

CONCLUSIONS

Overall, the streams sampled in the Chemung Subbasin contained fairly good biological, habitat, and water quality conditions in 2006. A majority of the sites were rated either nonimpaired or only slightly impaired; however, there are areas where improvement is needed in this watershed. AMD is a large source of impairment in the Tioga River Watershed. Another area in need of improvement is the headwaters of Canisteo River around Hornell-Canisteo, N.Y. Problems in this area appear to be from habitat degradation and possibly other water quality problems that need further investigation. Impairment in the Tioga River and Canisteo River headwaters has been documented in both 1997 and 2007 reports.

Most of the moderate and severe impacts in the Chemung Subbasin were due to degraded habitat conditions, AMD, or elevated aluminum, sodium, and nutrients. Many of the habitat problems identified in the habitat

assessments were due to a lack of adequate vegetated riparian zone width. Vegetation on the banks and in the riparian zone is very important to the life cycles and reproduction of aquatic insects and fish inhabiting the stream. Numerous insects rely on leaf litter as a food source. Other insects that emerge from the stream in the adult life stage to reproduce rely on the surrounding vegetation for activities such as laying eggs. Furthermore, vegetation creates shade that helps to maintain cool stream temperatures and adequate dissolved oxygen levels as well as providing bank stability to minimize erosion.

Another habitat problem identified in the assessments was low flow. The combination of low flow, lack of vegetated riparian areas, and the second hottest summer on record could have been a source of some of the impairment in this watershed. Other factors contributing to impairment in this subbasin were water quality issues, such as AMD, aluminum, sodium, and nutrients. The elevated

aluminum and sodium could be related to the erosion of streambanks or other sources; however, aluminum is not toxic to fish unless the pH of the waters is less than 5.2 when aluminum is present in the dissolved form (Gagen and Sharpe, 1987; Baker and Schofield, 1982). Possible sources of sodium could be salt deposits, natural gas wells, and road salt. Nutrients such as nitrogen and phosphorus may be a result of agricultural runoff and in particular, phosphorus from soil erosion.

Some of the highest quality watersheds in this survey were Baldwin Creek, Campbell Creek, Post Creek, Tobehanna Creek, Tuscarora Creek, and sections of the Cowanesque River. Efforts should be made to protect these watersheds from degradation. Some of the most degraded watersheds were Canacadea Creek, Colonel Bill's Creek, Newtown Creek, Purdy Creek, Morris Run, and the Tioga River. Further study is needed as to the source of impairment in some of these watersheds; where

Table 8. Information Resource Agencies in the Chemung Subbasin

Organization Name	County	Contact	Address	Phone	Email or Website
Chemung County Environmental Management Council	Chemung	Diane Fiorentino	425 Pennsylvania Avenue Elmira, NY 14904	607-734-4453	http://www.dec.state.ny.us/website/ej/region8groups.html#chemung
Chemung County Water Quality Committee	Chemung	Mark Watts	851 Chemung Street Horseheads, NY 14845	607-739-2009	http://www.dec.state.ny.us/website/ej/region8groups.html#chemung
Southern Tier Environmental Health and Safety Group	Chemung	Lee Hanle Younge	141 Olcott Road North Big Flats, NY 14814	607-562-3988	http://www.dec.state.ny.us/website/ej/region8groups.html#chemung
Upper Susquehanna Coalition	Chemung	Jim Curatolo	Tioga Soil and Water Conservation District 183 Corporate Drive Owego, New York 13827-3249	607-687-3553	http://www.u-s-c.org/
Steuben County Environmental Management Council	Steuben	Amy Dlugos, Chair	3 East Pulteney Square Bath, NY 14810	607-776-9631 Ext. 2268	http://www.steubencony.org/planning/emc.html
Steuben County Soil and Water Conservation District	Steuben	Jeffrey Parker, District Manager	Steuben SWCD USDA Service Center 415 W. Morris St Bath, NY 14810	607-776-7398	velynda-risley@ny.nacdnet.org
Chemung County Soil and Water Conservation District	Chemung	Mark Watts, District Manager	Chemung SWCD 851 Chemung St Horseheads, NY 14845	607-739-2009	markwatts@stny.rr.com
Tioga County (PA) Conservation District	Tioga	Ralph Brugger, District Manager	50 Plaza Lane Wellsboro, PA 16901	570-724-1801	http://www.geocities.com/tccdpa/
Bradford County Conservation District	Bradford	Michael Lovegreen, District Manager	Stoll Natural Resource Center, RR 5 Box 5030C Towanda, PA 18848	570-265-5539 Ext. 6	http://www.bradfordcountypa.org/OtherAgencies/ConservationDist.asp
Pennsylvania Association of Sustainable Agriculture	PA	Brian Snyder, Executive Director	PASA Headquarters 114 West Main Street P.O. Box 419 Millheim, PA 16854	814-349-9856	http://www.pasafarming.org/

the impairment source and cause are known, restoration efforts are needed.

Additional information and assistance with water related issues can be obtained from numerous resource agencies. A few of the resource agencies in the Chemung Subbasin are listed in Table 8. Agricultural Best Management Practices can be used to limit the impacts associated with farming operations. Information on these practices and other conservation methods can be obtained from County Conservation District Offices (Table 8). Grant opportunities to alleviate AMD impacts and more information on remediation technologies also are available from County Conservation District Offices and the Eastern Pennsylvania Coalition for Abandoned Mine Reclamation

(<http://www.orangewaternetwork.org/>). Urban stormwater problems can be minimized with low impact development and by allowing for groundwater recharge areas. More information on urban pollution remediation can be obtained from the Center for Watershed Protection through its Urban Subwatershed Restoration Manual Series (<http://www.cwp.org/>) and from the PADEP's Pennsylvania Stormwater Best Management Practices Manual (<http://www.dep.state.pa.us/dep/depurate/watermgmt/wc/subjects/stormwater-management/BMP%20Manual/BMP%20Manual.htm>).

SRBC staff is conducting the Chemung Subbasin Survey, Year-2 assessment in the Cohocton River Watershed. The streams sampled in this

survey are Twelvemile, Five Mile, Goff, Stocking, Mud, Meads, Tobehanna, and Little Tobehanna Creeks in addition to many unnamed tributaries to lakes and the mainstem Cohocton River. The sampling began in April 2007 and will continue through January 2008. The project includes quarterly water chemistry sampled at 27 sites throughout the watershed, two rain-event episodes sampled at selected sites, and macroinvertebrate and habitat assessments. The survey is focusing on nutrient sources and potential impacts from BTEX (Benzene, Toluene, Ethyl benzene, and Xylenes mix, which are volatile organic compounds found in petroleum-related products such as gasoline) in this watershed. More information on this project is available from SRBC.

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