Susquehanna River Basin Commission

a water management agency serving the Susquehanna River Watershed

Lower Susquehanna River
Reservoir Sediment Storage Capacity Issue

Chronology of SRBC Involvement

- 1985 SRBC initiates comprehensive monitoring of nutrients and sediments in the Susquehanna River basin, an effort now in its 28th year, which provides important data on annual sediment loads delivered to the reservoir complex behind major hydroelectric dams on the lower Susquehanna River. Funding support for the monitoring program is provided by Pennsylvania through its Chesapeake Bay Program funding allocation.

- 1992 The United States Geological Survey (USGS) releases information from an ongoing study indicating that sediment storage at 3 of 4 dams on the lower Susquehanna River is at a "steady-state" condition and the remaining storage capacity at Conowingo Dam has a life expectancy of approximately 15 years. Implications of the loss of such storage are reported to be a dramatic increase in sediment and phosphorus loads to the Chesapeake Bay.

- 1992 Pennsylvania Delegation of the Chesapeake Bay Commission (CBC) provides $15,000 grant funding to SRBC to formulate a study titled: "Managing Sediments and Nutrients in the Susquehanna River Basin", resulting in the formation of a Technical Advisory Committee to assist it in the development of a Scope of Study to address, among other things, dredging feasibility and other options for retaining sediment storage capacity behind the dams on the lower Susquehanna River.

- 1993 SRBC releases its Scope of Study and pursues federal funding to support implementation of the study plan, which focuses on sediment transport and sediment storage capacity behind the dams.

- 1994 Deliberations on the sediment management issue continue with the SRBC Technical Advisory Committee, as do efforts to secure federal funding to implement the study plan, which ultimately were unsuccessful.

- 1995 Final study report released by USGS indicating that remaining life of sediment storage capacity in Conowingo Pond is estimated to be 15 to 18 years.

- 1998 USGS releases an updated Fact Sheet (#003-98), titled: "Changes in Sediment and Nutrient Storage in Three Reservoirs in the Lower Susquehanna River Basin and Implications for the Chesapeake Bay." After analysis of the scouring event caused by the January 1996 ice-jam flood on the Susquehanna River, USGS determines that there is approximately 43 million tons of storage capacity remaining in Conowingo Pond, or 17 to 20 years of storage capacity without additional scour.

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- 1999 Pennsylvania Delegation of the CBC provides grant funding to SRBC to convene a Sediment Task Force to review the existing science and make management recommendations concerning sediment and the loss of sediment storage capacity on the lower Susquehanna River.

- 2000 SRBC collaborates with Chesapeake Bay Program in the development of the Water Quality Protection and Restoration Goals of *Chesapeake 2000*, which provides as follows: "By 2003, work with the Susquehanna River Basin Commission and others to adopt and begin implementing strategies that prevent the loss of the sediment retention capabilities of the lower Susquehanna River dams."

- 2000 The SRBC Sediment Task Force convenes the Sediment Symposium, bringing together experts to evaluate the state of knowledge with respect to sediment in the Susquehanna River Basin, its policy implications, and management options to address the issue.

- 2000 At the request of the SRBC Sediment Task Force, the Scientific and Technical Advisory Committee (STAC) of the Chesapeake Bay Program convenes a workshop and issues a Workshop Report, titled: "The Impact of Susquehanna Sediments on the Chesapeake Bay." STAC concludes that the loss of retention of sediment storage in the reservoirs behind the lower Susquehanna River dams would have a significant impact on Bay health.

- 2001 The SRBC Sediment Task Force issues its report recommending a series of actions to address the sediment issue, most notably the need to undertake a comprehensive study of the feasibility of managing sediment storage capacity in Conowingo Pond, including an analysis of dredging feasibility.

- 2001 The SRBC engages members of the Susquehanna River Congressional Task Force to support an authorization and appropriation for the Corps to undertake a study of management options for addressing the sediment issue as outlined by the Sediment Task Force report. An expanded authorization and appropriation for the Chesapeake Bay Shoreline Erosion Project is approved as part of the FY2002 federal budget, which includes authorizing language and funds to enable the Corps to proceed with a reconnaissance study on the sediment issue. The authorization and/or appropriation were supported in Congress by United States Senators Paul Sarbanes (MD), Barbara Mikulski (MD), John Warner (VA), George Allen (VA), Arlen Specter (PA), and Rick Santorum (PA), and by Congressmen Wayne Gilchrest (MD-1) and Paul Kanjorski (PA-11).

- 2003 The Corps issues its Interim Reconnaissance Report, Part 1, Sediment Behind the Dams on the Lower Susquehanna River. The SRBC and MDE issue letters of intent to the Corps committing to serve as nonfederal partners to the feasibility study outlined in the Phase 1 Report.

- 2003 The Corps, in coordination with SRBC and MDE, issue a Project Management Plan (PMP) to guide initiation of a feasibility study to evaluate sediment management options.

- 2003 The SRBC receives a $400,000 grant from Pennsylvania to undertake a Sediment Characterization Study of the sediments in storage in the lower Susquehanna River, utilizing USGS, the Maryland Geologic Survey, and the University of Maryland Center for Environmental Studies. The study analyzed the physical, chemical, and biological characteristics of the sediment stored behind Conowingo Dam to determine the water quality implications of dredging, and ultimate disposition, including potential suitability for beneficial use.

- 2004 The SRBC engages members of the Susquehanna River Congressional Task Force to support an appropriation to the Corps to undertake the sediment management study called for in the PMP. Federal funding was not provided.

- 2005 The SRBC re-engages members of the Susquehanna River Congressional Task Force to support an appropriation to the Corps to undertake the sediment management study. Federal funding was not provided.

- 2007 The SRBC hosts a congressional briefing on the sediment issue for Susquehanna River Congressional Task Force offices and interested stakeholder NGO's, providing information on the significance of maintaining sediment storage capacity and the need for federal support for a sediment management study to assess management options.

- 2008 With support from the SRBC, Pennsylvania provides $95,000 to the USGS to undertake a bathymetry study to provide updated data on the amount of sediment and remaining storage capacity for the reservoir system located in the lower Susquehanna River Basin. Results are released as Scientific Investigations Report 2009-5110, indicating 15-20 years of storage capacity remaining without accounting for statistically expected scouring.

- 2009 The Corps receives funding under the 2009 Omnibus Appropriations Act to sign a Feasibility Cost-Sharing Agreement (FCSA) with a non-federal partner to examine management options to address the Lower Susquehanna River sediment storage issue.

- 2009 As part of the Federal Energy Regulatory Commission (FERC) relicensing process for the relicensing of Conowingo Hydroelectric Facility, SRBC files comments with FERC requesting that the licensee, Exelon Generation Company, LLC (Exelon) be required, during the study phase of the relicensing process, to study the effects of the presence of the dam and operation of the project on sediment and nutrient accumulation upstream of the dam, sediment transport past the dam, and sediment deposition and distribution downstream of the dam, including spatial and temporal sediment distribution into the upper Bay.

- 2010 FERC directs the licensee to undertake a Sediment Introduction and Transport (sediment and nutrient loading) Study and prepare a report which includes a sediment management plan that provides projections of sediment accumulation, benchmarks for potential impacts and actions, and options to manage, mitigate and remove accumulated sediments. FERC also indicates that the licensee may be required to conduct a sediment transport modeling study if the initial study does not adequately characterize the geographic and temporal cumulative effects.

- 2011 The Corps issues a Project Management Plan that outlines the need and scope for a Lower Susquehanna River Watershed Assessment project (LSRWA), which would evaluate, identify and prioritize strategies for reducing sediments and associated nutrients delivered from the Lower Susquehanna River to the Chesapeake Bay. SRBC agrees to participate as a member of the Interagency Study Team organized under the LSRWA project, undertaken pursuant to an FCSA then executed by the Corps and MDE under Section 729 of the Water Resources Development Act of 1986, as amended.

- 2012 Exelon files its Sediment Introduction and Transport Study report with FERC, identifying, among other things, that discrepancies and limitations of existing data reveals the need for a single comprehensive and integrated analysis of the lower Susquehanna River Basin, and points to the LSRWA as the appropriate mechanism for developing an overall sediment management strategy for the lower basin and the Chesapeake Bay.

- 2012 SRBC participates with federal and state resource agencies in a coordinated negotiation with the licensee on potential license conditions, including those for sediment management. Completion of the negotiations is anticipated in 2013.

- 2012 The USGS releases Scientific Investigations Report 2012-5185, which analyses the "Flux of Nitrogen, Phosphorus, and Suspended Sediment from the Susquehanna River Basin to Chesapeake Bay during Tropical Storm Lee, September 2011, as an Indicator of the Effects of Reservoir Sedimentation on Water Quality." The Study concludes that as sediment storage capacity has decreased over the past decade, the effectiveness of the reservoir system in trapping nutrients and sediments has declined, resulting in increased concentration of nutrients and sediments being discharged during flow events in the range of 100,000 to 200,000 cubic feet per second (cfs). Heretofore, major scour was believed to be triggered at flow events of $\geq$400,000 cfs. These changes in the deposition/scour reservoir dynamics are now overwhelming the progress being made to reduce upstream loads from the basin.

- 2013 The SRBC continues its participation on the Interagency Study Team assisting with completion of the LSRWA project, which is scheduled for 2014 assuming anticipated funding is provided.