

Brodhead Watershed Conservation Plan

FINAL REPORT

January, 2002

Prepared by:
Brodhead Watershed Association
With: BLOSS Associates



Acknowledgements

The Watershed Partners were the backbone of this planning process. Their commitment to preserving and protecting the watershed underlies this entire plan.

Watershed Partners / Conservation Plan Steering Committee

Monroe County Commissioners – Mario Scavello, Donna Asure, James Cadue, Former Commissioner Janet Weidensaul

Monroe County Conservation District – Craig Todd, Darryl Speicher

Monroe County Planning Commission – John Woodling, Eric Bartolacci

Monroe County Historical Association – Candace McGreevey

Monroe County Office of Emergency Management – Harry Robidoux

Monroe County Open Space Advisory Board – Tom O’Keefe

Monroe County Recreation & Park Commission – Kara Derry

Monroe 2020 Executive Committee – Charles Vogt

PA Department of Environmental Protection – Bill Manner

Pennsylvania State University – Jay Stauffer

Penn State Cooperative Extension – Peter Wulfhurst

Stroudsburg Municipal Authority – Ken Brown

Mount Pocono Borough – Nancy Golowich

Pocono/Hamilton/Jackson Open Space Committee – Cherie Morris

Stroud Township – Ross Ruschman, Ed Cramer

Smithfield Township – John Yetter

Delaware River Basin Commission – Pamela V’Combe, Carol Collier

U.S. Environmental Protection Agency – Susan McDowell

Delaware Water Gap National Recreation Area – Denise Cook

National Park Service, Rivers & Trails Office – David Lange

National Institute for Environmental Renewal (no longer in existence) – Bob Cook

Aventis, Pasteur, Inc. – Bruce Kilby

Brodhead Watershed Association – Don Baylor, Edie Stevens, Charles Baughman

Buck Hill Conservation Foundation – Barbara Gregorich

Camelback Ski Area – Rich Wiseman

Henryville Flyfishers – H. John Hokenson

Kittatany Canoes – Ruth Jones

Pocono Mountains Vacation Bureau – Ann Southard Pilcher

Pocono Outdoor Club – John Motz

Trout Unlimited, Brodhead Chapter – Ron Mishkin

Particular thanks go to Don Baylor of Aquatic Resources Consulting for his dedication to this plan and all his efforts to preserve and protect the Brodhead watershed. Another key member of the planning team was David Lange of the National Park Service, Rivers and Trails Office, who provided hours of assistance to the planning team.

Contributors

Stroudsburg Municipal Authority
Pennsylvania Power & Light Co.
Weiler Corp.
Trout Unlimited – Brodhead Chapter
Henryville Flyfishers and members
Richard Shackleton
Ellen G. Woodhead
Roger Starr
John Hokenson
Gary Nicholas
Brian Coyle
Jonathan Director
James Monteith
Brodhead Forest and Stream
Alan Weintraub
Brodhead Flyfishers
Parkside Anglers
Thomas Dolan
National Institute for Environmental Renewal
John J. Riley, Inc.
William R. Sykes & Associates
Aquatic Resources Consulting
National Park Service, Rivers & Trails Office

Contributors to Kick-Off Event

William Penn Foundation
Pocono Record
Camelback Ski Area
Hannig Enterprises, Inc.
Pohoqualine Fish Association
John J. Riley
Skytop Lodge
Willam R. Sykes
Crescent Lodge

Art Show Contributors

Foxglove Gallery
Monroe County Arts Council
Monroe County Historical Association
Gary Kresge, Juror
Camille Breslauer
Edward Chesnovitch
Buck Hill Collection/Rae Donnelly
David Coulter
Teri and Anthony Farda

Jere Dunkelberger
Kathy Tolman
Doris Neff
Fred Beaver
Pocono Record
Barker Design & Print, Inc.
Kistler Printing Co., Inc.
Zebra Graphics

Retired Senior Volunteer Program

William Autwater
Ruth Henry
Margaret Bogart
And others

Darryl Speicher, Roger Spotts, Brian Hardiman, Don Baylor, and John Serrao contributed to *Land & Biological Resources*.

Cover photo by Darryl Speicher.

Many thanks go to our planning Consultant, BLOSS Associates and Project Manager, Michelle Farley.

And all those who attended the public meetings, participated in the Pocono and Buck Hill Streamwalks, completed surveys, or otherwise contributed to the development of the Brodhead Watershed Conservation Plan.

This Plan was made possible through a grant from the Pennsylvania Department of Conservation and Natural Resources through the Rivers Conservation Planning Program and local financial and in-kind support from contributors.

Table of Contents

Executive Summary	i
I. Introduction & Background.....	1
Plan Purpose.....	1
The Brodhead Watershed.....	2
Challenges.....	2
II. Identifying Issues, Concerns & Constraints.....	5
Identifying and Ranking Issues & Concerns	5
Identifying Special Places.....	6
Stream Walk Assessment.....	11
Citizen Surveys	11
EXPO Survey	11
Survey of Riparian Landowners.....	12
Categorizing Issues & Developing Goals.....	12
III. An Action Plan for the Brodhead Watershed	15
Vision.....	15
Goal Statements	16
Recommended Actions.....	16
Setting Timeframes and Priorities	16
Incorporating Related Planning Efforts	17
Management Options Tables	18
Water Quality and Quantity	19
Watershed Awareness	22
Policy, Planning and Regulation	25
Fish and Wildlife Habitat	28
Historic & Cultural Resources	30
Funding Sources.....	32
Composite Mapping for Recommended Actions.....	32
IV. Description of the Brodhead Watershed.....	37
Physical Setting of the Brodhead Watershed.....	37
Political Boundaries.....	37
Topography / Geology	41
Socio-Economic Setting.....	49
Population and Employment	49
Land Cover.....	51
Land Use / Zoning and Land Use Controls	51

Transportation	57
Scenic Geologic Features	57
V. Water Resources	61
Subwatersheds.....	61
Upper Brodhead Subwatershed	61
Lower Brodhead Subwatershed.....	64
Marshalls Creek Subwatershed	65
Paradise Creek Subwatershed	66
Pocono Creek Subwatershed.....	68
McMichael Creek Subwatershed.....	70
Watershed Management Units.....	75
Stream Order.....	76
Stream Designations	79
Wetlands	83
Floodplains.....	87
Storm Water	89
Water Quality.....	89
Groundwater Threats.....	90
Surface Water Threats.....	92
Chart of NPDES Permits in the Watershed.....	94
Water Supply	97
Private Drinking Water Systems	97
Public Drinking Water Systems	98
Wellhead Protection Areas	101
VI. Land & Biological Resources.....	105
Soil Characteristics	105
Land Ownership.....	113
Critical Land Areas	119
Biological Resources	123
Wildlife.....	123
PNDI Species.....	128
Vegetation.....	130
Hazard Areas.....	132
VII. Historic & Cultural Resources	135
Historic Resources	135
Historical Overview	135
Historical Highlights of the Brodhead Watershed	137
National Registry Sites.....	140
Historic Areas.....	141
Historic Sites, Structures, and Locations in the Brodhead Watershed.....	145

Cultural Resources	152
State Parks, Game Lands & Forests	152
County & Municipal Recreation Lands.....	153

Glossary

Appendix A - Public Involvement

- Informational Brochure - Copy
- EXPO Survey - Results
- Landowner Survey - Results
- Input from first set of public meetings - May, 2000
- Watershed Art Exhibition - Newspaper articles
- Ranking of Watershed Problems, Issues & Concerns
- Goal-Setting Workshop - Results
- Action Setting Workshop - Results

Appendix B - Streamwalk Assessment

- Sample Assessment Form
- Buck Hill Creek Results Matrix
- Pocono Creek Results Matrix
- Newspaper articles

Appendix C - Summary of Responses / Comments to Draft List of Potential Actions

Appendix D - Rivers, Trails and Greenway Funding Options

Appendix E - List of PNDI Species and Ecological Communities

Appendix F - Prior Studies

Appendix G - List of References

List of Maps

Special Places.....	9
Potential Project Locations – Water Quality & Quantity	33
Potential Project Locations – Fish & Wildlife Habitat	34
Potential Project Locations – Historic & Cultural Resources.....	35
Watershed Base Map	39
Topography	43
Bedrock Geology	47
Zoning.....	53
General Land Use	55
Scenic Geologic Features.....	59
Subwatersheds.....	73
Stream Order.....	77
Stream Designations	81
Wetlands and Floodplains.....	85
NPDES Discharge Points.....	95
Pollution Vulnerability.....	103
Septic Tank Absorbtion Limitations.....	109
Soil Suitability for Land Application of Treated Wastewater	111
Protected Lands.....	117
Critical Land Areas	121
Historic Resources	143