

Executive Summary

Hay Creek Watershed Conservation Management Plan

June 2004



“This project was financed in part from a grant from the Keystone Recreation, Park, and Conservation Fund, under the administration of the Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.”

The William Penn Foundation also provided financial support.

This plan was prepared by the staff of the Berks County Conservancy

*For information about receiving the Hay Creek Watershed Conservation Management Plan
Contact Dennis Rearden at 610-372-4992 or dennis@berks-conservancy.org*

I. PROJECT AREA CHARACTERISTICS

A. Location

Hay Creek watershed is located in south-central Berks County, Pennsylvania. From its origin in Robeson Township, Hay Creek flows in a northeasterly direction 12.8 miles to its confluence with the Schuylkill River in Birdsboro.

B. Watershed Size

Hay Creek watershed drains a 22.1 square-mile area. The majority of the watershed lies in Robeson and Union Townships, but also drains small portions of Brecknock and Caernarvon Townships, as well as, the boroughs of New Morgan and Birdsboro.

TABLE 1. Municipalities in Hay Creek Watershed			
Municipality	Total Area	Watershed Area	Percent in Watershed
	(Miles²)	(Miles²)	(%)
Borough of Birdsboro	1.34	0.59	44
Borough of New Morgan	5.74	2.82	49.1
Brecknock Township	17.76	0.11	0.6
Caernarvon Township	8.90	0.13	1.5
Robeson Township	34.32	14.31	41.7
Union Township	23.25	4.15	17.9
Watershed Totals	91.31	22.11	

C. Major Tributaries

There are thirteen tributaries of Hay Creek. The largest, Beaver Run, is 3.3 miles in length and drains 3.8 square miles. The headwaters are near Plowville in Robeson Township and the stream flows through a narrow valley, paralleling the Horse Shoe Trail in places, and tumbles into the Hay Creek near Scarlet’s Mill, the former White Bear Station. Beaver Run was designated as HQ-CWF and supports migratory fishes. Morris Run and Cold Run flow into Hay Creek in the upper reaches of the stream. One unnamed tributary that originates at Joanna Heights joins Cold Run at Mill Road in Geigertown. Another tributary, originating near the Geigertown Fire Tower, flows approximately 1800 feet before reinforcing the main branch of Hay Creek. Indian Run and Stinson Run are dammed for water supply, and join Hay Creek in its lower reaches. Indian Run was also known as Indian Hell Creek (1862 Atlas) and as Engine Run (1876 Atlas). The remaining tributaries are unnamed.

The damming of Indian Run and Stinson run created the Indian Run and Stinson Run Reservoirs respectively. These reservoirs and the former Dyers Quarry pit at Trap Rock are sources of potable water for the Birdsboro Municipal Water Authority. The Authority

maintains all three areas, and also has an intake directly from Hay Creek. Additionally, the BMWA owns and maintains approximately 1800-forested acres as the source of public drinking water adjacent to the closed section of Route 82. The Indian Run drainage area, which consists of mature woodland, is 0.82 square miles, or 523 acres. The Haines and Kibblehouse quarry operation, known as the Birdsboro Materials Quarry, is located on Chestnut Hill in the next valley to the north, downstream from the Indian Run reservoir.

D. Stream Classification

In Pennsylvania, streams or stream reaches are classified under water quality standards regulated by the Pennsylvania Department of Environmental Protection. There are five protected use designations awarded to streams that support the maintenance and propagation of fish species and suitable habitat for flora and fauna. The two highest designations, High Quality (HQ) and Exceptional Value (EV) mandate special water quality protection, because these streams embody outstanding ecological resources that are required to be maintained at existing quality.

Hay Creek and its tributaries have achieved high rankings for water quality. Two reaches of the stream are classified EV, the highest designation, reserved for the most pristine waters in the state. The EV sections are from the source to unnamed tributary 63882 at River Mile 8.1 and from Beaver Run to the Birdsboro boundary.

TABLE 2. Stream Order and Classifications in the Hay Creek Watershed				
Stream	Zone	Classification	Order	Exceptions
Hay Creek	Basin, Source to UNT 63882 at River Mile 8.1	EV	3	None
UNT 63882 to Hay Creek	Basin	CWF, MF	2	None
Hay Creek	Basin, UNT 63882 to Beaver Run	CWF, MF	3	None
Beaver Run	Basin	HQ-CWF, MF	2	None
Hay Creek	Basin, Beaver Run to Birdsboro Boundary	EV	3	None
Hay Creek	Basin, Birdsboro Boundary to Mouth	CWF, MF	3	None

E. Land Use

The main categories of land use in the watershed are forests, agriculture, and open water/wetlands. Residential development, commerce, and industry are also present. The Land Cover Map shows 10,728.51 acres in woodland (75.8%), 2,835.75 acres in farmland (20.1%), 369.10 acres in open water and/or wetlands (2.6%), 158.83 acres in residential development (1.1%), and 54.40 acres in Industrial/Commercial/

Transportation (0.4%). Agricultural lands are present in those areas where the Hay Creek valley is wider and more open. Pasture, meadows and hay fields include both active and fallow farms. The largest tract of farm land begins north of New Morgan and parallels Hay Creek to approximately one mile past Geigertown. Other agricultural areas are located north of Beaver Run, and south of Plowville.

The area of heaviest population is the Borough of Birdsboro, located along the Schuylkill River. Today most of the developable land in the Borough has been built upon.

The Berks County Planning Commission has identified the Hay Creek watershed area for future growth in the County's 20-20 Vision Comprehensive Plan. The following reasons formed the basis for this decision: 1) The area does not meet the minimum requirement of 500 contiguous farm acres to qualify as a viable agricultural zone in Berks County, 2) The watershed contains an existing village setting and, 3) the local municipalities are considering an infrastructure upgrade.

F. Population

According to census final population counts, population in Berks County increased by 37,113, or 11.03% between the years 1990 and 2000. The total count for 1990 was 336,523, and for 2000 the total was 373,636. The average population change in the municipalities contained within the Hay Creek Watershed varies. The Borough of Birdsboro and Caernarvon Township each saw an increase of approximately 19%; Robeson and Brecknock Townships had approximately 15% increases, while Union Township and the Borough of New Morgan changed by 0.38 and -2.78 respectively.

An analysis of population trends was undertaken for the Schuylkill Watershed Conservation Plan. A linear regression was performed on the 1990 population of each municipality to project the population for 2010. Population density, the number of people per unit area, was coordinated with the GIS mapping of watershed boundaries to calculate the number of people in the Hay Creek watershed. Based upon projections, the Hay Creek watershed was in the high threat category for continued population growth, achieving a projection of 21-30% growth between 1990 and 2010.

G. Outstanding and Unique Features

The Highlands
The Hopewell Big Woods Partnership
The Hay Creek/French Creek Important Bird Area (IBA)
Trails

H. Issues/Concerns/Constraints

Throughout the region, the overriding concern is retaining and maintaining the special features of the Hay Creek watershed while dealing with change. Interviews with officials and residents, feedback from public meetings, results from a Hay Creek Watershed

Association poll, as well as, relevant issues and concerns outlined in previous studies are summarized below:

1. Loss and fragmentation of forests and wildlife habitat

✿ *Protection of Birdsboro Municipal Authority Lands*

2. Water quality degradation of Hay Creek and its tributaries

✿ *Glen Morgan Lake*

✿ *Maintain Water Quality with Goal to Upgrade*

✿ *Water Quality of Hay Creek and Tributaries*

✿ *Haines and Kibblehouse's Birdsboro Materials Quarry*

3. Threat of suburban sprawl

✿ *Proposed Formula Motorsports Park, New Morgan Borough*

✿ *Zoning in Borough of New Morgan*

✿ *Sewage Treatment Plant, Geigertown*

✿ *Municipal Zoning*

✿ *Route 82*

✿ *Birdsboro Heights Subdivision and Development*

4. Loss of farmland

5. Quality and quantity of groundwater

✿ *Conestoga Landfill*

✿ *Protection of Wetlands, Springs and Seeps*

6. Road capacity

7. School shortages

8. Shortage of community services

9. Possibility of increased taxes

10. Ability of local municipalities to deal effectively with growth and change

11. Inadequate communication among adjacent municipalities

I. Opportunities:

✿ *Rail-Trail*

✿ *Scarlet's Mill Historic area*

✿ *Schuylkill Canal*

✿ *William Bird House*

✿ *Working Together and Communication*

✿ *Education and Community Projects*

GOALS AND MANAGEMENT OPTIONS SUMMARY

A. Goal: Protect and Sustain Water Quality and Water Quantity

Riparian Buffers

Specific recommendations:

- Complete a riparian buffer analysis for the entire Hay Creek Watershed.
- Establish native buffers in all areas identified in the analysis.
- Improve existing buffers by removal of invasive species and planting native species.

Stream Bank Fencing

Specific Recommendations:

- Inventory all farms in the watershed to determine need for exclusion fencing and animal crossings.
- Contact landowners to ascertain level of cooperation for installation of these practices.
- Determine funding program eligibility for individual landowners.
- Seek funding for farms without other financial aid sources.

Water Management

Specific Recommendations:

- Inventory all farms in the watershed to determine need for water best management practices.
- Develop conservation plans to address all non-point source pollution problems.
- Contact landowners to ascertain level of cooperation for installation of non-fencing AG BMP's.
- Determine funding program eligibility for individual landowners.
- Seek funding for farms without other financial aid sources.
- Design and implement water management BMP's.
- Eliminate all combined sewer systems in the watershed, if any exist.
- Work with municipal governments in the watershed to develop a 20-year plan, if non-existent, for discharge permit compliance and WWTP upgrades.
- Encourage sewer extensions to connect properties with failing or marginal on-site septic system.
- Discourage sewer extensions into new territory since this has a tendency to promote sprawl.

Nutrient Management

Specific Recommendations:

- Inventory farms in the watershed to determine which operations are lacking nutrient management plans according to the law.
- Assist in the development of nutrient management plans for all qualifying farms in the watershed.

Storm Water Management

Specific Recommendations:

- Inventory commercial, industrial, public and private properties in need of improved storm-water management practices.
- Install demonstration storm-water best management practices at a variety of facilities to increase awareness of benefits of such practices.
- Seek funding for additional implementation of storm-water best management practices.
- Attempt to influence the developers of the proposed Motorsports Park to construct and incorporate into the project design appropriate storm water best management practices.

Stream Bank Stabilization/Restoration

Specific Recommendations:

- Inventory entire watershed to determine need for restoration projects.
- Prioritize restoration projects based on severity of problem and impact of restoration on the watershed.
- Contact landowners to ascertain level of cooperation for stream restoration work.
- Seek funding for projects.
- Design and submit permit applications for projects.
- Implement projects

Wetlands Management and Protection

Specific Recommendations:

- Inventory all wetlands in the watershed.
- Determine protection status of all wetlands.
- Define and prioritize protection options for critical wetlands.
- Contact landowners to ascertain level of cooperation for wetlands protection.
- Seek funding for easement purchase or fee simple purchase as appropriate to the situation.

Groundwater

Specific Recommendations:

- Continuously monitor the Conestoga land fill liner integrity, cover, surface runoff, and groundwater discharge.
- Conduct a groundwater study in the watershed to assist in future development and zoning decisions.

Continue Water Quality Monitoring

Specific Recommendations:

- Develop and implement a continuous water quantity and quality monitoring program in the watershed.
- Evaluate the physical, chemical, and biological water quality in Glen Morgan Lake and determine if remediation or treatment is necessary.

- Evaluate the feasibility of a treatment system for the lake discharge water based on the findings of the above study.
- Evaluate the design and construction costs for a lake discharge treatment system.
- Evaluate the Operations, Management, and Maintenance costs for the lake treatment system.
- Implement remedial actions or treatment according to the findings from the above studies.

Improve Impaired Areas

Specific Recommendations:

- Develop an inventory of all point sources of pollution in the watershed.
- Determine compliance status of all NPDES permit holders in the watershed.
- Address specific permit violations with owners.
- Develop cooperative plan for full time compliance.
- Monitor discharges as necessary to assure compliance.
- Develop inventory of all non-point sources of pollution not addressed in the above sections.
- Develop strategies and implementation options to address these sources of pollution.
- Seek funding as required.
- Implement strategies and options.

Upgrade Streams to HQ and EV

Specific Recommendations:

- Strive to upgrade the PADEP water quality designation from Cold Water Fishery and High Quality to Exceptional Value

B. Goal: Protect, Preserve, and Enhance Natural and Agricultural Lands

Protect Natural Resource Areas

Specific Recommendations:

- Conduct a Feasibility Study, if necessary, or construct a trail within the watershed to connect the Schuylkill River Trail to Glen Morgan Lake and Elverson.
- Work with landowners to allow public access to Glen Morgan Lake area.
- Develop and construct a wildlife viewing trail and recreation area adjacent to Glen Morgan Lake.
- Assist with the protection of the Hopewell Big Woods.
- Develop a plan to protect forests in the watershed that are not a part of the Big Woods.
- Work with municipalities to enact tree harvest laws that incorporate conservation measures that protect water resources during harvest events.
- Assist with the restoration and preservation of Joanna Furnace and surrounding Historic sites.

- Protect and preserve the wetlands near the Bridgeview Infectious Waste Incinerator.
- Develop an inventory of wetlands, seeps, and springs in need of protection.
- Identify landowners and ascertain level of cooperation and interest in preservation.
- Identify funding sources for wetland protection.

Protect Environmental Hazard Areas

Specific Recommendations:

- Check municipal zoning records and ordinances to assure inclusion of all known hazardous areas in conservation zones.
- Work with watershed municipalities and County Planning Commission to assure continuity in conservation zones.
- Correct conservation zoning ranges, if possible, to include sensitive watershed sites.

Develop Program to Fund Stream Buffer and Wetlands Protection

Specific Recommendations:

- Develop a special funding or management program to encourage landowners to protect buffers and wetlands, and to identify environmentally compatible uses for these areas.

Institute Effective Agricultural Preservation

Specific Recommendations:

- Watershed municipalities should develop an Agricultural easement program independent of the county System.
- This program should involve a joint effort by all municipalities in the watershed.
- An Agricultural Preservation Bond issue should be considered as a source of funding for easements.
- Alternate sources of funding should be considered.

Establish Agricultural Security Areas

Specific Recommendations:

- Establish Agricultural Security Areas for all municipalities in the watershed.

C. Goal: Encourage Stewardship of Natural and Cultural Resources

Develop Resource Protection Educational Programs

Specific recommendations:

- The Hay Creek Watershed Association should establish a physical presence in the area to provide education, outreach, and technical assistance to municipalities and citizens.

Encourage Identification and Monitoring of Natural Resources

Specific recommendations:

- The Hay Creek Watershed Association should establish a physical presence in the area to provide education, outreach, and technical assistance to municipalities and citizens.

Develop Outreach Programs for Landowners and Municipalities

Specific recommendations:

- The Hay Creek Watershed Association should establish a physical presence in the area to provide education, outreach, and technical assistance to municipalities and citizens.

Encourage Forest Stewardship Plans

Encourage Conservation Plans

Encourage Enrollment in Conservation Reserve Program

Encourage Enrollment in Clean and Green Program

Encourage historic Preservation Initiatives

Specific recommendations:

The following is a list of initiatives to augment the ongoing preservation activities in this region:

- Submit National Register Nominations for individual buildings or historic districts, including those that have already been placed on PHMC database.
- Update historic site surveys and inventories.
- Publish books, articles and manuscripts dealing with local historic topics.
- Appoint Historic Preservation Commissions in townships and boroughs.
- Develop municipal Historic Preservation Plans pursuant to Act 68 of 2000.
- Develop historic resource overlay districts on municipal zoning ordinances.
- Assign and map GIS coordinates to updated historic resource survey. Create and distribute map of historic sites for driving or walking tours.
- Hold hands-on restoration workshops taught by professional tradesmen to explain and teach skills used in restoration work.
- Feature historic resources and stories of Hay Creek watershed in a television series. Stories might include the valley's expansive iron industry, the Underground Railroad, the Schuylkill Canal, etc.
- Preserve the sites and structures related to the historical iron making industry in the Hay Creek Watershed.

Route 82

Specific Recommendations:

- Actively lobby The Pennsylvania Department of Transportation and affected municipalities to keep Route 82 closed.
- Actively seek a public entity to own the Route 82 corridor for permanent protection as a park.

D. Goal: Encourage Regional Planning Initiatives

Participate in Berks County Regional Planning Program Planning on a Watershed Basis

Watershed Conservation Management Plans

Specific Recommendations:

- Conduct a Greenway Feasibility Study in the Watershed.
- Develop a Greenway according to the results obtained in the Feasibility Study.

E. Goal: Encourage Smart Growth

Location Characteristics

Site Planning Characteristics

Building Design

Existing Buildings

Residential Buildings

Commercial/Retail Buildings

Building Environmental Impact

Site and landscape Design

Specific Recommendations:

- Conduct workshops or training sessions with municipal zoning officials emphasizing Smart Growth Principles.
- Conduct workshops or training sessions with municipal zoning officials emphasizing Storm-water Best Managements Practices.
- Conduct workshops or training sessions with municipal zoning officials emphasizing Agricultural Best Management Practices.
- Work with the new owners of the New Morgan Property to incorporate Smart Growth principles into their development designs.