

CONCLUSIONS

Due to a switch from a fiscal year (July 1 – June 30) to a calendar year (January 1–December 31) reporting schedule, this report includes data from July 1, 2007 to December 31, 2008. Water quality at Group 1 streams was sampled six times, while Group 2 streams were sampled twice, and Group 3 streams were sampled once for this reporting cycle. Physical habitat assessments and macroinvertebrate collections were completed twice at Group 1 and 2 streams and once at Group 3 streams. The next interstate streams report will cover calendar year 2009 (CY-09), using data collected between January 1, 2009 and December 31, 2009.

Twenty-seven (34 percent) of the 79 interstate stream sites at which macroinvertebrate samples were collected during 2007 and 2008 had nonimpaired biological communities. Biological conditions at another 37 sites (47 percent) were slightly impaired, 12 sites (15 percent) were moderately impaired, and three sites (4 percent) were severely impaired. Physical habitat assessments included 38 sites (49 percent) with excellent habitat, 33 sites (42 percent) with supporting habitat, five sites (6 percent) with partially supporting habitat, and two sites (3 percent) with non supporting habitat. During 2008, three Group 3 streams, BISC, BULK, and REDH were not sampled due to dry conditions. Group 1 streams that were not sampled include SUSQ 10 in 2007 and 2008, and CNWG 4.4 in 2007; habitat was not sampled at CAYT 1.7 in 2007.

Overall, 94 observations (7 percent) exceeded water quality standards. Total iron exceeded standards most frequently with 33 violations (34 percent), followed closely by total aluminum with 26 violations (28 percent). Twenty-five out of the 32 sites sampled had parameters exceeding water quality standards, with 18 of those sites having more than one violation. Total iron and total aluminum appear to be naturally high in some of these watersheds. The Tioga River is the only waterway in the interstate streams assessment that has documented abandoned mine drainage indicated by high metals and high acidity. Elevated aluminum and depressed alkalinity may be due to acid precipitation, especially in the New York–Pennsylvania border streams. Total dissolved solids, nitrate plus nitrite, and dissolved oxygen are indicators of organic pollution and affect mostly the Pennsylvania-Maryland streams.

The current and historical data contained in this report provide a database that enables SRBC staff and others to better manage water quality, water quantity, and biological resources of interstate streams in the Susquehanna River Basin. The data can be used by SRBC's member states and local interest groups to better understand water quality in upstream and downstream areas outside of their jurisdiction. Information in this report also can serve as a starting point for more detailed assessments and remediation efforts that may be planned on these streams.

Future Study

Future study and remediation efforts should focus on those streams that had moderately or severely impaired macroinvertebrate communities or exceeded water quality standards. Moderately impaired biological conditions were found at Seeley Creek, Trowbridge Creek, North Fork Cowanesque River, Long Arm Creek, Scott Creek, and the Cowanesque River (COWN 2.2) in 2007. In 2008, moderately impaired biological conditions were found at Seeley

Creek, Scott Creek, Ebaughs Creek, the Cowanesque River (COWN 2.2), Bill Hess Creek, and Prince Hollow Run. No severely impaired biological conditions were found in 2007. However, in 2008, severely impaired biological conditions were found at Long Arm Creek, Dry Brook, and the White Branch Cowanesque River. Additional study of stream water chemistry, biology, and habitat at varying stream discharge levels may help explain some impairment problems.

As previously mentioned, 25 out of 32 stations were found to have one or more water quality parameters exceeding acceptable limits. Specific data, such as number and type of parameters exceeding standards, can be found on the individual station pages. The water quality conditions of these streams should be monitored for future violations. Furthermore, the source of the pollutants should be identified. State water quality standards vary across state lines, and problems may arise when the source of these pollutants is located in an adjacent state.

Although chemical and physical data are useful in their own right, biological information has proven to be a more robust and comprehensive indication of the health of aquatic environments. Fish are indicator organisms that reveal details about aquatic system health when fish community data are analyzed. Specifically, fish provide a comprehensive picture of the state of stream environments because within a community of fishes there is a large range of species that represents a variety of trophic levels and pollution tolerances (Karr, 1981). For these reasons, during CY-09 fish sampling will occur in May at selected Group 1 and 2 streams to add value to the existing biological assessments that have historically been conducted at interstate streams sites.



All water quality data from interstate streams sampling from the mid-1980s to the present are available from SRBC upon request.