Building Strong Collaborative Relationships for a Sustainable Water Resources Future:

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

SUMMARY OF REGIONAL WATER PLANNING

U.S. Army Corps of Engineers
Civil Works Directorate
441 G Street NW
Washington, DC 20314-1000

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The findings contained in this report are based on the information collected from the literature search and interviews for this initiative and should not be construed as an official Department of the Army position, policy or decision unless so designated by other official documentation.

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

1. STATE/REGIONAL WATER PLANNING STATUS

The Interstate Commission on the Potomac River Basin (ICPRB) was established by a compact between the states of Maryland and West Virginia, the commonwealths of Pennsylvania and Virginia, and the District of Columbia for "the purpose of regulating, controlling, preventing, or otherwise rendering unobjectionable and harmless the pollution of the waters of said Potomac drainage area by sewage and industrial and other wastes" (Source [1]). It was approved by the U.S. Congress in 1940 (54 Stat. 748).

The original purpose of the compact was improved water quality of the Potomac River and its tributaries. However in the 1960s, the Washington D.C. metropolitan region and the Potomac River basin, along with much of the eastern United States, experienced a major drought. It was determined that a future drought of equal or greater proportions could mean a significant reduction of water supply for the region. Subsequent technical studies and a 1970 amendment to the compact resulted in the creation of a special section within ICPRB (as authorized by Article III of the amended compact (84 Stat. 856)) named the Section for Cooperative Water Supply Operations on the Potomac River (CO-OP) that became responsible for providing technical support and administrative management to the water suppliers serving the metropolitan Washington area.

The ICPRB does not currently have a comprehensive water resources plan, nor does it have regulatory authority to enforce water resource management actions within the basin. However, the ICPRB plays three key roles in water resources planning in the Potomac Basin: Facilitation, Coordination, and Technical Support. The ICPRB is recognized as an agency of its member jurisdictions, which gives it the ability to take on different roles as needed. It plays a pivotal role in facilitating cooperation between federal, state, and local government agencies as well as other public and private stakeholder groups in planning and managing the water resources. The ICPRB has worked with the jurisdictions and their water resources plans, and has used ICPRB expertise to encourage comprehensiveness and sustainability in these plans. Current activities are driven by the *2006 Strategic Plan*, which provides three primary goals to guide the Commission's efforts (discussed below).

The ICPRB's mission is to enhance, protect, and conserve the water and associated land resources of the Potomac River and its tributaries through regional and interstate cooperation , and has since its inception been focused on water quality issues. As the growing metropolitan Washington began to stress available supplies in the 1960s, ICPRB played a pivotal role in assuring adequate supplies of raw water. That focus has become more important as the region's jurisdictions undertake more-comprehensive forms of water resource management. The ICPRB has increased its resources and staff expertise to enhance integrated water resources planning and management by and with the member jurisdictions. The main water resources planning efforts of the ICPRB include:

- Coordination of water withdrawals and reservoir operations between the three main water suppliers of the Washington Metropolitan Area during periods of drought in order to provide

sufficient supply to meet domestic use demands while ensuring compliance with minimum instream flow requirements.
- Preparation for drought conditions by conducting annual drought simulation exercises and generating monthly water supply outlooks.
- Water availability assessments of groundwater and surface water supplies using hydrologic models, and water balance estimates.
- Source water protection planning through the Drinking Water Source Protection Partnership, which is led by the ICPRB and is comprised of multiple federal, state, and local agencies as well as private water utilities to implement a "multi-barrier approach to safeguarding the drinking water supply for public health" (Source [2]).
- Development of Total Maximum Daily Load (TMDL) plans to address water quality impairments in the basin and provide technical assistance and support to ICPRB member jurisdictions.
- Provide support for the planning efforts of state and local agencies, such as the Pennsylvania Department of Environmental Protection's State Water Plan.
- Encourage wise water use and conservation throughout the watershed.

2. RESPONSIBLE STATE AGENCIES/REGIONAL ENTITIES

The commissioners of the ICPRB include "three members from each signatory body [Maryland, West Virginia, Pennsylvania, Virginia, and the District of Columbia] and three members appointed by the President of the United States" (Source [1]). The point of contact and executive director of the ICPRB is:

Mr. Joseph Hoffman, Executive Director
Interstate Commission on the Potomac River Basin
51 Monroe Street, Suite PE-08
Rockville, MD 20850
(301)984-1908
jhoffman@icprb.org
www.potomacriver.org

3. WATER MANAGEMENT VISION AND GOALS

The Interstate Commission on the Potomac River Basin (ICPRB) was established for "the purpose of regulating, controlling, preventing, or otherwise rendering unobjectionable and harmless the pollution of the waters of said Potomac drainage area by sewage and industrial and other wastes" (Source [1]).

In order to achieve this, the 1970 compact recognizes that (Source [1]):

> *…the regulation, control and prevention of pollution is directly affected by the quantities of water in said streams and the uses to which such water may be put, thereby requiring integration and coordination of the planning for the development and use of the water and associated land resources through cooperation with, and support and coordination of, the activities of Federal, State, local and private agencies, groups, and interests concerned with*

the development, utilization and conservation of the water and associated land resources of the said conservancy district.

To achieve its mission, the *2006 Strategic Plan* defines the following three goals for the ICPRB (Source [3]):

- *Promote watershed-based management protective of ecosystems and water resources.*
- *Foster development of engaged and knowledgeable citizens and stakeholders. Further, the strategic plan must address the health of the agency as well as the watershed.*
- *Acquire resources to achieve recognition of ICPRB as a vital link in the basin's health and future.*

4. SCOPE OF WATER RESOURCES PLANNING AND MANAGEMENT

The Interstate Commission on the Potomac River Basin (ICPRB) is comprised of five work units, each described in detail below.

- Cooperative Section for Water Supply Operations on the Potomac River (CO-OP)
- Water Resources
- Water Quality
- Living Resources
- Communications

While each unit pursues its own specific programs and projects, there is also collaboration between the units and with federal, state, and local agencies and organizations.

Cooperative Section for Water Supply Operations on the Potomac River (CO-OP)

This water supply section of the ICPRB participates in a number of programs aimed at ensuring a reliable and clean supply of water to the more than five million people living with the basin, including:

- Water Supply Coordination
- Drought Simulation Exercises
- Hydrologic Modeling and Water Balance Assessments (Groundwater and Streamflow)
- Drinking Water Source Protection

The ICPRB's Section for Cooperative Water Supply Operations (CO-OP) was started in the 1979 after a record drought and subsequent system-wide assessment showed that current supplies would not be sufficient to meet future demands in the region. As a result, the Jennings Randolph Reservoir was constructed in the upper reaches of the Potomac River watershed. Figure 1 shows the current water supply system in the Potomac River basin. The reservoir was one of 16 recommended for the basin by the U.S. Army Corps of Engineers for flood control and water supply.

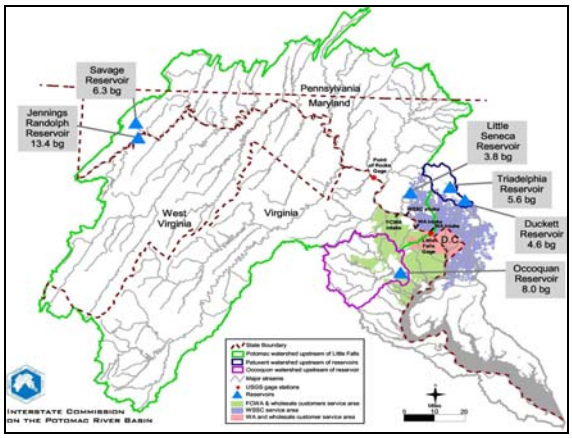

Figure 1. Water Supply Reservoirs in the Potomac River Basin (Source [4])

The Potomac River Low Flow Allocation Agreement (LFAA) of 1978 defines the administrative and technical procedures to be followed in event of a drought to ensure adequate water supply for domestic uses and to ensure adequate flow in the river to sustain aquatic life in a cooperative manner. In light of the need to abide by the LFAA and to meet future demands, the three main water suppliers in the Washington Metropolitan Area (Fairfax County Water Authority (FCWA), Washington Suburban Sanitary Commission (WSSC), and the Army Corps of Engineers' Washington Aqueduct Division (WAD)) and the ICPRB signed the Water Supply Coordination Agreement (WSCA) of 1982.

As stated in the WSCA, the water suppliers recognized that there would be a "mutual benefit of the suppliers to manage Potomac River flows, reservoir releases, and water supply withdrawals" (Source [5]) in a cooperative fashion and that the ICPRB was well suited to coordinate this effort. ICPRB's CO-OP Section is responsible for coordinating reservoir operations and water withdrawals between the three water suppliers during times of drought "to ensure that minimum environmental flow requirements and water supply withdrawals can be met" (Source [6]).

In order to prepare for drought conditions, CO-OP conducts an annual Drought Exercise that "simulates water management operations and decision-making under drought conditions for the [Washington Metropolitan Area] water suppliers" (Source [7]). The Drought Exercise is intended to "ensure that operational procedures are well practiced and understood, despite the possibility of many years between droughts" (Source [7]). CO-OP also monitors hydrologic conditions in the basin and releases a monthly Water Supply Outlook & Status update (April through October) that "provides valuable information about the water supply situation in the watershed" including "long-term precipitation data, flows…and the likelihood of water supply releases from the area reservoirs for the coming days" (Source [8]). Figure 2 shows an example of the comparison between historical and current flow conditions as reported in the October 2008 Water Supply Outlook.

Additionally, the water suppliers have agreed, through the Water Supply Coordination Agreement, to conduct a review every five (5) years (beginning in 1990) to evaluate the adequacy of the then available water supplies to meet the demands in the Washington

Metropolitan Area that may be expected during the succeeding twenty(20)-year period. ICPRB's CO-OP has conducted each of the four (4) previous reviews for the suppliers and is in the process of preparing the 2010 demand study at this time.

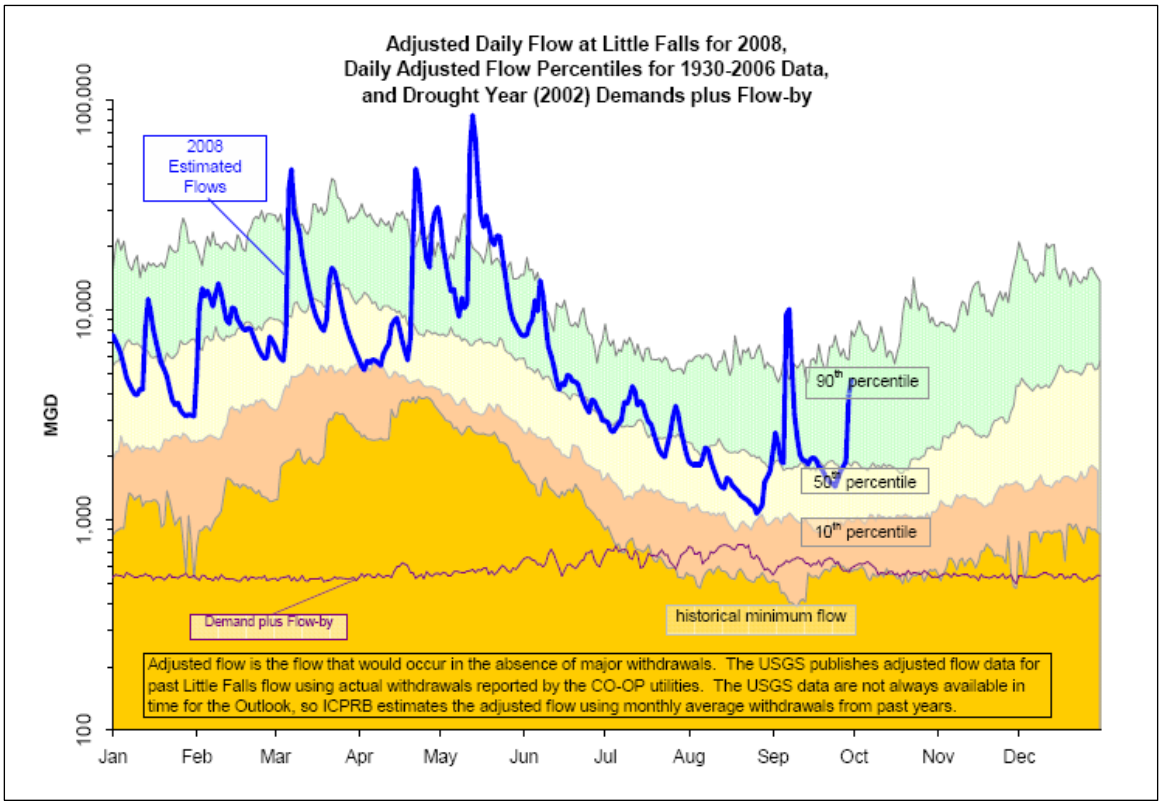

Figure 2. Comparison between Historical and Current Flow Conditions included in the Water Supply Outlook for October 2008 (Source [9])

Water Resources Section

The ICPRB's Water Resources section is also involved in a number of hydrologic monitoring and modeling projects to better assess available water supplies, particularly groundwater. The ICPRB has recently developed a coupled groundwater and stream flow model of the Upper Monocacy River watershed to assess the impacts of water withdrawals from streams and wells on aquatic habitat. The model predicts that during "dry" summers (1 in 5 summers), roughly 40 percent of represented stream reaches are dry or losing, and that this percentage is likely to increase significantly under future water demand scenarios. This result is consistent with other evidence that water resources are under stress in the upper Monocacy drainage area. These results also indicate that the ability to simulate a two-way exchange between ground water and surface water may be important in future watershed modeling efforts in this watershed. The ICPRB recognizes the great need for a basin-wide groundwater assessment, but currently lacks the resources to conduct such a study.

Another major planning effort of the ICPRB is the calculation of annual and seasonal watershed water budgets for the basin's coupled stream/aquifer systems. These water budgets, which provide estimates of annual recharge and summertime water availability, are used to help

understand available water supplies in the region. An annual and seasonal water budget pilot study was done in the Monocacy/Catoctin drainage area and an annual water budget study was done for the fractured bedrock of the entire Potomac River basin. When future resources permit, the seasonal water budget analysis will also be extended to the entire basin.
To support CO-OP Section operations and basin-wide water resources needs for modeling efforts, the ICPRB is collaborating with the United States Geological Survey (USGS) to maintain a network of continuous groundwater monitoring wells throughout the basin (Figure 3).

The ICPRB is also implementing a Shared Vision Planning approach to "investigate whether there are ways to operate North Branch reservoirs to better balance the many uses of the Potomac River" (Source [11]). The North Branch reservoirs, which include Savage Reservoir and Jennings Randolph Reservoir (Figure 1), support many uses including boating, swimming, fishing, and water supply. The ICPRB is in the process of meeting with stakeholder groups to discuss potential management plans and to develop a Shared Vision Planning model that will allow decision makers and stakeholders to "develop a 'shared vision' for how the system works" (Source [11]). The process promotes greater understanding of the system and provides the opportunity for stakeholder s to propose management changes that would benefit users.

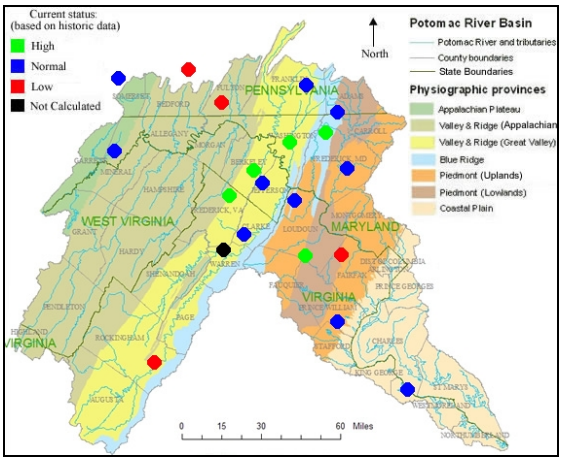

Figure 3. Real-time Groundwater Conditions in Potomac River Basin
(Source [10])

In addition to reservoir management and operations, the ICPRB is the lead coordinator of the Potomac River Basin Drinking Water Source Protection Partnership (DWSPP), which was created in 2004 with the mission (Source [2]):

> *To serve as a cooperative and voluntary partnership working towards the goal of improved source water protection of the Potomac River in recognition of the vital role of the river in supplying drinking water to millions of people within the Potomac watershed and in support of the multi-barrier approach to safeguarding the drinking water supply for public health.*

The DWSPP is composed of representatives from federal, state, and local government agencies, and water supply utilities. In 2005, the DWSPP formed the following six workgroups to focus on specific issues related to drinking water source protection:

- Pathogens
- Emerging Contaminants
- Disinfectant By Product Precursors
- Urban Issues
- Agricultural Issues
- Development of an Early Warning and Emergency Response System

Each of these workgroups has identified "objectives, activities, and milestones for its focus topic" (Source [12]). The overall objective of the DWSPP is to rely "not only on the treatment plant, but also on multiple barriers to contamination created by watershed protection efforts…to enhance drinking water quality and to minimize risks to public health" (Source [12]).

Water Quality and Living Resources

The Water Quality and Living Resources sections of ICPRB are involved in a number of projects including Total Maximum Daily Load (TMDL) development, biological water quality monitoring, the American Shad Restoration Project, and providing support to the Chesapeake Bay Program.

The ICPRB has been actively involved in the development and review of TMDL plans throughout the basin, especially for watersheds that span multiple states. Major efforts have included the TMDL plans for Polychlorinated Biphenyls (PCBs) in the Potomac River estuary (involving Maryland, Virginia and the District of Columbia as all share the same waterways and impaired designations), the Anacostia River in Maryland and the District of Columbia, and various watersheds in Pennsylvania. The ICPRB played a critical role in the PCB TMDL as it led to the cooperation between the participating jurisdictions, each of which had its own set of standards and impairment listings. This cooperation resulted in the development of a single integrated TMDL plan, rather than individual plans for each jurisdiction.

The ICPRB conducts routine biological monitoring surveys which provide information "to determine what improvements are needed in environmental conditions such as nutrients and underwater light levels to keep the Potomac ecosystems healthy" (Source [13]). The ICPRB also successfully "spearheaded a collaborative effort to stock American shad that began in 1995 and was designed to imprint shad to the historic spawning and nursery waters and help rebuild Potomac River shad stocks" (Source [14]) known as the Potomac River American Shad Restoration Project.

Staff from ICPRB work directly with the Chesapeake Bay Program (CBP) by providing support for the CBP's large monitoring database and by participating in many of the program's steering committees and subcommittees. The Chesapeake Bay Program is a partnership between federal, state, local agencies, and other public and private stakeholder groups that is working to restore and protect the Chesapeake Bay, to which the Potomac River is a major tributary.

Communication

The ICPRB strongly believes that "efforts to engage and involve the public in discussions and solutions are an essential part of [its] efforts" (Source [15]). The Communications section hosts numerous public workshops, community service activities, and recreational events each year, in addition to publishing the bi-monthly newsletter, *Potomac River Reporter*, and maintaining the ICPRB website. Public outreach is described in detail in the following section.

Other Activities

In addition to the programs and projects described above, the ICPRB also supports states in developing consistent regulations and strategies. In particular, the ICPRB supported the Pennsylvania's Department of Environmental Protection in its development of a comprehensive state water plan.

A major issue identified by ICPRB is infrastructure repair. A recent pipe break in the DC area resulted in severe flooding and diminished fire suppression protection. Additionally, one of the gates of the Savage Reservoir in the upper reaches of the Potomac River is in need of replacement, but the current owner and operator do not have sufficient funds.

5. PARTNERSHIPS, STAKEHOLDER, AND PUBLIC INVOLVEMENT

The ICPRB is a partnership between Maryland, Virginia, West Virginia, Pennsylvania, the District of Columbia, and the federal government. One of its main objectives is to facilitate cooperation among the various public and private stakeholders in the basin in developing planning and management strategies.

Through the Mid-Atlantic River Basins Group, the ICPRB also maintains close ties to the Delaware River Basin Commission (DRBC) and the Susquehanna River Basin Commission (SRBC). This group works together to address common issues, particularly federal funding sources. In 1994, congress eliminated line-item appropriations from the federal budget for these basin commissions, which has had a significant impact on their operations. The three commissions are working together to re-establish this funding source.

The ICPRB recognizes the importance of citizen stewardship in order to achieve its objectives. Activities include an annual Potomac River Ramble that gets citizens out on the river to encourage stewardship of the watershed. It also participates in numerous public outreach programs such as the Potomac Watershed Cleanup and a series of "watershed-wise landscape workshops" that provide rain barrels to citizens and education on their use and how to develop a watershed-wise landscape to minimize stormwater and pollution runoff to the river. The ICPRB also provides support to local watershed groups in their public outreach initiatives, and provides organizational and technical support.

To further provide information to the public, the ICPRB publishes a free bi-monthly newsletter, *Potomac River Reporter*, which describes current issues in the basin, and the efforts and accomplishments of the ICPRB and other agencies aimed at addressing these issues. It also maintains a website that is a major source of information on the Potomac River basin.

6. PLAN IMPLEMENTATION STRATEGY

Since it is not given regulatory authority to enforce water resource actions and standards, the ICPRB relies on the cooperation of federal and state regulatory agencies to adopt the regulations and standards recommended by the Commission. The role of ICPRB is primarily to facilitate cooperation among the states and federal government to achieve a common goal of protecting the

Potomac River by implementing a watershed-based strategy. It is also an important scientific resource that provides science-based answers to support local and state government decision-making.

ICPRB's activities are guided by a set of initiatives defined for each of the three goals stated in its *2006 Strategic Plan*. The success of these initiatives are based on the "measures of accomplishment", which are also defined for each goal, as described in the following section. The initiatives for the first goal to "Promote watershed-based management protective of ecosystems and water resources" (Source [3]) include:

- *Facilitate inter-jurisdictional cooperation and communication concerning water supply issues.*
- *Develop a set of tools to evaluate the impacts of changes in consumptive use, land use, and climate change on water supply in the basin.*
- *Conduct research to seek and develop answers to large-scale basin challenges.*
- *Identify water quality/watershed stressors meriting basin-wide criteria.*
- *Develop and propose watershed-wide water criteria for adoption by the jurisdictions.*
- *Build consensus with jurisdictions/stakeholders.*
- *Establish interstate committees to raise interest and commitment for common standards.*
- *Become the premier agency for modeling and monitoring analysis tools basin-wide and throughout the basin.*

7. OUTCOMES ASSESSMENT PROCESS

Although there is no standard assessment process to review progress made by the ICPRB, it has established specific "measures of accomplishment" for each of the three goals stated in its *2006 Strategic Plan*. These measures of accomplishment are specific targets that can be used to guide the Commission's efforts each year. The measures of accomplishment for the first goal include (Source [3]):

- *Produce Indices of integrity, Models, Maps of status, Interpretive reports, Reviews of state assessment reports, Watershed health criteria.*
- *Create a schedule for identifying, developing and building consensus for watershed criteria.*
- *Convene a meeting of Coastal Plain water supply scientist/stakeholders at least annually.*
- *Convene a meeting of upper Potomac basin (or selected sub-basin) water supply scientists/stakeholders at least annually.*
- *Provide the Monocacy basin ground water model to stakeholders by 2009.*
- *Complete the phase 1 upper Potomac basin watershed/ground water model by 2008.*
- *Complete the phase 2 upper Potomac basin watershed/ground water model by 2012 (subject to funding).*
- *Submit at least two grant proposals annually on behalf of DWSPP.*
- *Submit at least two grant proposals annually focused on water quantity issues.*

Annual reports were generated for a number of years, but have not been released for the past few years due to limited resources. Instead, the ICPRB devotes at least one issue of its bimonthly

newsletter, *Potomac River Reporter*, to the accomplishments of the previous year and another issue to the planned activities for the following year.

The ICPRB also submits quarterly reports to its commissioners on recent accomplishments and future activities. The majority of outcomes assessment is conducted internally during budget planning. Some outside feedback is provided by entities that provide funding to the Commission including the member jurisdictions and the Chesapeake Bay Program.

8. NEEDS, CHALLENGES AND CRITICAL PRIORITIES – INTERVIEW INSIGHTS

During the interview, ICPRB recognized two high priority issues, or "hot spots" in the Potomac River Basin:

- Source Water Protection of the DC-metro and other local water supplies in the Potomac River. The ICPRB created a partnership with water supply utilities and member jurisdictions to create a multi-barrier approach to source water protection. Implementation of this approach additionally improves the water quality of the Potomac River and alleviates impacts on Chesapeake Bay.
- Infrastructure Repair. The ICPRB discussed a major need to replace a release gate on the Savage Reservoir in the upper watershed of the Potomac River. Repair is being delayed due to insufficient funding. The impact of water supply system failures can be severe, as occurred during the recent water main break in the D.C. area.

The ICPRB is in need of a basin-wide groundwater assessment to better understand the availability of and current impacts on groundwater in the basin. Groundwater is a significant water supply source in much of the basin, but is not regulated in Pennsylvania or West Virginia since they do not have a groundwater permitting system.

Limited funding is also a major issue for the ICPRB. In 1994, the ICPRB and two other interstate river basin commissions (Delaware River Basin Commission and Susquehanna River Basin Commission) lost line-item appropriations in the federal budget. They are working together to reinstate this funding source.

ICPRB sees strong benefit to collaborating with federal agencies including United States Geological Survey, Environmental Protection Agency, and the Army Corps of Engineers (ACOE). The ICPRB has worked with each of these agencies on multiple occasions and hope to collaborate with The Nature Conservancy and ACOE on a future project that could involve a basin-wide water resources assessment.

9. REFERENCES

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