
**NUTRIENTS AND SUSPENDED
SEDIMENT TRANSPORTED IN THE
SUSQUEHANNA RIVER BASIN, 2006,
AND TRENDS, JANUARY 1985
THROUGH DECEMBER 2006**

Publication No. 252

December 31, 2007

*Kevin H. McGonigal
Water Quality Program Specialist*



Printed on recycled paper.

This report is prepared in cooperation with the Pennsylvania Department of Environmental Protection, Bureau of Water Quality Protection, Division of Conservation Districts and Nutrient Management, under Grant ME4100025873.

SUSQUEHANNA RIVER BASIN COMMISSION



Paul O. Swartz, Executive Director

Kenneth P. Lynch, N.Y. Alternate

Kathleen A. McGinty, Pa. Commissioner
Cathleen Curran Myers, Pa. Alternate
John T. Hines, Pa. Alternate/Advisor
Susan K. Weaver, Pa. Alternate/Advisor

Dr. Robert M. Summers, Md. Commissioner
Herbert Sachs, Md. Alternate/Advisor

Brigadier General Todd T. Semonite, U.S. Commissioner
Colonel Peter W. Mueller, U.S. Alternate
Colonel Christopher J. Larsen, U.S. Alternate
Lloyd Caldwell, U.S. Advisor
Amy M. Guise, U.S. Advisor

The Susquehanna River Basin Commission was created as an independent agency by a federal-interstate compact* among the states of Maryland, New York, Commonwealth of Pennsylvania, and the federal government. In creating the Commission, the Congress and state legislatures formally recognized the water resources of the Susquehanna River Basin as a regional asset vested with local, state, and national interests for which all the parties share responsibility. As the single federal-interstate water resources agency with basinwide authority, the Commission's goal is to coordinate the planning, conservation, management, utilization, development and control of basin water resources among the public and private sectors.

*Statutory Citations: *Federal - Pub. L. 91-575, 84 Stat. 1509 (December 1970); Maryland - Natural Resources Sec. 8-301 (Michie 1974); New York - ECL Sec. 21-1301 (McKinney 1973); and Pennsylvania - 32 P.S. 820.1 (Supp. 1976).*

This report is available on our website (www.SRBC.net) by selecting Public Information/Technical Reports. For a CD Rom or for a hard copy, contact the Susquehanna River Basin Commission, 1721 N. Front Street, Harrisburg, Pa. 17102-2391, (717) 238-0423, FAX (717) 238-2436, E-mail: srbc@srbc.net.

TABLE OF CONTENTS

ABSTRACT.....	1
INTRODUCTION	1
Purpose of Report.....	2
DESCRIPTION OF THE SUSQUEHANNA RIVER BASIN.....	2
NUTRIENT MONITORING SITES	5
SAMPLE COLLECTION AND ANALYSIS	7
PRECIPITATION.....	8
WATER DISCHARGE	8
2006 NUTRIENT AND SUSPENDED-SEDIMENT LOADS AND YIELDS.....	10
2006 SUMMARY STATISTICS AT ALL SITES	19
COMPARISON OF THE 2006 LOADS AND YIELDS OF TOTAL NITROGEN, TOTAL PHOSPHORUS, AND SUSPENDED SEDIMENT WITH THE BASELINES.....	23
DISCHARGE, NUTRIENT, AND SUSPENDED-SEDIMENT TRENDS.....	25
DISCUSSION	29
REFERENCES	32

FIGURES

Figure 1. The Susquehanna River Basin, Subbasins, and Population Centers.....	3
Figure 2. Locations of Sampling Sites Within the Susquehanna River Basin	6
Figure 3. Discharge Ratios for Long-term Sites, Susquehanna Mainstem Sites (top) and Tributaries (bottom)	9

TABLES

Table 1. 2000 Land Use Percentages for the Susquehanna River Basin and Selected Tributaries	4
Table 2. Data Collection Sites and Their Drainage Areas	5
Table 3. Water Quality Parameters, Laboratory Methods, and Detection Limits	7
Table 4. Summary for Annual Precipitation for Selected Areas in the Susquehanna River Basin, Calendar Year 2006	8
Table 5. Annual Water Discharge, Calendar Year 2006.....	9
Table 6. List of Analyzed Parameters, Abbreviations, and STORET Codes	11
Table 7. Annual Water Discharges, Annual Loads, Yields, and Average Concentration of Total Nitrogen, Calendar Year 2006.....	11
Table 8. Annual Water Discharges and Annual Loads and Yields of Total Phosphorus, Calendar Year 2006	11
Table 9. Annual Water Discharges and Annual Loads and Yields of Total Suspended Sediment, Calendar Year 2006	12
Table 10. Annual Water Discharges and Annual Loads and Yields of Total Ammonia, Calendar Year 2006	12
Table 11. Annual Water Discharges and Annual Loads and Yields of Total NO _x Nitrogen, Calendar Year 2006	12
Table 12. Annual Water Discharges and Annual Loads and Yields of Total Organic Nitrogen, Calendar Year 2006	12

Table 13.	Annual Water Discharges and Annual Loads and Yields of Dissolved Phosphorus, Calendar Year 2006.....	13
Table 14.	Annual Water Discharges and Annual Loads and Yields of Dissolved Orthophosphate, Calendar Year 2006.....	13
Table 15.	Annual Water Discharges and Annual Loads and Yields of Dissolved Ammonia, Calendar Year 2006	13
Table 16.	Annual Water Discharges and Annual Loads and Yields of Dissolved Nitrogen, Calendar Year 2006	13
Table 17.	Annual Water Discharges and Annual Loads and Yields of Dissolved NOx Nitrogen, Calendar Year 2006	14
Table 18.	Annual Water Discharges and Annual Loads and Yields of Dissolved Organic Nitrogen, Calendar Year 2006	14
Table 19.	Annual Water Discharges and Annual Loads and Yields of Total Organic Carbon, Calendar Year 2006.....	14
Table 20.	Seasonal Mean Water Discharges and Loads of Nutrients and Suspended Sediment, Calendar Year 2006	15
Table 21.	Seasonal Mean Water Discharges and Yields of Nutrients and Suspended Sediment, Calendar Year 2006	16
Table 22.	2006 Monthly Flow in CFS and TN, TP, and SS in Thousands of Pounds.....	17
Table 23.	2006 Monthly Flow in CFS and TN, TP, and SS Yields in lbs/acre	18
Table 24.	Enhanced Monitoring Station Concentration Summary Statistics for 2006 in mg/L.....	20
Table 25.	Enhanced Monitoring Station Average Concentration Data for 2006.....	21
Table 26.	Enhanced Monitoring Station Average Seasonal Concentration Data for 2006 in mg/L.....	22
Table 27.	Comparison of 2006 TN, TP, and SS Yields with Baseline Yields at Towanda, Pa.....	24
Table 28.	Comparison of 2006 Seasonal TN, TP, and SS Yields with Baseline Yields at Towanda, Pa.....	24
Table 29.	Trend Statistics for the Susquehanna River at Towanda, Pa., January 1989 Through December 2006	26
Table 30.	Trend Statistics for the Susquehanna River at Danville, Pa., January 1985 Through December 2006	26
Table 31.	Trend Statistics for the West Branch Susquehanna River at Lewisburg, Pa., January 1985 Through December 2006.....	27
Table 32.	Trend Statistics for the Juniata River at Newport, Pa., January 1989 Through December 2006	27
Table 33.	Trend Statistics for the Susquehanna River at Marietta, Pa., January 1987 Through December 2006	28
Table 34.	Trend Statistics for the Conestoga River at Conestoga, Pa., January 1985 Through December 2006	28
Table 35.	High Flow Events at Towanda and Danville, 2004-2006.....	29
Appendix A Annual Loads of All Parameters.....		33