

MEMORANDUM

TO: Commissioners
FROM: Carol R. Collier
DATE: September 24, 2008
RE: **Water Resources Plan for the Delaware River Basin ~ FY 2008 Achievements**

September 2008 marks the fourth anniversary of the *Water Resources Plan for the Delaware River Basin* (Basin Plan). During the past year, DRBC and our partners have advanced the goals of the Plan through a number of programs and projects. This memo briefly highlights major Plan-related achievements and describes accomplishments and progress within the five Key Result Areas (KRAs).

I. MAJOR ACHIEVEMENTS

BASIN-WIDE RESULTS

- **Protecting Water Quality - Lower Delaware permanently designated**
In July 2008, following 3 years of temporary status, the 76 mile reach of the Lower Delaware was permanently given *Significant Resource Waters* status in the Special Protection Waters Program.
- **Flood Mitigation – Improved flood warning**
With DRBC assistance, and promotion by members of Congress (Sponsors: Dent, Holt, Lautenberg, Menendez), \$235,000 in federal funds were directed to NOAA-NWS for work on improved flood warning in the Delaware River Basin, including an evaluation of precipitation and flow gauging networks and flood mapping at forecast points. See page 4.
- **Sustainable Water Supply - USACE study and State water plans in final preparation**
DRBC and the Army Corps (USACE) completed a study of long term water supply sufficiency as part of a broader multi-jurisdictional project to enhance water resource management. This basin-wide effort complements planning efforts in several states. See page 2.
- **Flow Management – The Flexible Flow Management Program**
The Flexible Flow Management Program (FFMP) has been in operation since October 2007; a rule-making process has been initiated to incorporate the FFMP into the Water Code. See page 3.
- **Improved Coordination – 2nd Federal Summit**
Hosted by Brigadier General Todd Semonite, a 2nd Federal Summit was held in May 2008. Governor and DRBC Chair, Edward Rendell, welcomed Summit attendees, including Mr. John P. Woodley, Assistant Secretary of the Army for Civil Works. The focus was the coordination of efforts for comprehensive monitoring, flood mitigation and water supply management.
- **Environmental Condition Reporting – State of the Basin 2008**
In response to the Commissioner's directive, assessments of more than 30 environmental indicators have been assembled into a report on conditions in the Basin. See page 8.

SUB-BASIN RESULTS

- **Natural Gas Drilling Regulatory Framework**
DRBC is currently working with other regulatory and scientific agencies at the federal, state and interstate levels to refine review criteria for natural gas projects. See page 3.
- **Flood Mitigation – Planning for NJ Communities**
A Flood Mitigation Plan has been prepared for four New Jersey Counties. See page 4.
- **Watershed Management - Projects finalized**
Several multiple-year watershed initiatives will be memorialized in final reports this year including: Christina Watershed Management Final Report, the Upper Wissahickon SAMP Final Report and the Pocono ORD Final Report. See page 5.
- **Stormwater Management - Retrofit at DRBC headquarters**
Phase I of the retrofit project to implement NJ Stormwater regulations on an existing developed site is complete, functional and being monitored for water quality improvement.

II. PROGRESS BY KEY RESULT AREA

KEY RESULT AREA 1 - SUSTAINABLE USE & SUPPLY

67% OF DRBC WORK HOURS

1.1 WATER SUPPLY PLANNING & MANAGEMENT

Sustainable Water Supply

In addition to collaborative work with the Philadelphia District of the Army Corps of Engineers on the Long Term Sufficiency of Water Supply Study as part of the Multi-jurisdictional Project, DRBC staff have been advising state water supply planning efforts through state and regional committees and direct technical support. Delaware's Water Supply Coordinating Council (WSCC) released its 10th annual report on efforts to enhance reservoir capacity and employ ASR to improve sufficiency of supplies during drought. New Jersey's statewide water supply plan is taking shape; release is expected in January 2009.

Pennsylvania's State Water Plan is also expected this year. DRBC has been involved with data set improvements and testing of the Water Supply Screening Tool on 6 watersheds that are candidates for Critical Water Planning Area designation. Staff also worked in partnership with the SRBC to develop a Plan of Action for the creation of a Technical Assistance Center focused on water use reduction in Pennsylvania.

Water Use Efficiency. A resolution to revise Article 2 of the DRBC Water Code as it pertains to tracking water losses and improving water accountability and supply system efficiency was developed by the Water Management Advisory Committee (WMAC) and proposed to Commissioners for action in December. Improvements are needed to reduce the estimated 150 million gallons of water lost by systems each day. DRBC continues to take a lead role in enhancing the Water Audit Software hosted on the American Water Works Association website.

Effective Ground Water Management. A review of water use in the SE Pennsylvania Ground Water Protected Area (SEPA-GWPA) revealed that although the area as a whole has seen a reduction in water demand over the period 1990 to 2003, some sub-basins may be operating close to, or above, their potentially stressed limit.

Data Management. A database management system is being designed to improve data sharing and management within DRBC and ultimately with external partners. Good data management is essential to enable sound decision making and improve all aspects of water supply planning and management. A product is expected in the next fiscal year.

1.2 FLOW MANAGEMENT

FFMP adoption and implementation: The Flexible Flow Management Program (FFMP) was implemented starting in October 2007 while the DRBC concurrently initiated a rule-making process to incorporate the FFMP into the Water Code. The public submitted over 1,900 comments on the FFMP and proposed Water Code amendments. The majority of comments requested additional releases for the protection of the tailwater and upper main stem fishery and for flood mitigation. The Commission is finalizing the Response to Comment document.

The FFMP Reassessment Study. One provision of the FFMP is a Reassessment Study to evaluate the impacts of the FFMP and use the information to adapt the FFMP. The FFMP scope and Request for Proposals have been developed and are close to being finalized.

1.3 WATER QUALITY

Anti-degradation. In July 2008, following 3 years of temporary status, the 76 mile reach of the Lower Delaware was permanently given *Significant Resource Waters* status in the Special Protection Waters (SPW) Program. The entire 197 mile length of the non-tidal Delaware River is now protected under this program. Notice of rule adoption is being filed in accordance with Compact requirements. The Response to Comments document and SPW Guidance manual will be available this fall. Other accomplishments include development of a water quality model for the Lower Delaware and the completion of the 2nd year of Scenic Rivers Monitoring for the Upper and Middle Delaware.

PCB Water Quality Standards Implementation Plan. Culminating a two year effort, an approach has been developed to address the long-term attainment of water quality standards for PCBs through NPDES permitting and non-point source control measures. Concurrence by the states was achieved at a meeting in September 2008. The DRBC/EPA workgroup also developed draft regulations and an implementation plan for Commission review and a rule proposal in FY 2009. The regulations would accompany the planned adoption of a revised water quality criterion for PCBs for Zones 2 through 6. Work continues on the development and calibration of PCB homolog models for the Stage 2 TMDLs for PCBs. This effort will be completed in FY2009.

National Water Quality Monitoring Network. Begun in 2007, this national pilot project has resulted in a report - presented to the National Water Monitoring Council in January 2008 - on gaps in a mountain-to-oceans monitoring network in the basin, and \$100,000 for the deployment of additional USGS automatic monitoring stations.

Contaminants of Emerging Concern. The first survey in the Delaware Estuary has been completed for a range of unregulated contaminants including flame retardants (PBDEs), perfluorinated chemicals (PFOAs/PFOs) and pharmaceuticals and personal care products (PPCPs). This screening survey will allow the targeting of specific chemicals that may be of concern for impacts to aquatic life or human health for additional study.

Natural Gas Drilling. Water supply, quality and landscape impacts are among the potential issues surrounding the hydrofracturing process for the extraction of natural gas from Marcellus shale formations in the Upper basin. DRBC is working with SRBC, Pennsylvania and New York to coordinate agency actions and minimize unnecessary duplication of effort in the review process. Companies must obtain applicable state and DRBC approvals. Staff have met with industry representatives and held pre-application meetings to explain the Commission's regulatory review process. So far (as of September 24, 2008), no natural gas drilling company has submitted a project application to the DRBC for review.

2.1 FLOOD WARNING, MITIGATION AND MANAGEMENT

USACE Multi-jurisdictional Project. Flood mitigation tasks performed by the Corps have included identification of flood damage centers using FEMA claims data, development and application of a potential structural and non-structural solution matrix, structure inventories at identified damage centers and updated stage-frequency relationships along the main stem Delaware. A draft plan was finalized in June 2008 and is currently under agency review.

Flood Mitigation Implementation Matrix. DRBC lead the development of an Implementation Matrix to track flood-related studies and projects that meet the intent of the recommendations included in the 2007 Basin's Interstate Flood Mitigation Task Force Action Agenda sent to the governors in July 2007.

NOAA Flood Warning Improvements Grant: With DRBC assistance and Congressional sponsors (Dent, Holt Lautenberg, Menendez), \$235,000 in federal funds were directed to NOAA-NWS for work on improved flood warning in the Delaware River Basin. The funds will support an evaluation of existing precipitation and stream gage networks, flood hardening of select prioritized stream gages and implementation of USACE flood inundation mapping into AHPS at flood forecast points.

Delaware River Basin Flood Analysis Model Project. DRBC is part of a multi-agency team including USACE-Hydrologic Engineering Center, USGS, and NOAA-National Weather Service that is developing an integrated flood analysis model to evaluate the effects of various operating alternatives for downstream flood mitigation. Model development began in August 2007, model completion is expected by January 2009.

Floodplain Regulations Evaluation Subcommittee. In May 2008, New Jersey and Pennsylvania Commissioners requested that a subcommittee of the Flood Advisory Committee to be formed to address Task Force Recommendation FR-1: "Catalog,

Evaluate and Update Existing Floodplain Regulations in the Basin". The subcommittee is charged to review, catalog and evaluate the similarities and differences in floodplain regulations throughout the Basin and present recommendations for consideration to the FAC, who will report the results of their deliberations to all Commissioners.

NJ Four County Flood Mitigation Plan. DRBC led development of a Flood Mitigation Plan for 43 municipalities in four New Jersey Counties (Hunterdon, Mercer, Sussex and Warren). The plan contains over 160 locally developed mitigation actions that if implemented could reduce future flood loss. Partners in the planning initiative include the New Jersey Department of Environmental Protection, the NJ Office of Emergency Management and county and municipal officials. The plan was submitted for approval in June 2008.

2.2 AQUATIC LIFE AND HABITAT

Bioassessment Data Collection and Analysis DRBC continued data collection of biological communities (macroinvertebrates, periphyton) on the non-tidal Delaware River for the purpose of establishing biological criteria to protect these ecological communities. These studies were bolstered through collaborative research by EPA Region 3 and EPA-ORD on a randomized macroinvertebrate survey of the non-tidal river that establishes recommendations for biocriteria and augments DRBC's analytical work toward biocriteria development.

Delaware River Oyster Revitalization. In this its 4th year, the program planted 430,000 bushels of shell to enhance oyster recruitment and re-establish the reef. It is estimated that the \$4.3 million federal investment to date has resulted in a \$168 million benefit. In April, the project received the 2008 Government Award from the Water Resources Association of the Delaware River Basin.

Dwarf Wedgemussel study progress. The habitat study is in phase 2. Field work is complete and a draft study and recommendations are being prepared. A final report from the US Fish & Wildlife Service is scheduled for winter of 2008.

3.0 WATERSHED MANAGEMENT

The integration of water and land use management frequently takes place at the watershed scale as DRBC works with local, regional and state program partners to improve conditions in specific watersheds. Below is a report of progress in targeted watersheds.

Schuylkill River Watershed. The Exelon Restoration Fund, initiated as a condition of DRBC docket D-69-210CP, provided nearly \$138,000 for restoration projects this year. Three projects were selected to address agricultural BMPs in the Maiden Creek watershed and stormwater issues in the Scioto Creek and Wissahickon watersheds. Since its inception in 2006, the fund has supplied approximately \$525,000 for 9 projects that have helped to restore areas of the Schuylkill degraded by acid mine drainage or poor agricultural and stormwater management practices. This year, the Schuylkill Action Network (SAN) signed an MOU with the Schuylkill River Heritage Area (SRHA) to expand the existing Exelon Fund into a Schuylkill River Restoration Fund and actively seek additional grantors to support restoration projects that will protect this important drinking water source.

Christina River Watershed. DRBC's Coordination of the Targeted Watershed Initiative Watershed program includes partnerships with: Brandywine Watershed Association, Chester County Conservation District, Chester County Water Resources Authority, DNREC, Delaware Nature Society, PADEP, EPA Region III and University of Delaware's Water Resources Agency. The project has applied more than \$1.5 million of direct and leveraged funding to water quality improvement projects. The final report details the following accomplishments:

- Christina Partnership Website
- Watershed Outreach and Education
- 10 Nutrient Management Control Plans
- 7 Nutrient Management Control Systems
- 500 Crop Acres Treated
- 2000-ft Water Diversion Systems installed
- Water Control Structures
- 1000 Ft. Stream Fencing;
- 10,000 Ft. Stream Reforested

- SMARTYARD Landscaping at 150 homes
- 5000-ft Stream Bank Restoration/ Reforestation Study
- 1 Stormwater Outfall Retrofit
- 2 Stormwater Basin Retrofits
- DE Stormwater Wetland Retrofit
- Monitoring in PA & DE

Pocono Creek Watershed: This is a collaborative project to establish levels of water resource sustainability known as the Framework for Sustainable Watershed Management in the Pocono Creek Watershed. The project includes the following partners: DRBC, USGS, EPA Regions II & III, EPA-ORD, Monroe County, PADEP, PA Fish & Boat Commission, and Brodhead Watershed Association. The project is investigating and establishing scientifically defensible tools for protection of streamflow and trout populations and developing management strategies for implementation. The following independent studies are being completed at this time:

- *Measuring Flows and Impervious Surface:* The EPA-ORD developed a Distributed Groundwater Model that measured current recharge and associated flows throughout a 37 sub-watershed system. The model is also able to predict alterations in flow due to projected build-out for the year 2020.
- *Ecological Flow Study:* The USGS-Fort Collins Science Center has completed a Hydroecological Assessment Process for the Pocono, which found that the stream belongs to a Perennial Flashy/Runoff class.
- *Impact of Ground Water Withdrawals on Stream Baseflow:* The USGS PA Water Center developed a three dimensional calibrated ground water flow model capable of simulating aquifer-stream interactions.
- *Social Marketing:* The project includes an innovative community outreach and education effort (Trout Tales and Trails) that commissioned 15 area artists to decorate 5-foot fiberglass trout, which were strategically placed throughout watershed with an instructional "Tale" about ecological flows in Pocono Creek.

Upper Wissahickon SAMP. The project team led by DRBC, with assistance from a technical team and an advisory committee, completed the development of a management plan for this stressed watershed area. This project melds the requirements of the Coastal Zone program's Special Area Management Plan (SAMP) with the development of a Critical Area Resource Plan (CARP) under Pennsylvania's Act 220 Water Supply Plan development process. The management plan, which includes identification of alternative strategies and recommendations to mitigate the stress on water resources on the Upper Wissahickon, was completed in June 2008. Documents related to the SAMP can be viewed at www.planning.montcopa.org/Wissahickon.

This project is a collaborative effort with PA DEP, Montgomery County, and the Pennsylvania Environmental Council (PEC).

Upper and Central Region watersheds.

The large tracts of forest in the upper basin provide excellent protection of the Delaware River headwaters. DRBC is working with the Pinchot Institute for Conservation, the National Park Service, PA DCNR and other partners in the "Common Waters" Initiative. The goal is to develop strategies to accommodate growth in the Central and Upper Region watersheds of NY, PA and NJ while protecting forest and water resources. A grant has been provided from the William Penn Foundation to support the Initiative.

4.0 INSTITUTIONAL COORDINATION AND COOPERATION

DRBC is a major forum for negotiation, coordination and collaborative efforts in the basin and a national leader on select issues that involve development of new region scale resource management policy frameworks (Integrated Water Management; Toxics Pollution Control; and Real Time Monitoring Capacity). Some of the more notable programs and efforts that required substantial DRBC involvement and coordination in FY2008 include:

- 2nd Federal Coordination Summit
- Special Protection Waters and Scenic River-related efforts: SPW rule development; participation in the Upper Delaware Council and Lower Delaware Management Committee and Delaware River Greenway Partnership
- PCB Water Quality Standards Implementation Plan (3 States; 2 EPA Regions; EPA Headquarters and Interested Parties)
- Federal Water Resource Management: National Water Quality Monitoring Network Pilot Study; Participation in USACE Leadership and testify before Congressional Committees on the topic of "Integrated Water Resource Management".
- Interstate Flood Mitigation Task Force Implementation Activities as itemized in the July 2008 Implementation Status Report/Matrix.
- Army Corps of Engineers "Enhancing Multi-jurisdictional Use and Management of the Water Resources for the Delaware River Basin"—Final Report Development.
- FFMP negotiation support: meetings, water code amendments and modeling.
- Delaware Estuary: Estuary Implementation Committee (EIC) and Science & Technical Advisory Committee (STAC); Oyster Revitalization Task Force; Partnership for Delaware Estuary Habitat Restoration Alliance
- State Water Management: **Delaware** Water Supply Coordination Council; **New Jersey** Clean Water Council and Water Monitoring Coordination Council; **Pennsylvania** State Water Plan: Statewide Committee, Delaware Regional Committee, Policy & Implementation Sub-committee, Critical Water Planning Area Subcommittee, Water Conservation Subcommittee, Wissahickon Watershed Critical Area Planning, and the PA Water Resource Advisory Committee
- Watershed initiatives including the Schuylkill Action Network (SAN), the Christina, Pocono Creek, and Upper Wissahickon projects
- Natural Gas Well Development Coordination (PA, NY, SRBC, ORSANCO, USGS, EPA)
- Standing interstate and national initiatives such as ASIWPCA, ICWP, AWRA, WEF, AWWA, Fish & Wildlife Cooperative, Commission Advisory Committees
- Funding maintenance and restoration; Congressional outreach
- Administrative Agreement development with EPA and states
- Executive Director testimony; US Congress: House Subcommittee on Water Resources & the Environment
- Integrated Water Management: Executive Director participated in several USACE leadership meetings to share lessons learned and success stories
- Presentation to the National Water Quality Monitoring Council's (EPA, NOAA, USGS, states) annual conference on the national pilot project to develop a mountains-to-ocean monitoring network in the Delaware Basin
- Other collaborative monitoring, assessment, data management and mapping efforts

5.0 EDUCATION AND STEWARDSHIP

DRBC is involved directly and indirectly with education and outreach activities that promote stewardship and, per the Basin Plan, help to establish a basin-wide sense of place. In addition to participating in multiple regional events during the year – such as state Coast Days, the annual Shad Festival, Riverfest and Bay Day, Schuylkill and Lehigh events and the annual Delaware River Sojourn, the staff also makes presentations at special conferences, prepares annual and special reports, and shares information and learning from DRBC research activities. Of the many efforts that have occupied staff attention this year, the following are especially noteworthy.

Lower Delaware SPW Rulemaking and Public Participation. Proposed regulatory changes to permanently designate the lower Delaware River as Significant Resource Waters under the DRBC's Special Protection Waters (SPW) program were published during September 2007. Two informational meetings took place on October 25 in Stockton, N.J. and on November 1 in Easton, Pa. A public hearing followed on December 4 in West Trenton, N.J. and written comments were accepted through December 6, 2007.

FFMP Rulemaking and Public Participation. On December 3, 2007, the DRBC published proposed changes to its Water Code to implement a Flexible Flow Management Program (FFMP) for operation of the three New York City Delaware Basin reservoirs. Informational meetings were held during the afternoon and evening on December 18, 2007 in Matamoras, Pa., and on January 8, 2008 in Philadelphia, Pa. A public hearing to receive comments took place on January 16, 2008 in West Trenton, N.J. In response to numerous requests expressed at the hearing, DRBC announced on January 17 that the comment period was being extended from January 18 to March 3, 2008.

Christina Watershed Legislative Event. Since 1995, the Christina Basin Clean Water Partnership has worked to develop a coordinated, scientific approach to improve the basin's water quality and meet the water needs of that interstate region (see page 7). The significant accomplishments of this program were celebrated on February 29, 2008 with an awards ceremony in Kennett Square, Pa., which honored six property owners involved in separate projects throughout the Christina Basin. US Representatives Joe Pitts (PA 16th District) and Mike Castle (DE At Large), as well as a staff member from the office of Representative Jim Gerlach (PA 6th District) presented the awards.

New Jersey Flood Action Plan Technical Assistance Workshops. Four workshops were held in October 2007 to review risk assessment and mitigation actions for Mercer, Hunterdon, Sussex and Warren counties in New Jersey.

State of the Basin Report. A draft of the report on conditions across the Basin was prepared for Commissioner in mid September. The report marks the first time since 1981 that a multi-indicator basin-wide report has been assembled by DRBC since 1981. It is the product of a collaborative effort with the Partnership for the Delaware Estuary and is also the first time that the basin's four Water Resource Research Institutes have worked together. An October publication date is scheduled.

DRBC.net The commission's web site continues to take an increasingly important role in disseminating information to the public. Since its inception, the number of visits to the home page has steadily grown, reaching all-time highs in both the total bytes of information sent as well as number of "hits" to the home page during fiscal year 2008. A heavily visited, new page provides information on Natural Gas Drilling in the Marcellus Shale Formation.