than 15 inches over a seven-day period. According to precipitation frequency tables developed by the National Oceanic and Atmospheric Administration for the period of observed record (NOAA Atlas 14), the chance of rainfall of this magnitude is 1 in 700 in any given year. Large areas of the western and northern basin received over 10 inches of rain during the period – which is a 1 in 100 chance event.

I believe it is important to note that residents along the lower main stem of the Delaware witnessed a period of 41 years, from 1955 to 1996, without experiencing a major flood (reference exhibit A). While we do not yet know for certain how storm patterns are changing in response to climate change, the past two years have demonstrated that floods follow no predictable pattern. Climate change research appears to be pointing to more extreme precipitation cycles, whether they are wet or dry.

Flood Vulnerability

In the view of DRBC staff, flood vulnerability remains a chronic problem in Bucks County and throughout the entire basin, due in part to the sporadic nature of flooding, but also due to the ongoing insufficient funding of federal mitigation programs and cost-share formulas that are difficult for many local municipalities to meet.

Flood prone communities often find that the limited mitigation funds available are not adequate to acquire or elevate the residences and buildings that are repeatedly flooded. As a means for communities to graphically demonstrate their need for mitigation funding, DRBC staff have completed an analysis of repetitive and severe repetitive loss properties in the Delaware River Basin which can be found online at http://www.nj.gov/drbc/Flood_Website/floodclaims_home.htm. The analysis shows that Bucks County has the highest number of repetitive loss properties in the basin and that Yardley Borough is the second highest ranking municipality. For purposes of this hearing, DRBC staff completed a detailed analysis of Bucks County municipalities (reference exhibit B). The analysis shows that there are 561 repetitive loss properties in Bucks County that have received insurance claims totaling over $60 million through the National Flood Insurance Program (NFIP) for losses that occurred during the period of 01/01/1978-12/31/05. This analysis does not include claims from the recent June 2006 flood, nor does it include uninsured flood damage.

Flood Mitigation Suggestions from Citizens and Professionals

No one set of flood mitigation measures will stop flooding along the Delaware. The DRBC believes that many approaches should be considered and that a combination of measures will improve resiliency to flooding in the basin. The DRBC has received many varied mitigation suggestions from citizens and/or professionals through recent hearings and briefings that we would like to share with you. The suggestions fall into three categories: 1) Measures to lower existing flood levels; 2) Measures to reduce damage to existing structures; and 3) Measures to prevent flood damage from getting worse. Please note that some of the listed items fit into more than one of these categories.

1) Measures to lower existing flood levels
    a) Completion and local adoption of FEMA-approvable flood and/or all hazards mitigation plans for municipalities
    b) Construction of a main stem dam
    c) Enlargement of existing or construction of new tributary dams
    d) Creation of dedicated voids in water supply reservoirs
    e) Removal of existing floodplain structures
    f) Channel modifications
    g) Stormwater retrofitting
    h) Centralize flood control and operations responsibilities

2) Measures to reduce damage to existing structures
    a) Completion and local adoption of FEMA-approvable flood and/or all hazards mitigation plans for municipalities
    b) Acquisition and removal of floodplain structures
    c) Elevation of floodplain structures
    d) Levees and flood walls
    e) Stormwater retrofitting
    f) Continued improvement of the basin's flood warning system
    g) River stage forecast mapping
    h) Providing dam break inundation mapping to emergency managers
    i) Flood insurance map modernization and updating
    j) Local floodproofing such as backflow prevention
    k) Provide better funding options for building elevations within the flood insurance program

3) Measures to prevent flood damage from getting worse
    a) Completion and local adoption of FEMA-approvable flood and/or all hazards mitigation plans for municipalities
    b) Toughen floodplain regulations to allow no new construction in floodplains
    c) Maximum build-out assumption in the computation of flood discharge rates for flood insurance map updating
    d) Implementation of stormwater best management practices (BMPs) for new construction
    e) Maintain and improve dam safety programs
    f) Debris clearing and channel maintenance
    g) Consider climate change effects on future precipitation frequency

DRBC Flood Mitigation Recommendations

The DRBC is one of many organizations working to achieve flood loss reduction in the Delaware River Basin. One of the strengths of the DRBC is its ability to bring together various government and non-governmental stakeholders across jurisdictional boundaries for the shared interest of the watershed. Following the April 2005 flood, DRBC staff developed a set of flood loss reduction recommendations with inputs from the Commission's Flood Advisory Committee (FAC). The FAC is comprised of federal, state, and local organizations with flood loss reduction responsibilities and has served to coordinate multi-agency efforts to improve the basin's flood warning system and mitigate flood losses.

In response to ongoing public interest in basin flood loss reduction efforts, in May 2006 DRBC staff prepared a document, "Moving Forward to Reduce Flood Vulnerability in the Delaware River Basin" (reference exhibit C).

Following the June 2006 flood, DRBC staff reviewed the set of flood loss reduction recommendations previously prepared by the FAC and considered the citizen and professional input summarized earlier. Below is a series of ten recommendations that DRBC staff believe should be prioritized and implemented to reduce flood damage in the basin:

1) Encourage and support the completion and local adoption of FEMA-approvable flood and/or all hazards mitigation plans for all municipalities as required by the federal Disaster Mitigation Act of 2000. These plans form the basis for communities to receive cost-shared federal funds aimed at flood mitigation and are required to maintain eligibility for disaster mitigation funding. Both structural and non-structural mitigation options may comprise such plans. Once the planning is completed, increased funding is needed to implement the mitigation options listed in each plan.

2) Increase the priority of federal and state funding for building elevations and acquisitions in flood prone communities. The number of requests for elevations and acquisitions cannot be met with the existing level of funding, even where FEMA-approvable mitigation plans are in place.

3) Target FEMA map modernization funds to those municipalities where flood conditions have changed due to development. It is essential that the flood insurance program be defined by mapping that is based on the most current data available.

4) Strengthen and unify floodplain regulations basin wide. Encourage regulations to be consistent with the "No Adverse Impact" recommendations by the Association of State Floodplain Managers.

5) Implement best management practices (BMPs) for stormwater control. Consideration should be given to infiltration and retention of runoff onsite, use of swales instead of curbing, minimal impact landscaping, and limiting paved widths to those needed for safety.

6) Expand floodplain awareness and flood safety educational programs.

7) Strengthen flood warning in the basin by implementing recommendations developed through the input of flood warning and mitigation experts who comprise the DRBC's FAC. Some of the recommendations include:

- Expansion and maintenance of the USGS stream and precipitation gage network.
- Continued maintenance and further development of the Advanced Hydrologic Prediction Services (AHPS) by the National Weather Service.
- Increased funding to the National Weather Service, USGS, and U.S. Army Corps of Engineers for the development of flood stage forecast maps to be integrated with AHPS.

8) Develop a flood management/reservoir operating plan that accounts for all existing major reservoirs and includes potential flood mitigation by New York City's water supply reservoirs. Such a plan should not be expected to alleviate all future flooding but could provide a measure of additional flood mitigation by means of seasonal voids and forecast-based void management. Funding is needed to provide the technical support to develop such an operating plan. DRBC staff have outlined the need for a basin-wide rainfall/runoff and routing model to evaluate potential flood operating plans (reference exhibit D). Any plan that involves the use of water supply reservoirs inherently includes a reallocation of storage and must be unanimously agreed to by the parties to the 1954 U.S. Supreme Court Decree (four basin states and New York City).

9) Fully update and expand the 1984 Delaware River Basin Survey Report by the U.S. Army Corps of Engineers to include the entire non-tidal length of the Delaware River and its major tributaries. At this time, the State of New Jersey has committed to cost share a geographically limited update of this report. Greater funding will need to be secured in order to fully evaluate regional structural and non-structural options for flood mitigation.

10) Ensure funding for adequate maintenance of existing flood control structures. Consider new structures only when economically supported and consistent with recreational and ecological objectives.

NJ Governor's Flood Mitigation Task Force Draft Recommendations

Following the flood of April 2005, DRBC staff participated on the New Jersey Governor's Delaware River Flood Mitigation Task Force, which developed a draft report now under consideration by Governor Corzine. The recommendations in the draft report relate to community flood mitigation planning, flood warning, property acquisition, building elevation, and floodplain regulation and are available online at http://www.njflood.org/. The ten DRBC recommendations presented above are generally consistent with those presented in the draft task force report.

The draft task force report states that floodplains should be expected to flood. The Task Force concluded that no one set of measures, either alone or in combination, will completely stop flooding along the Delaware. In addition, it recommended that any studies for potential

mitigation projects should focus on local nonstructural and structural measures, rather than large structural projects on the main stem.

Case Study: A Success Story in Bucks County

Urbanization and more localized storm events have caused frequent tributary flooding for many years and mitigation along the Neshaminy Creek is now being addressed through effective county and federal cost-sharing efforts. The success of the Neshaminy flood mitigation program in Bucks County is an excellent example of effective federal and county cooperation to provide much-needed funding for flood mitigation. The program has been a cooperative effort of the county, Natural Resources Conservation Service (NRCS) and FEMA. According to Richard Manna, the County's Flood Mitigation Program Manager, this joint effort has led to the voluntary acquisition of 100 properties and the elevation of 45 homes, with 20 more homes in the engineering or contract process and another 40 signed up for elevation (*Intelligencer*, Doylestown, Pa., July 7, 2006).

Given this success, we also understand that the problems along the main stem Delaware River are larger in scope and will require significantly more funding for both local mitigation and any regional approaches that may apply.

Conclusion

In the view of DRBC staff, funding priorities must be revised in order to implement mitigation options that will reduce long-term risks to loss of life and property from flooding. Even the DRBC has had to deal with the loss of federal funding support of its annual operating budget, which has limited the agency's flood loss reduction efforts. It is only through a re-prioritization of federal funds that the money will be adequate to seriously move forward with solutions.

Furthermore, multiple approaches to flood mitigation are needed to improve resiliency to flooding. Communities must be encouraged to complete and locally adopt their all hazards mitigation plans. Effective mitigation will require the cooperation and coordination of residents, elected officials and all federal, state and local agencies with flood mitigation responsibilities. Additionally, expansion of floodplain awareness and strengthened floodplain regulations basin-wide will allow for better planning and stricter protection of floodplains in the future.

We believe that most agencies and organizations involved in flood loss reduction are committed to ending the damage/personal loss/rebuild cycle that has been allowed to continue in the floodplains, and that strong measures and adequate funding are needed to end this cycle and ultimately reduce long term flood damage costs.

Thank you for your time. I'll now take any questions that you may have.