CODORUS CREEK RCP

CODORUS CREEK WATERSHED

RIVER CONSERVATION PLAN

Prepared for: Codorus Creek Watershed Association

Prepared by: BUCHART HORN, INC.

January 2005

EXECUTIVE SUMMARY

The Codorus Creek River Conservation Plan (RCP) was initiated in May 2003 with the intent being to develop a long term management strategy for the entire watershed. The goals and objectives of the management plan will be achieved through the adoption and implementation of the plan's recommendations. To develop a list of recommendations, it was first necessary to compile and collect available information, Geographic Information System (GIS) data, technical data (water quality), existing project information, and other sources of information while at the same time collaborating and coordinating with local efforts addressing similar watershed issues.

This RCP is a follow-up to a former RCP developed for the Upper Codorus Creek Watershed which is located south of Spring Grove, Pa. This study was completed in 2001 and was conducted by the Codorus Chapter of Trout Unlimited. This existing report was used in the development of the Codorus Creek RCP. For the most part, attempts were made to maintain continuity and consistency with the existing RCP.

The watershed was previously assessed through three separate projects, including: South Branch Codorus Creek Assessment, East Branch Codorus Creek Assessment, and the West Branch/Main Stem Codorus Creek Assessment. These assessments were primarily geo-morphological assessments based on Rosgen principles. The results of each assessment were the identification of impaired streams based mostly on stability and degree of degradation. The assessments prioritized the streams into three categories. Those categories are Priority 1 (severely impaired), Priority 2 (moderately impaired) and Priority 3 (slightly impaired or stable). For the purposes of this RCP, only the Priority 1 and Priority 2 streams were used in the analysis.

In addition to the assessments described above, another project was started in 2003 by the US Army Corps of Engineers (US ACOE). This project, the Codorus Creek Project, was actually two projects in one. One project, Section 1135, was a feasibility study to analyze the entire watershed on an ecological basis. The second project, Section 206, was a feasibility study to analyze the flood control facility through the city of York. Both projects were halted in fiscal year 2004 due to budget constraints. At this time the Corps of Engineers developed an Interim Report which details the project status and results at the time the project was halted. In November 2005, Congress reinstated the funding to the US ACOE. As a result, the project will start sometime in the winter/early spring 2005. The Interim Report was a valuable reference document in the preparation of this RCP. The US ACOE compiled existing information on water quality parameters such as macro-invertebrates and fish species from various sources such as the Pennsylvania Fish and Boat Commission, U.S. Fish and Wildlife Service, other resource agencies, industry groups (NCASI), school groups (university studies, etc.), and local watershed groups.

Once all the available information was collected it was entered into a GIS developed for the project. The information was mapped and analyzed to determine what the main sources of impairment are within the watershed.

It was apparent that the main issue facing the watershed is water quality. Mostly as it is related to the degradation of streams and waterways. The largest source of impairment is coming from stream instability and soil loss. Stream instability not only has several causes but also has several implications as well. Stream instability comes from a significant lack of riparian buffers. The riparian vegetation that is present within the watershed is insufficient in most cases to stabilize the stream. As a result, the buffers can't stabilize the soil and stream banks. This has far reaching effects all the way to the Chesapeake Bay estuary.

It is apparent that one of the most important, or highest priority, recommendations is the protection and/or reestablishment of a watershed's riparian zones. One way for municipalities to protect the riparian area is to adopt a Riparian Overlay Zone which would restrict uses within this zone.

There are other recommendations that can help protect watershed resources including, but not limited to: natural resource overlay zone, restoration and stabilization of impaired streams, implementation of Best Management Practices, and the formation of municipal Environmental Advisory Councils (EACs).

The intent of the RCP is to be a planning tool for local municipal planning officials. Historically, RCPs are not used as the tool for which they were intended. To combat this problem, the consultant developed an interactive GIS based tool, the Codorus Creek Watershed Toolbox, which incorporates the goals and objectives of the RCP into an unique, easy to use, interactive program designed so that users surf the watershed just like internet users surf websites.

Once the plan is approved and adopted by the municipalities within the watershed, those recommendations identified in the RCP will be eligible for funding from various sources thus highlighting the RCP's real advantage to local municipalities.

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SECTION 1.0
INTRODUCTION

In March 2002, the Codorus Creek Watershed Association (CCWA), a local non-profit watershed organization, was awarded a grant from the Pennsylvania Department of Conservation and Natural Resources (PADCNR) for the preparation of a River Conservation Plan (RCP). PADCNR defines a RCP as:

> **"*A comprehensive watershed or river corridor-based study*. This study requires an inventory of existing natural, recreational and cultural resources, analysis of the issues, concerns and threats to river resources and values and specific recommendations that set forth priorities and actions leading to the development of a long-term watershed management program."**

To complete the task, CCWA, in May 2003, contracted with a local consulting firm to assist in the completion of the RCP. In addition, CCWA was required to obtain an in-kind services match for the grant. The in-kind services match was obtained by garnering support of local agencies, organizations and municipalities.

Other notable contributions were provided by the following:

York County Planning Commission
U.S. Army Corps of Engineers, Baltimore District
York County Conservation District
York County Economic Development Corporation
Codorus Creek Watershed Association
Aquatic Resource Restoration Company
Codorus Creek Improvement Partnership
Ecosystem Recovery Institute
Pennsylvania Department of Environmental Protection

Shortly after this project was initiated the U.S. Army Corps of Engineers (Corps) announced they would be conducting two feasibility studies to evaluate environmental restoration potential within the watershed and within the flood control project throughout the City of York. Descriptions of both studies revealed that they were very close in scope, goals, and objectives to the intended format of the RCP. Unfortunately, the Corps project was halted in fiscal year 2004 due to budgetary constraints. To summarize their efforts to date, the Corps prepared a Codorus Creek Watershed, Interim Environmental Restoration Report (Interim Report). This report provided valuable information in the preparation of the RCP.

Another project currently in development is the Codorus Creek Watershed Act 167 Stormwater Management Plan (Act 167 Plan). This is being completed through the York County Planning Commission. The South Branch Codorus Creek Act 167 Plan was

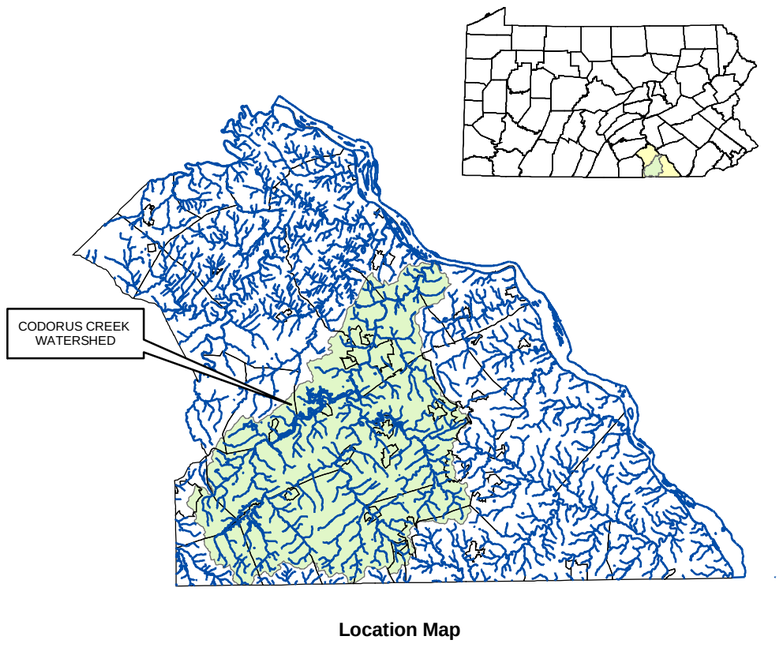
previously prepared in 1990, adopted in 1991, and is now in the final stages of being updated which should be adopted by the York County Commissioners in early 2005. The east and main branches of the Phase I Codorus Creek Act 167 Plan are under development and are about to be finalized at the time of this report. Phase I of the Act 167 Planning Process is the detailed project scoping process whereby the interested parties convene to develop a detailed outline of the Act 167 Plan itself. Once Phase I is complete, Phase II is then started which is the actual implementation of the plan. The Act 167 Plan addresses stormwater management planning at the watershed level as opposed to the municipal level. Although there is not one complete Act 167 Plan for the entire watershed yet, the future plans will compliment the goals and objectives of the Codorus Creek RCP.

Although both documents and plans are excellent in their own right, they are not as comprehensive as the RCP is intended to be. The Interim Report provides a plan for environmental restoration concentrating on ecological restoration initiatives and ecosystem enhancement. It does not include recommendations on stormwater management, land use and zoning. The Act 167 Plan, however, does address stormwater management, and potentially zoning and land use issues, but does not provide recommendations on ecological restoration or ecosystem enhancement. The goal of the RCP is to blend these two philosophies into a holistic approach for comprehensive watershed management.

This RCP is a follow-up to a previous RCP prepared by Codorus Chapter of Trout Unlimited for the Upper Codorus Creek Watershed. As such, the written or text portion of this RCP makes an attempt to maintain some continuity between the two plans. The previous RCP covered the Upper Codorus Creek Watershed, or West Branch, upstream of Spring Grove. It covered an area of approximately 74 square miles. This RCP takes the planning process one step farther by creating an interactive tool for use by municipalities in the watershed.

The concept of an interactive watershed tool resulted from the lack of use by most of the prepared RCPs. Most of these documents are not used the way they are intended and instead remain where they were first placed, on a shelf. To make the Codorus Creek Watershed RCP useful, an interactive watershed management tool based on GIS, the Codorus Creek Watershed Toolbox (CCWT), was developed. The goal of the CCWT is to provide a unique, user-friendly, easily understandable interactive tool which enables the municipalities, planning officials and other groups and agencies to access the information, analysis, and recommendations of the RCP in an electronic format. A user of the CCWT surfs the watershed for information the way Internet users surf websites for information. The written document portion of the RCP is meant to complement the CCWT. The written portion is also provided in a PDF format on the CCWT.

The **Study Area** for the RCP is the watershed minus the Upper Codorus Creek RCP (Figure 1.1-1). It encompasses approximately 205 square miles. At times, this RCP may overlap the Upper Codorus Creek RCP; however, for the most part the Upper Codorus



Location Map

Total Watershed Area - 176293.46 acres/275.46 square miles
Study Watershed Area - 130442.57 acres/203.82 sqare miles
Total Length of Streams in Watershed - 530.05 miles
Total Length of Streams in Study Area - 397.66 miles

Watershed	Area	Stream Miles
Rehmeyer Hollow	493.61 acres	1.19 miles
Barshinger Creek	3473.09 acres	10.75 miles
Brush Run	1569.80 acres	2.99 miles
Buffalo Run	1797.52 acres	4.14 miles
Centerville Creek	4790.20 acres	12.95 miles
Cherry Run	1058.67 acres	2.02 miles
CC Indian Rock Dam	6379.26 acres	16.75 miles
Codorus Creek North	3986.70 acres	17.92 miles
Codorus Creek York	14200.62 acres	40.90 miles
Dee Run	2004.59 acres	4.37 miles
East Branch Codorus Creek	14989.55 acres	52.29 miles
EBCC Blymire Hollow	3345.18 acres	7.63 miles
EBCC Dunkard Valley	2108.78 acres	4.59 miles
Fishel Creek	2463.51 acres	5.45 miles
Foust Creek	1131.30 acres	2.29 miles
Glenn Rock Valley	2279.45 acres	4.95 miles
Inners Creek	1987.99 acres	4.91 miles
Krebs Run	2778.09 acres	4.13 miles
Mill Creek	11831.58 acres	27.00 miles
Pierceville Run	4494.12 acres	9.67 miles
Seaks Run	2062.01 acres	5.32 miles
South Branch Codorus	21651.45 acres	68.05 miles
Stoverstown Branch	1959.69 acres	6.03 miles
Trout Run North	846.83 acres	1.59 miles
Trout Run South	2194.30 acres	5.32 miles
WBCC Indian Rock Dam	10320.64 acres	64.00 miles
WBCC Spring Grove	1110.08 acres	4.77 miles
Willis Run	3054.37 acres	5.32 miles

CWF
HQCWF
WWF
Road
Stream

Municipal Boundary
Subwatershed
Trout Unlimited Study
Codorus Creek Watershed

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 1.1-1
PROJECT AREA MAP

Codorus Creek Watershed Association

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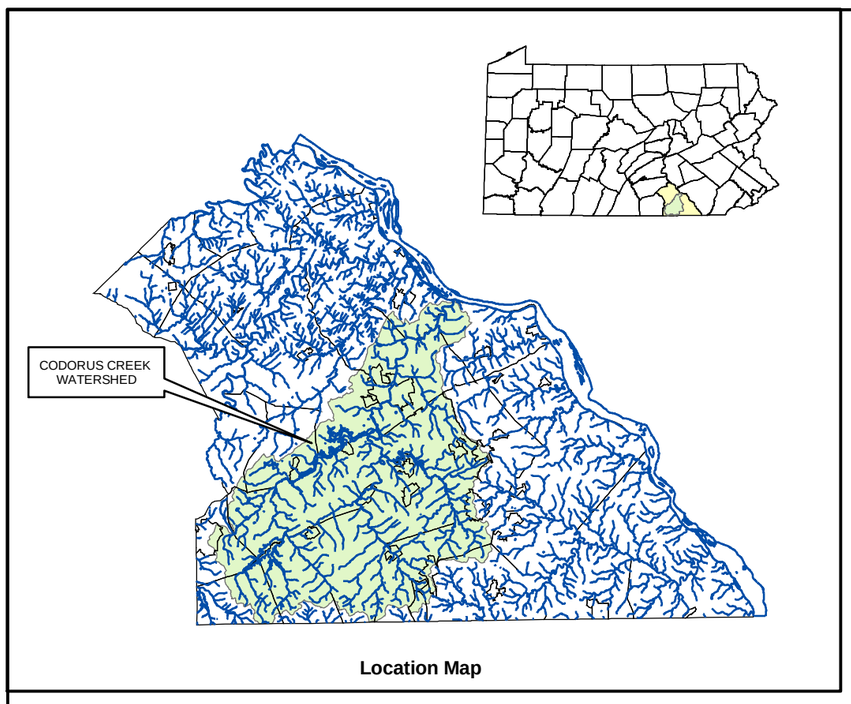


Location Map

Susquehanna River

FIGURE 1.1-2
STREAM DRAINAGE CORRIDOR MAP

Road
Stream
Major Road
Codorus Creek Watershed
Subwatershed
Trout Unlimited Study
Drainage Corridor
Municipal Boundary

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

Codorus Creek Watershed Association

BUCHART HORN, INC.

Creek RCP is a stand-alone document that is a valuable tool for that portion of the watershed.

To evaluate the watershed, it was divided into sub-watersheds based on data received from the Pennsylvania Spatial Data Access (PASDA) and data received from the York County Planning Commission. Major watershed boundaries follow Pennsylvania's State Water Plan, while the sub-watershed boundaries follow DEP's Stormwater Management Program. In some instances it was necessary to "unofficially" name some of the sub-watersheds to eliminate confusion for the Watershed Toolbox.

Sections 2-5 describe and analyze the watershed in it's entirety. There are general characteristics and observations made about the whole watershed irrespective of the sub-watershed boundaries. Section 6 describes the sub-watersheds in more detail and provides specific recommendations for each sub-watershed and the municipalities in which they lie.

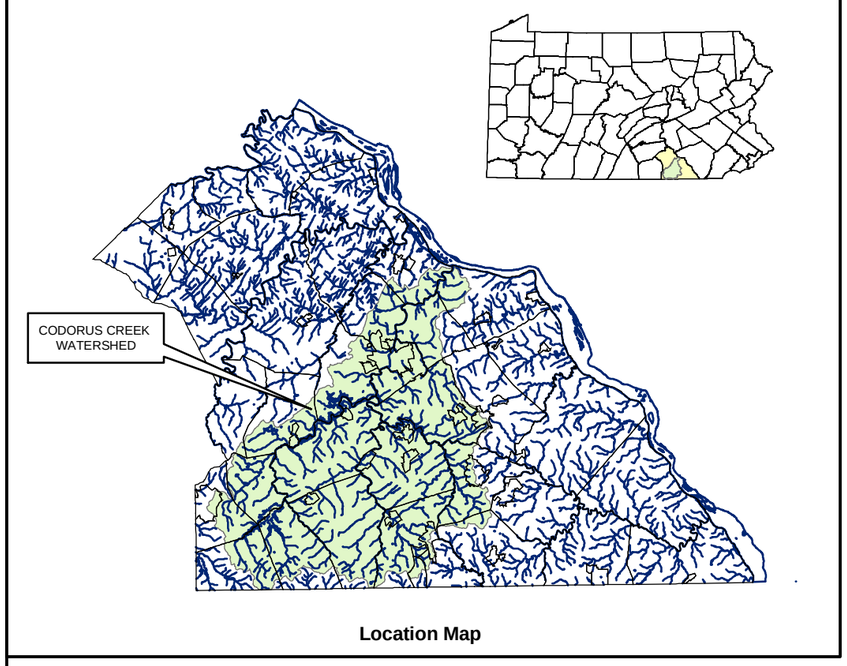
SECTION 2.0 - General Characteristics of the Entire Watershed

2.1 Watershed Location, Size

The Codorus Creek Watershed is a sub-watershed of the Lower Susquehanna River Basin located in South Central Pennsylvania. Containing approximately 278 square miles, the Codorus Creek Watershed is a major watershed in York County, Pa. In fact, approximately 99.9 percent of the watershed's total area is located in York County. A very small portion of the watershed is located in northern Maryland. The watershed extends from extreme south-western York County north to the mouth (with the Susquehanna River near the small towns of Saginaw and River View), west to the Adams County border and east to Winterstown. The headwaters of the Codorus Creek's three main branches, the East, South and West/Main Branches, are located in southern York County along the Maryland-Pennsylvania border (Figure 1.1-1).

2.2 Topographic Setting

The Codorus Creek Watershed is located in the Piedmont Uplands Section of the Piedmont Physiographic Province. The Piedmont Physiographic Province covers most of Southeastern Pennsylvania and is characterized by low, gently rolling hills intersected by shallow streams (Figure 2.2-1). The watershed comprises two topographic zones, the Hanover-York Valley and the Southeastern Upland. The Hanover-York Valley extends from the Susquehanna River near Wrightsville through York to Hanover, Pa. This narrow valley is the primary route for the main stem and west branches of the Codorus Creek. This valley ranges in width from two to four miles at its widest point. The surrounding slopes are nearly level to gently rolling. The underlying bedrock is dominantly schist, phyllite, quartzite bedrock and of limestone, which erodes more rapidly due to the dissolving action of carbonic acid in the rainwater. Sinkholes in areas with underlying limestone are common and can produce karst topography (Hersh 1963, Smith 1990). Karst topography is defined as unusual surface and subsurface features ranging from sinkholes, vertical shafts, disappearing streams, and springs, to complex underground drainage systems and caves. The Southeastern Upland covers the southeastern third of the county and extends west across the southern portion of York County toward Hanover. Most of the Codorus Creek does not flow through this section; however, there is an extensive network of tertiary streams that feed into the Codorus from this section. As a result, a majority of the rainfall in this area flows into the Codorus. In the extreme southwestern part of the watershed the topography is rolling, with underlying soils consisting of erosion-resistant schist and quartzite (Hersh 1963, Smith 1990).



Location Map

Susquehanna River

CODORUS CREEK NORTH
EAST MANCHESTER TWP
TROUT RUN NORTH
HELLAM TWP
DEE RUN
DEE RUN
MANCHESTER TWP
SPRINGETTSBURY TWP
MILL CREEK
NORTH YORK BORO
WILLIS RUN
YORK CITY
WEST YORK BORO
CODORUS CREEK YORK
WILL CREEK
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WEST BRANCH
YORK TWP
YOE BORO
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
RED LION BORO
INNERS CREEK
WINDSOR TWP
BARSHINGER CREEK
LAKE ADAHAGASCO
JACKSON TWP
BUNCH CREEK
WBCC SPRING GROVE
SPRING GROVE BORO
JACOBUS BORO
BUNCH CREEK
PARADISE TWP
STOVERSTOWN BRANCH
NORTH CODORUS TWP
OIL CREEK
FISHEL CREEK
LOGANVILLE BORO
SEVEN VALLEYS BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SOUTH BRANCH CODORUS CREEK
SEAKS RUN
SEAKS RUN
NORTH HOPEWELL TWP
HEIDELBERG TWP
OIL CREEK
SPRINGFIELD TWP
HERR RUN
BUFFALO RUN
BRUSH RUN
CHERRY RUN
PORTERS CREEK
JEFFERSON BORO
BRUSH RUN
FOUST CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
"REHMEYER HOLLOW"
GLEN ROCK VALLEY
LAKE MARBURG
PENN TWP
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
CODORUS TWP
PIERCEVILLE RUN
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
WEST MANHEIM TWP
NEW FREEDOM BORO

Stream
Subwatershed
Municipal Boundary
Codorus Creek Watershed

Elevation in Feet

High : 1230 Feet

Low : 239 Feet

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 2.2-1
RELIEF MAP

Codorus Creek Watershed Association

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2.3 Geology and Soils

The project area is located within the Piedmont Uplands Section. This geologic section is maturely dissected and slopes gently southeast. Elevations in the watershed ranges from 250 to 950 feet above mean sea level. The rocks in this section are chiefly metamorphosed sediments, but they do include some igneous rocks. All of the rocks have been intensely folded and faulted (Bureau of Resources Programming 1980).

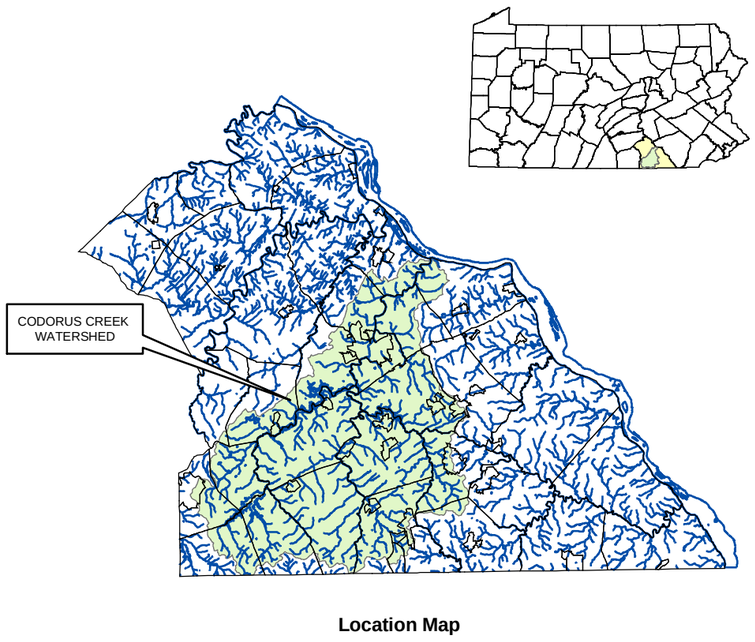
The watershed is typified of soils formed of materials weathered from igneous (volcanic) and metamorphic (pressure and heat) rocks. This substratum is largely schist with some quartzite. The soils within the region have depths ranging from 40 to 70 inches and dominant slopes varying between 0 and 20 percent. Due to the level, deep nature of soils in the area, the Codorus Creek Watershed historically has been used for agriculture (Bureau of Resources Programming, 1980). According to the United States Department of Agriculture (USDA) general soil map for York County (Figure 2.3-1), the following major soil groups are present within the Codorus Creek Watershed:

Urban Land-Duffield-Haggerstown Association: Urban land that is nearly level to strongly sloping with very deep and well drained soils that are formed from limestone found on ridges and in narrow valleys. Most of the soils of this association are found around the City of York and Manchester township.

Chester-Glenelg Association: This association is characterized by land that is gently sloping to moderately steep with deep to very deep well drained soils formed from schist, phyllite, and saprolite which are found on ridge tops and hills. These soils are mostly used for agriculture with some areas of urban land uses and woodland intermingled.

Mt. Airy-Glenelg-Manor Association: This association is characterized as land that is gently sloping to moderately steep with moderately to deep soils that are somewhat excessively drained to well drained and formed from schist and phyllite on ridges and hills. Land uses on these soils are predominately agricultural, with some areas of urban or recreational development and a few areas of woodland.

Edgemont Association: Land that is gently sloping to very steep with very deep soils that are well drained and formed from quartzite and conglomerate on ridges and hills. Land uses on these soils are mainly woodland with some crop land, on ridge tops and foot slopes, and urban development along major roads.



Location Map

Susquehanna River
CREEK
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
DEE RUN
I - 83 EXWY
CHURCH RD
MT ZION RD
MANCHESTER TWP
SPRINGETTSBURY TWP
RT 30 BYP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
RTE 30 BYP
I-83 EXWY
YORK CITY
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
EAST BERLIN RD
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
TRINITY RD
SOUTH BRANCH CODORUS CREEK
QUEEN ST
YOE BORO
WINDSOR TWP
YORK TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
RED LION BORO
INNERS CREEK
RED LION BORO
WINDSOR TWP
LAKE PAHAGACO
WBCC SPRING GROVE
JACOBUS BORO
INNERS
BARSHINGER CREEK
WINDSOR TWP
JACKSON TWP
SPRING GROVE BORO
BUNCH CREEK
BARSHINGER
WINDSOR TWP
BUNCH CREEK
PARADISE TWP
YORK RD
STOVERSTOWN BRANCH
NORTH CODORUS TWP
OIL CREEK
CHURCH ST
MILL RD
FISHEL
SEVEN VALLEYS BORO
LOGANVILLE BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WINTERSTOWN BORO
HANOVER RD
WEST BRANCH CODORUS CREEK
SEAKS RUN
PENN TWP
SOUTH BRANCH CODORUS CREEK
NORTH HOPEWELL TWP
HEIDELBERG TWP
BRUSH RUN
SEAKS RUN
OIL CREEK
CHERRY RUN
SPRINGFIELD TWP
OIL CREEK
PORTERS CREEK
JEFFERSON BORO
RUN
BRUSH RUN
CHERRY RUN
FOUST CREEK
INTERSTATE 83
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
"REHMEYER HOLLOW"
GLEN ROCK VALLEY
LAKE MARBURG
JEFFERSON RD
WEST BRANCH CODORUS CREEK
PENN TWP
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
PIERCEVILLE RUN
CREEK
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
ROUTE 216
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
SHREWSBURY TWP
FURNACE CREEK
LONG RUN
STICKS RD
CENTERVILLE CREEK
2ND ST
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
STELTZ RD

- Stream
- Road
- Major Route
- Susquehanna River
- Trout Unlimited Study
- Municipal Boundary
- Subwatershed
- Codorus Creek Watershed

- Urban Land - Duffield - Hagerstown
- Chester-Glenelg
- Mt. Airy - Glenelg - Manor
- Edgemont
- Conestoga - Urban Land - Clarksburg
- Penn - Landsdale - Readington
- Glenelg - Mt. Airy

4,000 2,000 0 4,000 8,000 Feet

1 inch equals 7,500 feet

FIGURE 2.3-1
GENERAL SOILS MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

Conestoga-Urban Land-Clarksburg: This association is characterized as land that is nearly level to strongly sloping with very deep soils that are well drained to moderately well drained and formed in residuum from limestone and calcareous schist on nearly level to rolling uplands. These soils mainly support urban development with some crop land and recreational areas.

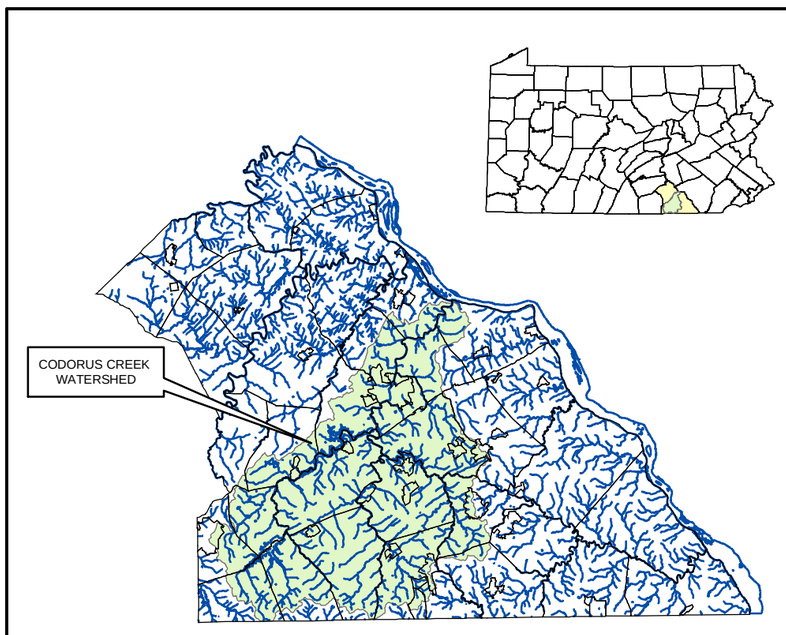
Penn-Landsdale-Readington Association: This association is characterized as land that is nearly level to strongly sloping with moderately deep and deep soils that are well drained and moderately well drained and formed from shale, siltstone, sandstone, and conglomerate on undulating to rolling uplands. These soils are mainly used for agricultural purposes with some urban development and woodlands.

Glandelg-Mt. Airy Association: Land that is gently sloping to moderately steep with moderately deep and deep soils which are well drained and somewhat excessively drained and formed from schist and phyllite on ridges and hills. These soils are mainly used for crop land, pasture, and woodland with some urban and recreational development.

Soils and their characteristics are an important resource to every watershed. A thorough understanding of those characteristics can lead to better management practices. Of particular importance for watershed health is the understanding of soil permeability. Permeability is the rate at which water infiltrates and permeates through a particular soil group. Soils with high permeability (Figure 2.3-2) will allow water to infiltrate the groundwater and recharge the aquifer quicker than soils with low permeability. Allowing precipitation to infiltrate the soil and recharge the aquifer is vitally important for the health of a watershed. Not only does it recharge the aquifer, but it also recharges our streams, keeping them healthy and cool during warmer periods.

It is important to understand soil permeability. Soils with low permeability are those in which water infiltrates the ground water at a very slow rate or not at all. Often, these soils tend to be hydric, and are sometimes associated with the presence of wetlands. It is this slow permeability which creates the unique habitat necessary for the existence of wetlands that are also vital to a watershed's overall health. Checking this document (Figure 3.2-1 and 3.2-3), or the revised York County Soil Survey (York County Conservation District, 717-840-7430) can direct a landowner or agent to the location where wetlands may be present. This is discussed in more detail in Section 3.2-E.

Fortunately for the Codorus Creek Watershed, permeable soils, or those that are suitable for infiltration (Figure 2.3-1), cover a large portion of the watershed. Overall they cover approximately 70% of the watershed area, or about 123,716 acres. However, not all of those acres are open space. Some of those areas are now impervious areas. This is why it is important to know where these soils are



Location Map

Stream
Road
Major Route
Municipal Boundary
Subwatershed
Trout Unlimited Study
Codorus Creek Watershed

Well drained Soil
Moderately well drained Soil

Aquifer

Crystalline-Rock aquifers
Early Mesozoic basin aquifers
Piedmont and Blue Ridge carbonate-rock aquifers

N

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 2.3-2 GEOLOGIC FEATURES MAP

Codorus Creek Watershed Association

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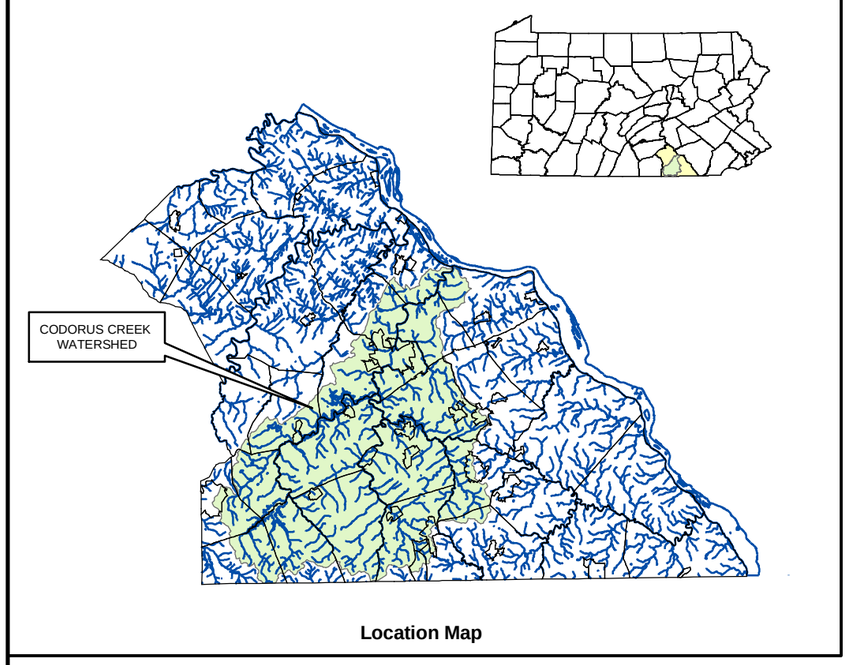


Location Map

Susquehanna River

TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
MANCHESTER TWP
SPRINGETTSBURY TWP
NORTH YORK BORO
SPRING GARDEN TWP
CODORUS RUN
YORK CITY
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
SPRING GARDEN TWP
WEST MANCHESTER TWP
WBCC INDIAN ROCK DAM
SOUTH BRANCH CODORUS CREEK
YORK TWP
YOE BORO
WINDSOR TWP
NEW SALEM BORO
DALLASTOWN BORO
RED LION BORO
WBCC INDIAN ROCK DAM
WINERS CREEK
RED LION BORO
WINDSOR TWP
JACKSON TWP
WEST SPRING GROVE
SPRING GROVE BORO
BUNCH CREEK
JACOBUS BORO
BARSHINGER CREEK
WINDSOR TWP
WINDSOR TWP
STOVERSTOWN BRANCH
NORTH CODORUS TWP
PARADISE TWP
SEVEN VALLEYS BORO
LOGANVILLE BORO
EBCC/DURKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SOUTH BRANCH CODORUS CREEK
SEAKS RUN
NORTH HOPEWELL TWP
SPRINGFIELD TWP
HEIDELBERG TWP
OIL CREEK
PORTERS CREEK
JEFFERSON BORO
BRUSH RUN
CHERRY RUN
FOUST CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
PENN TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
TROUT RUN SOUTH
SHREWSBURY TWP
CODORUS CREEK
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
SHREWSBURY TWP
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK

sinkhole
other karst features
Stream
Major Route
Susquehanna River
Trout Unlimited Study
Municipal Boundary
Subwatershed
Codorus Creek Watershed

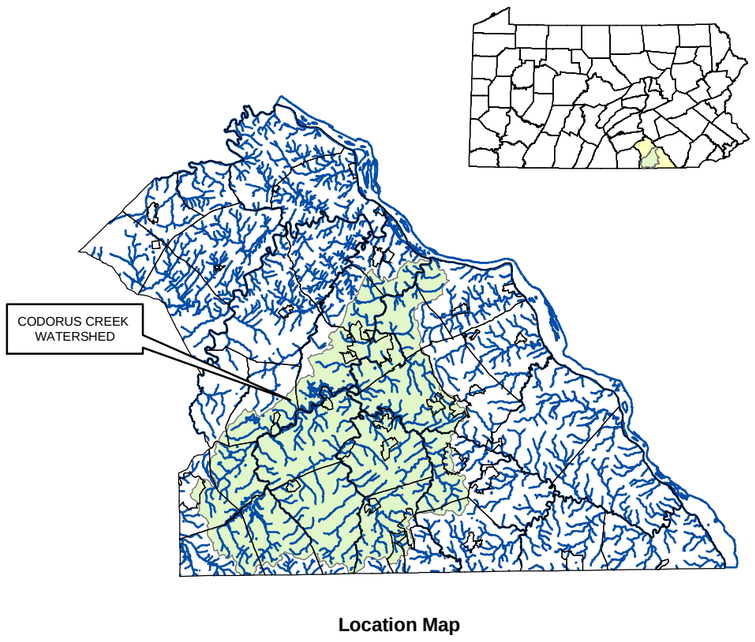
4,000 2,000 0 4,000 8,000 Feet

1 inch equals 7,500 feet

FIGURE 2.3-3
GEOLOGIC HAZARDS MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.



Location Map

Materials Mined at Each Site

1. Top Soil & Limestone & Dolomite
2. Sandstone
3. Shale
4. Limestone & Dolomite & Sedimentary Rock
5. Limestone & Dolomite
6. Metamorphic
7. Limestone & Dolomite

Susquehanna River
CREEK
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
1
DEE RUN
DEE RUN
MANCHESTER TWP
2
SPRINGETTSBURY TWP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
4
YORK CITY
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
WINDSOR TWP
5
6
7
3
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WINDSOR TWP
SOUTH BRANCH CODORUS CREEK
YORK TWP
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
DALLASTOWN BORO
REDLION BORO
WINERS CREEK
RED LION BORO
WINDSOR TWP
JACKSON TWP
WBCC SPRING GROVE
JACOBUS BORO
WINERS
BARSHINGER CREEK
SPRING GROVE BORO
BUNCH CREEK
WINDSOR TWP
BARSHINGER
WINDSOR TWP
BUNCH CREEK
PARADISE TWP
STOVERSTOWN BRANCH
NORTH CODORUS TWP
OIL CREEK
FISHEL
LOGANVILLE BORO
SEVEN VALLEYS BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SEAKS RUN
PENN TWP
SOUTH BRANCH CODORUS CREEK
NORTH HOPEWELL TWP
HEIDELBERG TWP
SEAKS RUN
OIL CREEK
SPRINGFIELD TWP
CHERRY RUN
BRUSH RUN
BRUSH RUN
CHERRY RUN
PORTERS CREEK
JEFFERSON BORO
FOUST CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
KREBS RUN
GLEN ROCK BORO
PENN TWP
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
KREBS RUN
PIERCEVILLE RUN
CREEK
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
SHREWSBURY TWP
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK

Mine Site
Major Route
Stream
Susquehanna River
Trout Unlimited Study
Subwatershed
Codorus Creek Watershed
Municipal Boundary

4,000 2,000 0 4,000 8,000 Feet

1 inch equals 7,500 feet

FIGURE 2.3-4
MINED RESOURCES MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

located and to protect and use them to our advantage. For instance, instead of requiring a developer to construct a typical stormwater management system whereby the water is simply held and released after a certain period of time, a municipality should require infiltration provided the site has soils suitable for infiltration. A thorough knowledge of the watershed and location of such soils can aid in the determination of where infiltration is possible.

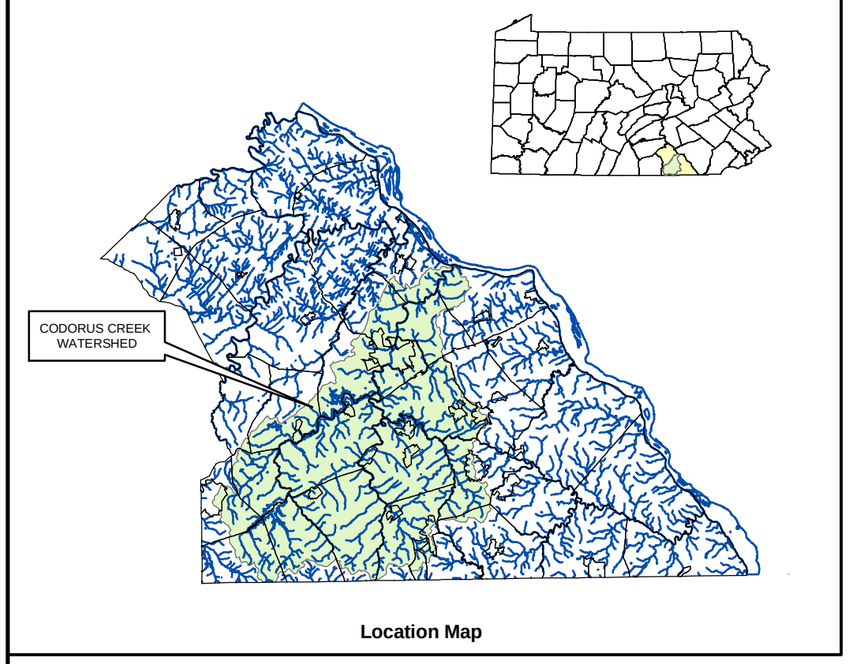
Other notable geologic related features are geologic hazards, such as sink holes and other Karst topography features (Figure 2.3-3) and mine locations (Figure 2.3-4). Locating these features and avoiding impacts is important. Sink holes areas are highly unstable and the effects of sink holes can be catastrophic. Knowing where the mines are located and avoiding impacts to these sites is also important. Some of these areas are abandoned and some are still active.

In addition to knowing about soil permeability, geologic hazards, and mine locations, it is also important to understand which soils are susceptible to erosion either by wind or water. Figure 2.3-5 shows soil slopes within the watershed. Often, soil slope is directly correlated with soil erosion. Soil erosion causes numerous environmental problems from the loss of top soil to the siltation of our waterways including the Chesapeake Bay. Protection of steep slopes and erosive soils is critical. Sedimentation is one of the leading, if not the leading, cause of pollution of the Bay. Siltation of the Bay covers valuable habitat for various life forms and the sediment can be laden with harmful chemicals and minerals such as nitrogen, phosphorous, and other elements found in fertilizers, herbicides, and pesticides. Impacts to steep slopes and erosive soils should be avoided if at all possible. Stabilization of these areas with native vegetation is important.

2.4 Climate

The Codorus Creek Watershed is dominated by atmospheric flow patterns common to the humid continental regions lying in the North Temperate Zone. Most of the weather systems that influence the area originate either in Western Canada or the Central Plains of the United States and are steered eastward by the prevailing winds and the jet stream.

Another influencing weather phenomenon is the flow and primary source of precipitation associated with cyclonic circulation from the Gulf of Mexico northward through the watershed. As a result of the dominant easterly flow into the area, the moist airflow from the Atlantic Ocean, to the east, is a modifying factor rather than a controlling climatic factor. Periodically, considerable moisture is picked up by storms developing and moving north along the Atlantic seaboard. As a result, these disturbances, while not occurring often, usually bring moderate to heavy amounts of precipitation in the form of rain, and when temperatures are low enough, snow. The Great Lakes, ironically, have little impact on the climate of the region. This is due to the eastern movement of storms that form over the Great Lake region.



Location Map

Susquehanna River
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
MANCHESTER TWP
SPRINGETTSBURY TWP
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
YORK CITY
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WINDSOR TWP
SOUTH BRANCH CODORUS CREEK
YORK TWP
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
DALLASTOWN BORO
REDLION BORO
INNERS CREEK
RED LION BORO
WINDSOR TWP
JACKSON TWP
WBCC SPRING GROVE
JACOBUS BORO
BARSHINGER CREEK
SPRING GROVE BORO
BUNCH CREEK
WINDSOR TWP
WINDSOR TWP
STOVERSTOWN BRANCH
PARADISE TWP
NORTH CODORUS TWP
SEVEN VALLEYS BORO
LOGANVILLE BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
PENN TWP
SOUTH BRANCH CODORUS CREEK
SEAKS RUN
NORTH HOPEWELL TWP
HEIDELBERG TWP
SPRINGFIELD TWP
OIL CREEK
CHERRY RUN
BRUSH RUN
JEFFERSON BORO
FOUST CREEK
PORTERS CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
PENN TWP
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
SHREWSBURY TWP
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK

Stream
Major Route
Susquehanna River
Trout Unlimited Study
Municipal Boundary
Subwatershed
Codorus Creek Watershed

Soil Slope
0 - 3
4 - 8 %
9 - 15 %
16 - 25 %
26 - 35 %

4,000 2,000 0 4,000 8,000 Feet

1 inch equals 7,500 feet

FIGURE 2.3-5
SOIL SLOPE MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

Weather, such as precipitation, droughts, temperature, wind direction and speed, relative humidity, and sunshine are measurable variables that affect the watershed. The region and watershed, on average, receive 41 inches of precipitation annually. The normal precipitation totals range from a minimum of 2.6 inches in February to a maximum of 4.3 inches in May. The mean annual number of days with snow cover of one inch or more is approximately 50 days.

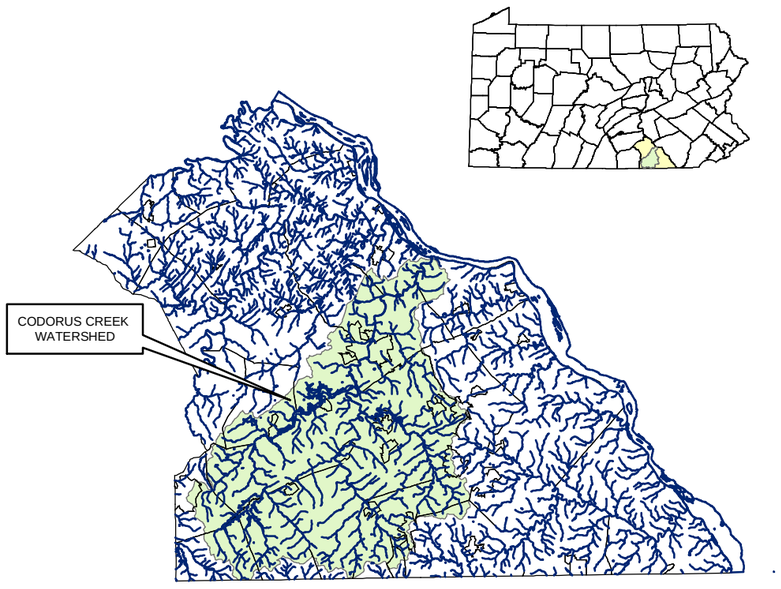
The average annual temperature for the study area is 53°F. Seasonal average temperatures for the study area range from 32° F in the winter, 54° F in the fall, 52° F in the spring, and 73° F in the summer months. Within the last 30 years of recorded climate data the highest temperature recorded was 105° F in July 1936 and a low of -21° F in January 1994.

Winds are an important hydrologic factor because of their evaporative effects and their association with storm systems. The prevailing wind direction in the region is westerly during the winter months and southerly during the summer months. Relative humidity also affects evaporation processes in small streams and other waterbodies. The average annual relative humidity for the region is 75%.

2.5 Land Use and Zoning

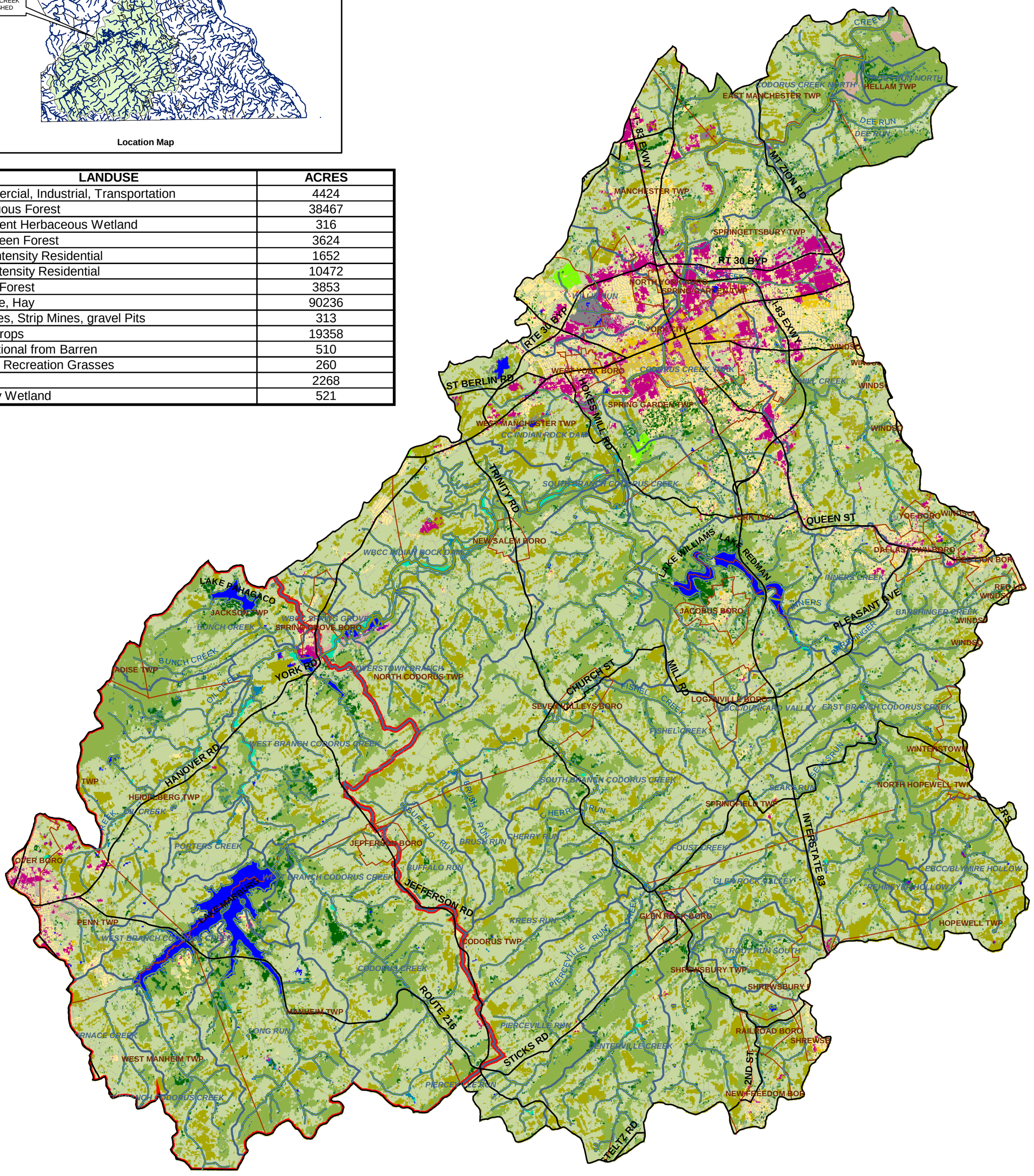
The Codorus Creek Watershed has many different land uses, including residential, agricultural, industrial, commercial, parks and recreation, and forested. Agriculture comprises the largest land use category in the entire watershed, covering an average of 65%, or about 115,092 acres, of the total land area of 177,065 acres (Figure 2.5-1). As mentioned previously, the Codorus Creek and its three main branches begin in the southern portion of the watershed and flow north through York City to meet the Susquehanna near Saginaw. The watershed starts out approximately 20 miles wide from the eastern edge of Hanover Borough (West/Main Branch Codorus Watershed) to the eastern edge of Hopewell Township (East Branch Codorus Watershed). Generally, the southern portion of the watershed is more agricultural, and as the watershed narrows toward the City of York, the watershed becomes more residential, commercial, and industrial. After exiting the city, land use in the watershed becomes more rural again with suburban sprawl into the northern section of the watershed. The watershed surrounding the northern most section of the Codorus Creek becomes more forested and agricultural before joining the Susquehanna.

Figure 2.5-1 shows a general land use map for the entire watershed. Included on this map is a table of land use classifications and the acreage it covers. Of particular importance are the amount of deciduous forest, wetlands, all types of agriculture and commercial/industrial. Evaluating land use on a watershed level is very important to understanding watershed health. We know from research and experience that it is much better for water quality to have forested and vegetated ground as opposed to impervious commercial, industrial and residential areas. However, it is not possible to maintain 100% vegetated cover. Although the



Location Map

LANDUSE	ACRES
Commercial, Industrial, Transportation	4424
Deciduous Forest	38467
Emergent Herbaceous Wetland	316
Evergreen Forest	3624
High Intensity Residential	1652
Low Intensity Residential	10472
Mixed Forest	3853
Pasture, Hay	90236
Quarries, Strip Mines, gravel Pits	313
Row Crops	19358
Transitional from Barren	510
Urban, Recreation Grasses	260
Water	2268
Woody Wetland	521



Major Route
Stream
Road
Trout Unlimited Study
Municipal Boundary
Subwatershed

Landuse / Cover

- Water
- Low Intensity Residential
- High Intensity Residential
- Commercial, Industrial, Transportation
- Quarries, Strip Mines, Gravel Pits
- Transitional from Barren
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Pasture, Hay
- Row Crops
- Urban, Recreation Grasses
- Woody Wetland
- Emergent Herbaceous Wetland

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 2.5-1
LANDUSE MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

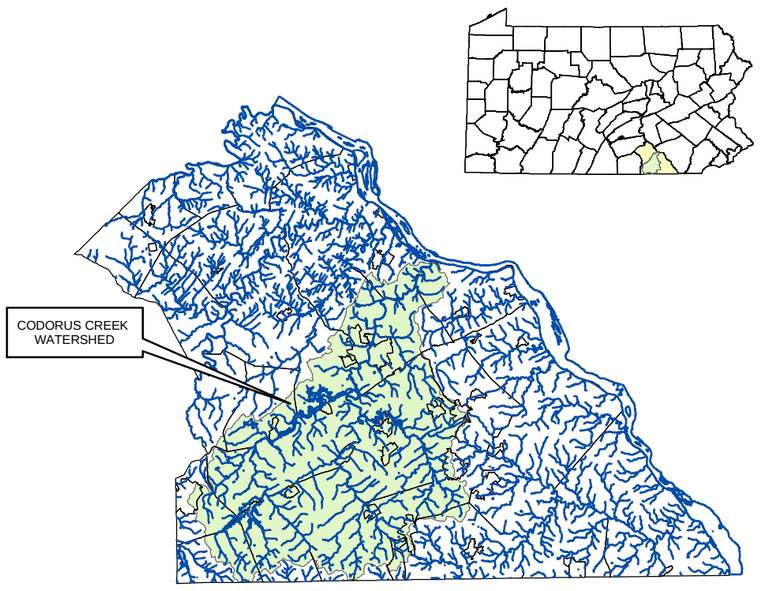
existing data sources for land cover do not show trends relating to the loss or gain of various types of land cover, we can infer from residential and commercial growth that we are losing open space and vegetated ground cover with each new unit of impervious surface, whether that is a commercial warehouse or a single family residence. As a result, managing growth and land use is critical. Of particular importance is land use surrounding our streams and waterways. Figure 2.5-1, Land Use Map, shows the drainage corridor for the main stem of the Codorus Creek and it's three main braches. Table 2.5-1 below shows various land use classifications and acreage within the drainage corridor.

Table 2.5-1: Land Use Types and Acreage for the Codorus Creek Watershed.

LAND USE	ACREAGE
Commercial, Industrial, Transportation	4424
Deciduous Forest	38467
Emergent Herbaceous Wetland	316
Evergreen Forest	3624
High Intensity Residential	1652
Low Intensity Residential	10472
Mixed Forest	3853
Pasture,Hay	90236
Quarries, Strip Mines, Gravel Pits	313
Row Crops	19358
Transitional from Barren	510
Urban, Recreational Grasses	260
Water	2268
Forested Wetland	521

Zoning is the way governments control the physical development of land and the kinds of uses to which each individual parcel or property may be put. Zoning laws typically specify the areas which residential, industrial, commercial, recreational and agricultural activities may take place. For instance, a zone of R-1 might only allow for single-family detached homes as opposed to apartment complexes or multiple family units. On the other hand, a zone of C-1 might only allow certain types of commercial or industrial uses in one jurisdiction, but in another might allow a mixture of housing and businesses.

Zoning is purely a county, city, or municipal affair. Though such laws are somewhat universal, the classifications used to describe zoning are not uniform from one municipality to another. For example, municipality "A" and municipality "B" both have a zone of C-1. However, municipality "A's" C-1 permits a certain type of commercial venture only whereas municipality "B's" C-1 zone permits a mix of commercial and residential. If these two municipalities are adjacent to one another, it is possible to have both C-1 zones adjacent as well. Although zoning has numerous benefits, it is not without problems. One of the problems with zoning is the variation from one municipality to another as described above. Since municipal boundaries have no correlation to watershed boundaries, neither do zoning districts. As a result, a watershed is comprised of a



Location Map

ZONING	ACRES
Agricultural	90705
Apartment/Office	1360
Business	238
Commercial	4082
Commercial/Industrial	9
Conservation/Open Space	24587
Industrial	9106
Institutional	44
Mixed Use	1808
Quarry	1512
Residential	24849
Residential - rural/low density/open space	16594
Slope	47
Village Center	1332

Major Route
Stream
Road
Trout Unlimited Study
Municipal Boundary
Subwatershed

Agricultural
Apartment/Office
Business
Commercial
Industrial
Institutional
Mixed Use

Quarry
Residential
Slope
Village Center
Commercial/Industrial
Conservation/Open Space
Residential - rural/low density/open space

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 2.5 - 2
ZONING MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

widely varying mixture of zoning classifications. This complicates the management of watersheds as related to zoning. One way to protect watershed resources through zoning, and have each municipality be consistent, is for each municipalities zoning ordinance to consider natural resource boundaries such as streamside buffers. As a result, there would be some consistency and continuity between municipalities and the zoning boundaries around natural resource features of the entire watershed.

A detailed analysis of the zoning ordinances for each municipality is beyond the scope of the RCP. For the purposes of this report, the zoning of the watershed has been generalized (Figure 2,5-2). Attempts have been made to reference the zoning ordinances for each municipality as they pertain to natural resource protection. To the extent possible, this is included in Section 6.0, Sub-Watershed Detailed Analysis.

Zoning varies as much as land use across the watershed. As with land use, zoning is more agricultural and rural/light density residential toward the southern end of the watershed than it is toward the north. Most of the industrial/commercial zoning classifications are centered around urban centers such as York City, West York Borough, Spring Grove Borough, Hanover Borough, Dallastown Borough, Red Lion Borough, Shrewsbury Borough and New Freedom Borough. As with land use, it is most important to understand how the different zoning classifications are arranged within the drainage corridor. Table 2.5-2 below describes the various general zoning classifications and the acreage each classification covers within the watershed.

Table 2.5-1: Zoning Classifications and Acreage for the Codorus Creek Watershed.

ZONING (GENERAL)	ACREAGE
Agriculture	90705
Appartment/Office	1360
Business	238
Commercial	4082
Commercial/Industrial	9
Conservation/Open Space	24587
Industrial	9106
Institutional	44
Mixed Use	1808
Quarry	1512
Residential	24849
Residential-Rural-Low Density	16594
Slope	47
Village Center	1332

Although zoning is controlled by governments, the various zones within a municipality are not permanent. This is both a curse and a blessing. It is possible to petition the appropriate zoning officials/board within the municipality for a rezoning of a particular zone. For example, a commercial developer owns or wishes to purchase a parcel of land to construct a new warehouse facility, but the

parcel is zoned agriculture (which prohibits such uses). The developer may be able to petition the municipality for a reclassification of that zone, so that a permitted use is the construction of warehousing facilities. Which, in and of itself seems fine, but the zone across the street or adjacent to the parcel may be zoned R-1, which could represent single family, detached residential.

However, it may be possible to re-zone something for the benefit of the environment. There are cases in Pennsylvania where a municipality rezoned areas along a creek to prohibit most forms of development. For example, in Bushkill Township, Northampton County, Pennsylvania, the township supervisors created a nature zone around the woodlands surrounding the valuable waters of the Bushkill Creek, hoping to protect the riparian area.

2.6 Population Profile -

As with most of the Lower Susquehanna River Basins in South Central Pennsylvania, the Codorus Creek sub-watershed is experiencing rapid growth and development. In fact, in *Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania* by the Brookings Institution, the York area was Pennsylvanias fastest growing metropolitan area between 1990 and 2000. Between 1990 and 2000 York Major growth areas in the watershed include York Township, Shrewsbury Township/Borough, Hanover and surrounding municipalitiesThis is, in part, due to the watershed's proximity to Harrisburg, Pa and Baltimore, Md. Some of this rapid growth is occurring in the headwaters of the Codorus Creek , and its main branches, resulting in degradation of watershed resources in once pristine areas.

According to the 2000 Census the City of York's population didn't change between the 1990 census and the 2000 census. As of the 2000 Census, there were approximately 42,192 people living in the City of York which lies entirely in the Codorus Creek Watershed. York County saw an increase in population of 42,177 between 1990 and 2000. A significant portion of that growth occurred within the Codorus Creek Watershed, particularly in the area of York Township and Shrewsbury Township. 98.9% of the population is white/Caucasian. The median household income in 1998 was $45,685. Table 2.6-1 below ranks the major employers within the watershed and lists what sub-watershed they are located.

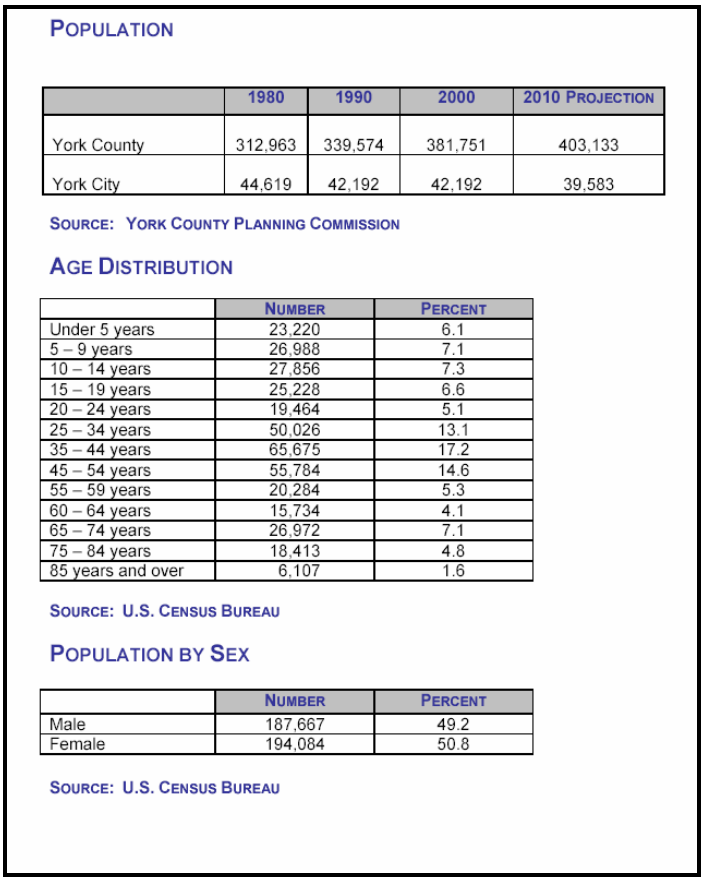
Figure 2.6-1 shows the population distribution for the watershed. As can be expected, the majority of the population lives close to the more urban areas such as the City of York, West York Borough, North York Borough, Hanover Borough and the region around New Freedom Borough, Railroad Borough and Shrewsbury Borough. Additionally, Springettsbury Township, York Township, Shrewsbury Township, Dallastown Borough, and the East York areas are experiencing an increase in growth and development.

Table 2.6-1: Major employers within the Codorus Creek Watershed.

Rank in Watershed	Employer	# of Employees	Sub-Watershed
1	Wellspan Health	5,170	East/South Branch
2	Harley-Davidson	2,800	Mill Creek
3	York County Government	2,175	East/South/West Branches, Mill Creek,
4	York International	1,631	Mainstem
5	Susquehanna Pfaltzgraff	1,473	Mainstem
6	UTZ Foods	1,176	Mainstem
7	Giant Food Stores	1,133	Willis Run, East Branch, Mill Creek
8	P.H. Glatfelter	1,107	West Branch
9	Walmart Stores	1,012	East Branch, Mill Creek, Willis Run
10	Dentsply International	948	Mainstem
11	Kinsley Construction	914	East Branch
12	Weis Markets	848	Mill Creek, Willis Run
13	Memorial Hospital	754	Mill Creek
14	City of York School District	687	Mainstem

Source: York County Economic Development Corporation – 2002 Surveys

Figure 2.6-1: Additional population data for *York County*.



POPULATION

	1980	1990	2000	2010 PROJECTION
York County	312,963	339,574	381,751	403,133
York City	44,619	42,192	42,192	39,583

SOURCE: YORK COUNTY PLANNING COMMISSION

AGE DISTRIBUTION

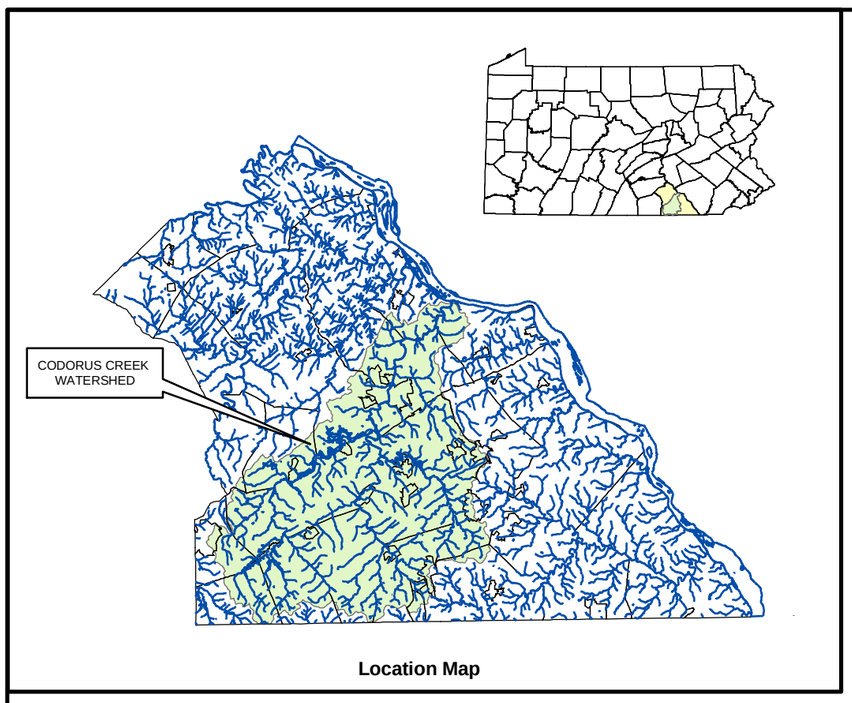
	NUMBER	PERCENT
Under 5 years	23,220	6.1
5 – 9 years	26,988	7.1
10 – 14 years	27,856	7.3
15 – 19 years	25,228	6.6
20 – 24 years	19,464	5.1
25 – 34 years	50,026	13.1
35 – 44 years	65,675	17.2
45 – 54 years	55,784	14.6
55 – 59 years	20,284	5.3
60 – 64 years	15,734	4.1
65 – 74 years	26,972	7.1
75 – 84 years	18,413	4.8
85 years and over	6,107	1.6

SOURCE: U.S. CENSUS BUREAU

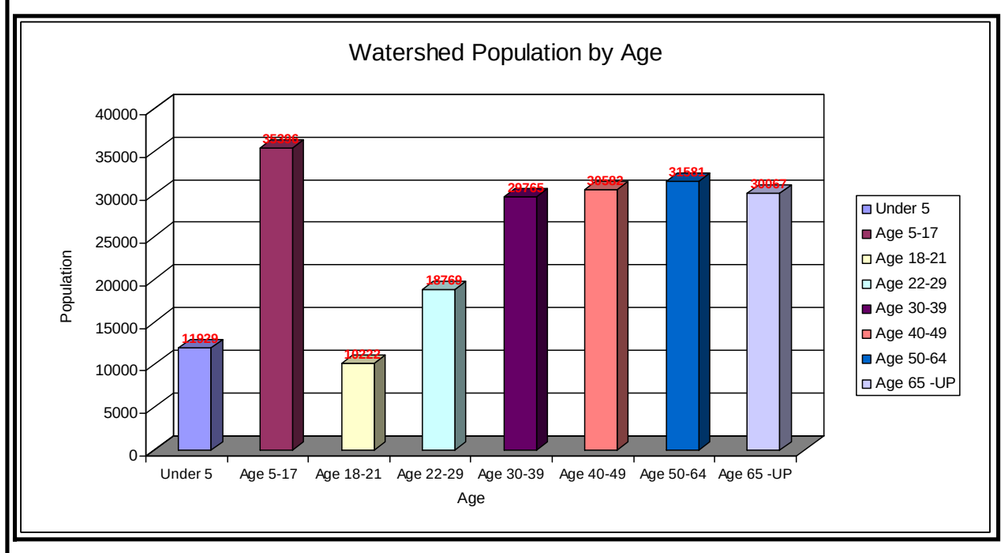
POPULATION BY SEX

	NUMBER	PERCENT
Male	187,667	49.2
Female	194,084	50.8

SOURCE: U.S. CENSUS BUREAU



Location Map



Road
Major Route
Stream
Trout Unlimited Study
Municipal Boundary
Subwatershed
Codorus Creek Watershed

Population / Acre

0.00
0.01 - 0.26
0.27 - 0.94
0.95 - 2.88
2.90 - 5.14
5.15 - 7.44
7.45 - 10.64
10.65 - 16.49
16.60 - 30.05
30.06 - 954.05

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 2.6- 2
POPULATION DENSITY MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

2.7 Unique Features of the Watershed (from the York County Environmental Resources Inventory prepared by the York County Planning Commission):

In October 2004, the York County Planning Commission prepared the Environmental Resources Inventory for York County. The inventory is a component of the York County Comprehensive Plan. Features listed in the inventory are natural features and areas that are unique due to their rareness, irregularities, aesthetic qualities, or local significance. It is these qualities that separate them from other features in the watershed and steps should be taken to preserve these features.

The following is a list of those features which occur within the Codorus Creek Watershed and a brief description of each feature. Figure 2.7-1 shows the general locations of each feature.

Bootlegger Sink Cave – Located in Manchester Township, this cave was formed from knotty blue limestone and dark massive dolomite associated with the Kinzers Formation. The name of the cave is derived from its past use as a shelter for a moonshine still. Currently, it is listed as gated, with no access, by the Pennsylvania Cave Conservancy.

Colmoru Cave – Located in West Manchester Township, this cave was formed from gray and white spotted limestone and marble associated with the Kinzers Formation.

East York Cave – This cave is located in Spring Garden Township and was formed from Limestone associated with the Conestoga Formation.

Emigs Cave – Emigs Cave is located in Manchester Township near the village of Emigsville and is formed in Village Dolomite.

Marble Cave – Located in West Manchester Township, this cave was formed in the Kinzers Formation.

North York Cave – The North York Cave is located in Manchester Township, this cave is associated with the Kinzers Formation. Of additional significance, two invertebrate species listed as species of special concern are found within this cave.

Pigeon Cave – Located in West Manchester Township, this cave, named for pigeons that roost in it, was formed from light gray magnesium limestone.

Pulpit Rock – Although this feature is located within the Trout Unlimited Study Area of the watershed, it was not discussed in the Upper Codorus Creek River Conservation Plan and hence will be discussed here. Pulpit Rock is located in

Heidelberg Township, this outcrop of quartzite provides a southern view of York County during the winter months. This feature also serves as a control point for the U.S. Coast and Geodetic Survey.

Railroad Rock House Cave – Located in Shrewsbury Township, this cave was formed in a Wissahickon Schist and Metabasalt Contact.

Sandy Cave – Sandy Cave is located in West Manchester Township and formed in the Kinzers Formation.

Seitzland Marsh – A unique feature the watershed, the Seitzland Marsh, located in Shrewsbury Township, is the largest sedge marsh in York County. It consists of a floodplain dominated by tussock sedge that provides habitat for reptiles and amphibians.

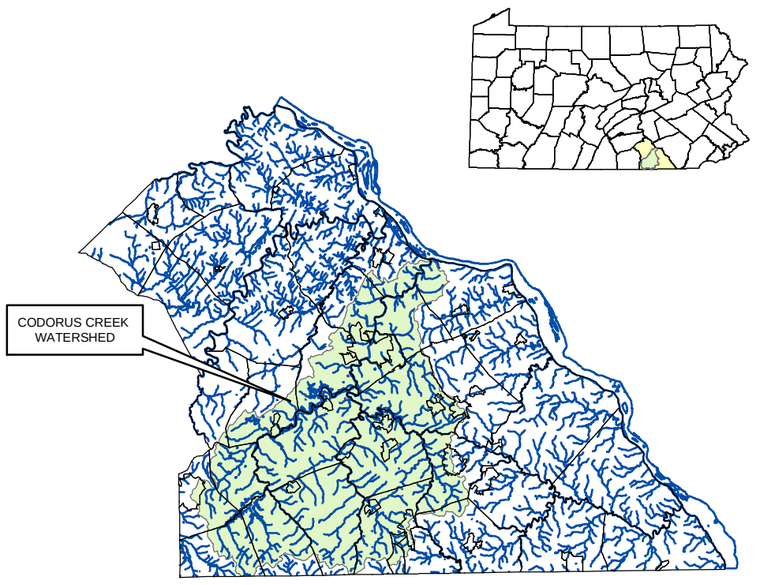
St. Marks Cave – Located in the City of York, the St. Marks Cave was discovered during the construction of St. Marks Lutheran Church. The cave was surveyed and sealed during the construction.

Taxville Quarry Caves – The Taxville Quarry Caves are located in West Manchester Township and consist of two caves. Both caves were formed of white and pink fine grain marble associated with the Kinzers Formation.

West York Cave – The West York Cave is located in West Manchester Township and was formed in dolomite and marble associated with the Kinzers Formation. The cave was closed to visitors when several teenagers had to be rescued after becoming lost inside the cave.

Willis Run Pit Cave – The Willis Run Pit Cave is located in West Manchester Township and was formed in marble associated with the Kinzers Formation. The main room of the cave is located beneath the stream and waters of the stream are believed to increase the temperature within the cave.

As with all unique features, those listed above should be appreciated and protected, but left undisturbed. The dominance of caves within the watershed gives clear insight into the underlying geology of the area. While caves are unique and amazing features of the landscape, they can be very dangerous and attempts to enter any and all caves should be avoided. Furthermore, attempts to impact caves in any way, through development or otherwise, should also be avoided. The descriptions provided above are for reference purposes only and are not meant to be a detailed analysis of each feature. Figure 2.7-1 shows the locations of unique features of the watershed.



Location Map

Unique Features List

1. Bootlegger Sink Cave
2. Colmoru Cave
3. East York Cave
4. Emigs Cave
5. Marble Cave
6. North York Cave
7. Pigeon Cave
8. Pulpit Rock
9. Railroad Rock House Cave
10. Sandy Cave
11. Seitzland Marsh
12. St. Marks Cave
13. Taxville Quarry Caves - Cave 2
14. Taxville Quarry Caves - Cave 1
15. West York Cave
16. Willis Run Pit Caves

Susquehanna River
CREEK
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
DEE RUN
MANCHESTER TWP
SPRINGETTSBURY TWP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
YORK CITY
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
SOUTH BRANCH CODORUS CREEK
YORK TWP
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
DALLASTOWN BORO
RED LION BORO
INNERS CREEK
RED LION BORO
WINDSOR TWP
JACKSON TWP
WBCC SPRING GROVE
JACOBUS BORO
INNERS
BARSHINGER CREEK
SPRING GROVE BORO
BUNCH CREEK
WINDSOR TWP
BUNCH CREEK
BARSHINGER
WINDSOR TWP
STOVERSTOWN BRANCH
PARADISE TWP
NORTH CODORUS TWP
OIL CREEK
FISHEL
LOGANVILLE BORO
SEVEN VALLEYS BORO
EBCC/DUTKARD VALLEY
EAST BRANCH CODORUS CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SEAKS RUN
PENN TWP
SOUTH BRANCH CODORUS CREEK
NORTH HOPEWELL TWP
HEIDELBERG TWP
SEAKS RUN
OIL CREEK
BRUSH RUN
CHERRY RUN
SPRINGFIELD TWP
CHERRY RUN
BRUSH RUN
PORTERS CREEK
JEFFERSON BORO
FOUST CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
"REHMEYER HOLLOW"
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
PENN TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
KREBS RUN
PIERCEVILLE RUN
CREEK
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
SHREWSBURY TWP
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK

Stream
Major Route
Susquehanna River
Trout Unlimited Study
Municipal Boundary
Subwatershed
Codorus Creek Watershed

Cave
Erosional Remnant
Marsh

4,000 2,000 0 4,000 8,000 Feet
1 inch equals 7,500 feet

FIGURE 2.7-1
UNIQUE FEATURES MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

SECTION 3.0 –Resources for the Entire Watershed

3.1 Land Resources

The Codorus Creek Watershed is vast and varied which affords its residents with numerous land resources ranging from forest products to minerals and soils. As noted in Section 2.0, approximately 23% (41,000 acres) of the watershed is forested. A majority of those forested areas are deciduous and hardwood species. Due to recent growth in new home construction, particularly in the southern portion of the watershed, the forested areas are getting smaller. One of the major problems with forests of the eastern United States is fragmentation. Fragmentation is the loss of connectivity of forested tracts which creates many smaller isolated patches of forest as opposed to large contiguous ones. This limits the type, abundance and diversity of plant and animal species that utilize forest ecosystems. Review of Figure 2.5-1 reveals extensive fragmentation of forested areas. Of particular importance again are those areas closest to the stream channels within the drainage corridor. Ideally, all streams should have a contiguous forested buffer not fragmented and connected to larger tracts of forested areas. This provides many benefits to the health of the environment. Certain species of birds and mammals live in older growth mature forests of substantial size. If forested areas are too small, they cannot survive. If larger forested areas are connected to each other by way of a forested stream corridor, these species of birds and mammals are able to travel greater distances to find food and shelter. Additionally, forested stream corridors have benefits to the streams themselves by maintaining bank stability, moderation of temperature, nutrient removal and erosion control (sediment from upslope areas).

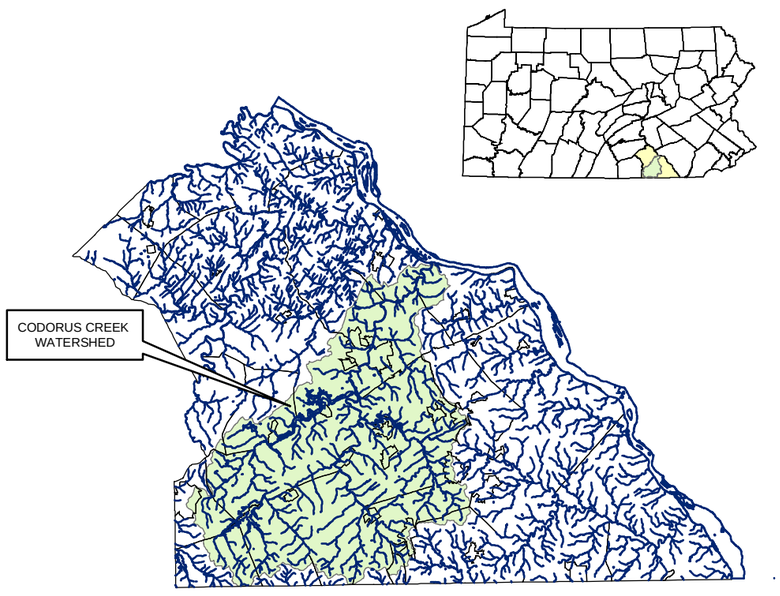
Agricultural and Natural Areas

The major land use and industry within the watershed is agricultural. This is due in large part to the high quality soils that are located in the watershed. The Commonwealth of Pennsylvania keeps records of those soils that are considered to be prime farmland soils or soils of statewide importance. These soils should be preserved. Figure 3.1-1 shows the locations and extent of prime farmland soils and soils of statewide importance.

In addition to prime farmland soils, there is an extensive network of farms that are preserved through various financial incentive programs such as agricultural security areas and easements (Figure 3.1-1).

Another program is the Conservation Reserve Enhancement Program (CREP). CREP is a new Federal/State partnership with a goal of enrolling 100,000 acres of highly erodible cropland and marginal pastureland in conservation cover plantings. There are approximately 37 CREP sites located within the watershed (Figure 3.1-1).

In addition to the farmlands and conservation areas, there are several “natural areas” located in the watershed. Natural areas are unique land areas that provide habitat for



Location Map

TYPE	ACRES
Agricultural Preservation Easement	3027
Agricultural Security Area	36884
Farm and Natural Lands Trust Easem	2198
Prime Farmland	55480
Total	**97,589**

Conservation Reserve Enhancement Program Site
Road
Stream
Major Route
Municipal Boundary
Trout Unlimited Study
Subwatershed
Codorus Creek Watershed
Subwatershed
Agricultural Security Area
Agricultural Preservation Easement
Farm and Natural Lands Trust Easement
Prime Farmland Soil

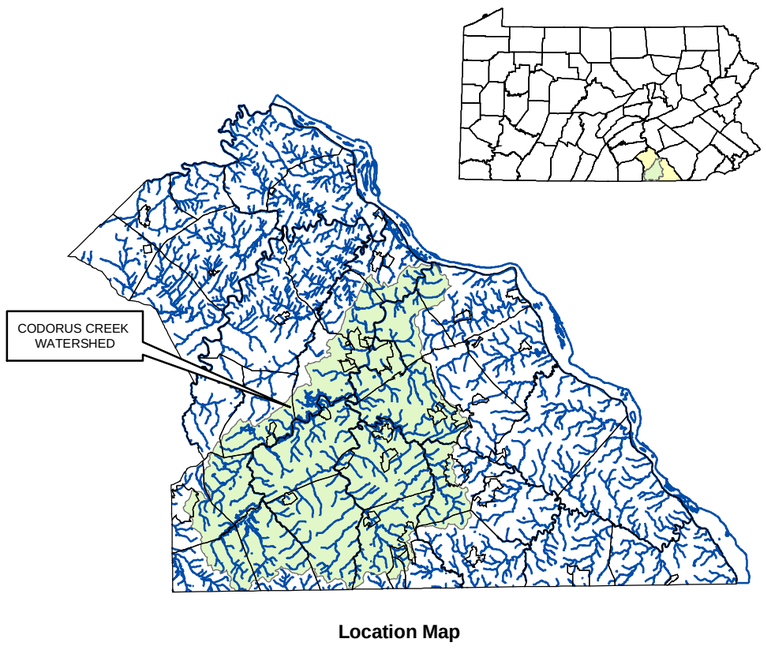
7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.1-1 AGRICULTURAL PRESERVATION MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.



Location Map

Susquehanna River
CREE
CODORUS CREEK NORTH
TROUT RUN NORTH
EAST MANCHESTER TWP
HELLAM TWP
DEE RUN
DEE RUN
I - 83 EXWY
CHURCH RD
MT ZION RD
MANCHESTER TWP
SPRINGETTSBURY TWP
RT 30 BYP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
RTE 30 BYP
I-83 EXWY
YORK CITY
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
WINDSOR TWP
EAST BERLIN RD
HOKES MILL RD
SPRING GARDEN TWP
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WINDSOR TWP
TRINITY RD
SOUTH BRANCH CODORUS CREEK
YORK TWP
QUEEN ST
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
RED LION BORO
INNERS CREEK
RED LION BORO
WINDSOR TWP
LAKE PAHAGACO
JACKSON TWP
JACOBUS BORO
INNERS
PLEASANT AVE
BARSHINGER CREEK
WINDSOR TWP
WBCC SPRING GROVE
BUNCH CREEK
SPRING GROVE BORO
BARSHINGER
WINDSOR TWP
BUNCH CREEK
PARADISE TWP
YORK RD
STOVERSTOWN BRANCH
NORTH CODORUS TWP
CHURCH ST
MILL RD
FISHEL CREEK
LOGANVILLE BORO
SEVEN VALLEYS BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
MAIN ST
OIL CREEK
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
HANOVER RD
SEAKS RUN
SEAKS RUN
NORTH HOPEWELL TWP
PENN TWP
SOUTH BRANCH CODORUS CREEK
HEIDELBERG TWP
BRUSH RUN
CHERRY RUN
SPRINGFIELD TWP
WINTERSTOWN RD
OIL CREEK
INTERSTATE 83
PORTERS CREEK
JEFFERSON BORO
BUFFALO RUN
BRUSH RUN
CHERRY RUN
FOUST CREEK
EBCC/BLYMIRE HOLLOW
HANOVER BORO
BUFFALO RUN
WEST BRANCH CODORUS CREEK
LAKE MARBURG
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
PENN TWP
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
PIERCEVILLE RUN
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
ROUTE 216
PIERCEVILLE RUN
RAILROAD BORO
FURNACE CREEK
LONG RUN
STICKS RD
CENTERVILLE CREEK
SHREWSBURY TWP
2ND ST
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
TELTZ RD

PNDI Sites
Road
CWF
HQCWF
WWF
Major Route
Stream
Wetlands
Natural Areas
Susquehanna_River
Subwatershed
Municipal Boundary
Trout Unlimited Study
Codorus Creek Watershed

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.1 - 2
NATURAL RESOURCE MAP

Codorus Creek Watershed Association

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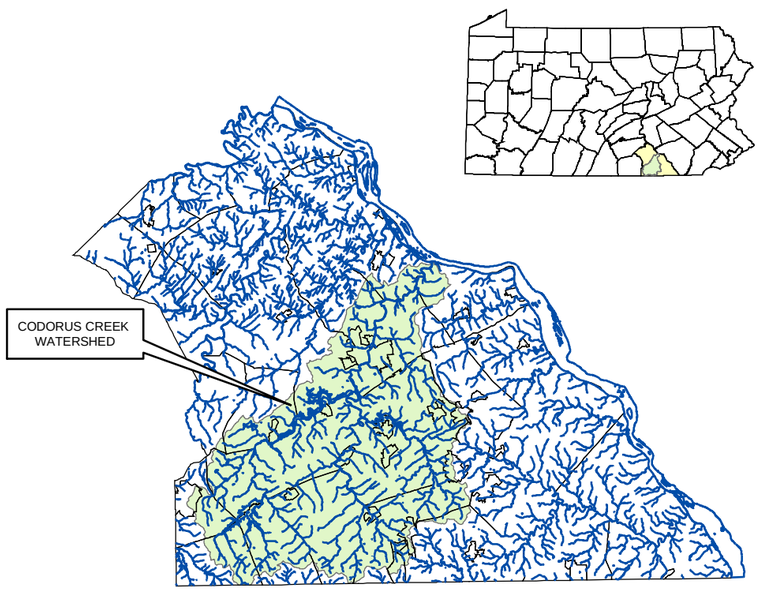


Location Map

CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System - Superfund Sites

PCS - Permit Compliance System - Companies which have been issued permits to discharge waste water into rivers

RCRA - Resource Conservation and Recovery Act Information - All generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities

TRIS - Toxic Release Inventory - Manufacturers of Toxic Chemicals are required to report the locations and quantities of chemicals stored on-site to government

CERCLIS (superfund)
PCS (wastewater)
RCRA (haz. waste)
TRIS (toxic mat.)
Major Route
CWF
HQCWF
WWF

Road
Stream
Municipal Boundary
Subwatershed
Trout Unlimited Study
Codorus Creek Watershed

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.1- 3
WATER QUALITY HAZARDS MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.

various species of plants and animals. The natural areas within the watershed are located on Figure 3.1-2.

Hazardous Waste/NPDES

Review of existing files and coordination with local and state agencies revealed 5 superfund sites located within the watershed (Figures 3.1-3). In addition to superfund sites, there are numerous discharges into the streams in the watershed. Table 3.1-1 lists the permitted National Pollution Discharge Elimination System (NPDES) outfalls and which sub-watershed they are located.

Table 3.1-1: NPDES-Permitted Discharges in Codorus Creek Watershed (7-H)

Name	Municipality	Permit No.	Receiving Stream	Stream Code	Discharge Type [1]
Asbury Pointe, Ltd.	East Manchester Twp	PA0084794	Codorus Creek	08032	PSTP
Brookhaven MHP	Hellam Twp	PA0036285	Dee Run	08040	PSTP
Colonial Crossings[2]	North Codorus Twp	PA0084611	UNT Codorus Creek	08200	PSTP
Countryside Mobile Homes[3]	North Codorus Twp	PA0081434	UNT South Br. Codorus Creek	08096	PSTP
Glatfelter Company	Spring Grove Borough	PA0043257	Codorus Creek	08032	IW/SW
Glen Rock WWTP	Shrewsbury Twp	PA0020818	South Br. Codorus Creek	08093	POTW
Graystone STP[4]	Codorus Twp	PA0088102	UNT South Br. Codorus Creek	08156	PSTP
Harley-Davidson MCO	Springettsbury Twp	PA0085677	Codorus Creek	08032	GW
Harley-Davidson MCO	Springettsbury Twp	PA0007765	UNT Codorus Creek	08059	IW/SW
Kinsley Concrete	Spring Garden Twp	PA0246565	UNT Codorus Creek	08079	IW/SW
Lehigh Portland Cement Co.	West Manchester Twp	PA0010375	UNT Codorus Creek	08085	IW/SW
New Freedom WWTP	Railroad Borough	PA0043257	South Br. Codorus Creek	08093	POTW
North Codorus Township WWTP[5]	North Codorus Twp	PA0247391	UNT Codorus Creek	08196	POTW
Osram Sylvania	West Manchester Twp	PA0009016	Willis Run	08077	IW/SW
Richard Kern	North Codorus Twp	PAG043521	UNT South Br. Codorus Creek	08152	SFTF
RecOil[6]	York City	PA0038288	Mill Creek	08060	IW/SW
Rutter's Dairy	Manchester Twp	PA0081418	UNT Codorus Creek	08055	IW/SW
Springettsbury Township WWTP	Springettsbury Twp	PA0026808	Codorus Creek	08032	POTW
Springfield Township WWTP	Springfield Twp	PA0086860	UNT East Br. Codorus Creek	08098	POTW
Thomas Hofler	Springfield Twp	PAG043686	UNT Foust Creek	08179	SFTF
United Defense, LP	West Manchester Twp	PA0009253	Codorus Creek	08032	GW, IW/SW, PSTP
York City WWTP	Manchester Twp	PA0026263	Codorus Creek	08032	POTW
York International	Spring Garden Twp	PA0008541	Codorus Creek	08032	IW/SW
York Water Company	Springfield Twp	PA0088790	East Br. Codorus Creek	08097	SWD

Notes:
1 PSTP = Private Sewage Treatment Plant, IW/SW = Industrial Waste/Storm Water, POTW = Publicly-Owned Treatment Works (Sewage), GW = Treated Groundwater, SWD = Surface Water Diversion (from Susquehanna River to Lake Redman for Water Supply), SFTF = Single Family Treatment Facility

2 Colonial Crossings is a residential subdivision under development; eventually flows from Colonial Crossings will be connected to the North Codorus Township WWTP

3 Countryside Mobile Homes will eventually be connected to the North Codorus Township WWTP.

4 The Graystone STP is under construction to serve two residential developments, but will eventually be connected to the Jefferson Borough WWTP being planned.

5 North Codorus Township is currently seeking permits from DEP to construct and operate a POTW (expected startup in 2005).

3.2 Water Resources

A. The Hydrologic Cycle

The hydrologic cycle is the process by which water is transported between the atmosphere and the earth's surface in a repeating cycle (atmosphere to earth and back to the atmosphere). Surface water, overland flow and groundwater are part of this cycle. Figure 3.2-1 below is a graphical representation of the hydrologic cycle over a watershed.

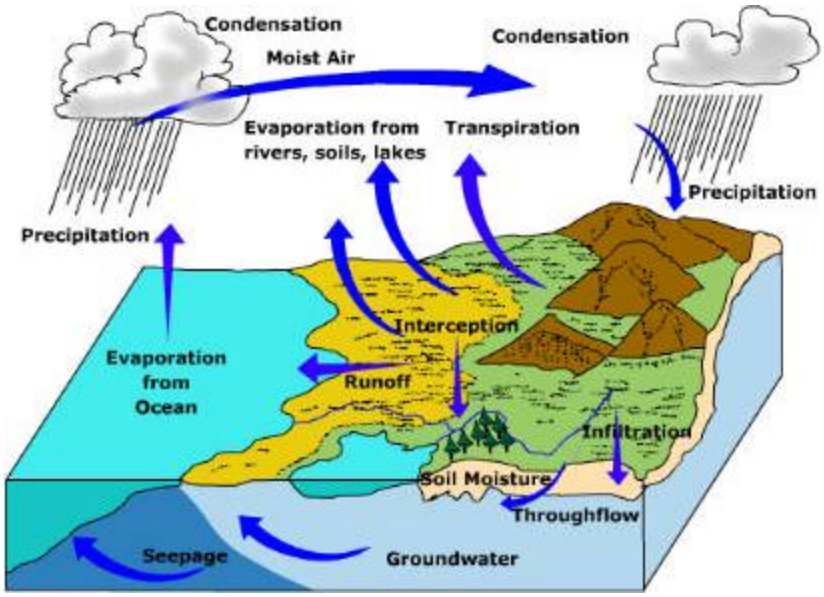


Figure 3.2-1: Hydrologic Cycle.
(Source: www.uwsp.edu)

B. Groundwater Resources

Groundwater exists below the surface in two zones, the moisture contained in the soils and the water table. This is the source for headwaters and replenishment of rivers and streams. It can also be a source of water for public and private wells, and intakes on streams for public water supply. Groundwater is replenished (groundwater recharge) from precipitation falling on the earths surface and infiltrating through the soils and fissures (cracks) in the bedrock and making it's way to aquifers or the water table.

Ground water that exists within the soils is in the unsaturated zone. Water in this zone is utilized by plants and transported back to the atmosphere through a process called transpiration. Transpiration is the evaporation of water through the leaves of a plant during photosynthesis. During photosynthesis the stomata (tiny pores under a leaf's surface) are open to allow the exchange of CO_2 and O_2. As a result of the stomata being opened for photosynthesis, the air surrounding the leaf, when relative humidity is below 100%, will evaporate water from the stomata. To replenish the water lost during photosynthesis, plants must "pull" water from the soil through their roots. When there

is not enough water in the soil to replace that lost during photosynthesis, the cells of the leaf shrink and the plant appears to be wilted.

The second zone is the water table, or saturated zone, located within an aquifer. An aquifer is a geologic formation within the saturated zone which contains enough permeability (fissures/cracks/caverns) to store and transport usable amounts of water. Aquifers are of two types, consolidated and unconsolidated. Consolidated aquifers are formed of solid rock which allow for the flow of water through cracks, fissures, and channels known as secondary porosity. Unconsolidated aquifers are made of un-cemented layers of silt, sand, and gravel that allow for the movement of water between individual particles, known as primary porosity. Confined aquifers have layers of materials within the saturated zone that restrict the movement of water in and out of that zone, whereas unconfined aquifers have no restrictions on the movement of water into the saturated zone.

According to the United States Geological Survey there are three types of aquifers found within the watershed and study area. General descriptions of those aquifers are as follows:

Early Mesozoic Basin Aquifers: This aquifer is formed of sandstone that has been compacted and cemented together, along with areas of shale and diabase. Due to the amount of compaction and cementation much of the area relies on secondary porosity with some occurrence of primary porosity. Groundwater yields within the sandstone areas average about 80 gallons per minute (gpm) and those located in diabase areas average only up to 5 gpm. Within this aquifer, wells deeper than 200 feet seem to produce higher average yields, but fail to maintain those yields over a period of years. This type of aquifer comprises most of northern York County and as a result there is only a small part of the watershed located in this aquifer (YCPC, Water Resources Plan 2003).

Piedmont Carbonate Rock Aquifers: This aquifer consists mainly of limestone and dolomite. Rocks in this aquifer are soluble and form what are known as solution cavities filled with water depending on the depth of the groundwater. The flow of water is mainly by secondary porosity and the ability of these rocks to store water depends on the size and number of the cavities and their interconnections. Yields in this aquifer vary depending on the number of solution cavities, but can be as much as several thousand gallons per minute possible (YCPC, Water Resources Plan 2003).

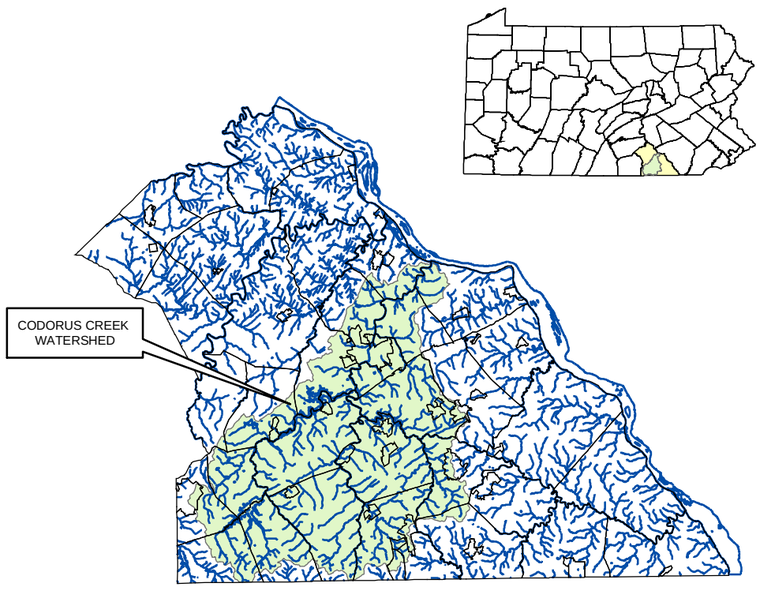
Crystalline-Rock Aquifers: Crystalline-Rock Aquifers make up the largest part of the watershed and study area. Crystalline rock materials are not permeable and water storage mainly takes place within unconsolidated material above the rock and through small fractures in the rock by secondary porosity. Since these aquifers are composed of very small fractures, storage capacity and yields are relatively low, generally yielding 5 to 25 gallons per minute (YCPC, Water Resources Plan 2003).

It is important to understand what types of aquifers makeup a watershed. The recharge of aquifers affects the temperature, water quality, and flow of streams, and the available water for public and private use. Allowing water to get to the aquifer to recharge it is critical. Preserving those areas that are well drained and allow water to infiltrate the soils helps to recharge the aquifers. For instance, it is important to know which soils that lie above the *Crystalline-Rock Aquifer* are suitable for infiltration practices. In other words, which soils are well drained. We now know that the *Crystalline-Rock Aquifer* has a very slow permeability and a low yield. As a result, allowing as much water to reach the aquifer as possible is extremely important for recharge. If water is not allowed to permeate the soils, either from impervious surfaces or flushing our stormwater down our streams, then the slow permeability of the *Crystalline-Rock Aquifer* is compounded by not allowing enough water to reach it. What little water does reach the aquifer will take a long time to recharge it. Therefore, protection and use of permeable soils for infiltration is necessary.

C. Surface Water Resources - Lakes and Reservoirs

Lakes and Reservoirs supply water to residents and industry within and outside of the watershed while at the same time providing opportunities for recreation and aesthetics. Surface water resources (major lakes) are limited to two water supply reservoirs, Lake Redman and Lake Williams, in the study area. A third major lake, Lake Marburg, which is in the watershed but outside the study area, is located in the southwestern portion of the watershed and is the largest impoundment within the watershed.

Lake Redman lies just upstream of Lake Williams on the East Branch of the Codorus Creek. Together they impound approximately 125 million gallons. Due to an increase in demand and to further insure against future droughts, the York Water Company, owner of the two lakes, recently began the construction of a water supply pipeline from the Susquehanna River to Lake Redman. Initially, the section of Codorus Creek, which flows through Lake Redman and Lake Williams was classified as CWF. The Susquehanna River, however, is classified as a WWF. In order to obtain the proper permits from Federal and State agencies for the installation of the pipeline and subsequent discharge of WWF water into a CWF system, the York Water Company was required to petition the Commonwealth of Pennsylvania to re-classify the Codorus Creek within the two lakes. They were successful with their petition and as a result, the lakes are now classified as WWF.



Location Map

Susquehanna River

CREEK
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
DEE RUN
I - 83 EXWY
CHURCH RD
MANCHESTER TWP
MT ZION RD
SPRINGETTSBURY TWP
RT 30 BYP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
I-83 EXWY
YORK CITY
RTE 30 BYP
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK NORTH
MILL CREEK
WINDSOR TWP
EAST BERLIN RD
HOKES MILL RD
SPRING GARDEN TWP
WEST MANCHESTER TWP
CO INDIAN ROCK DAM
WINDSOR TWP
TRINITY RD
SOUTH BRANCH CODORUS CREEK
YORK TWP
QUEEN ST
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC/INDIAN ROCK DAM
DALLASTOWN BORO
RED LION BORO
LAKE WILLIAMS
LAKE REDMAN
INNERS CREEK
LAKE MAHAGACO
JACKSON TWP
WBCC/SPRING GROVE
SPRING GROVE BORO
JACOBUS BORO
INNERS
PLEASANT AVE
BARSHINGER CREEK
RED LION BORO
WINDSOR TWP
WINDSOR TWP
BUNCH CREEK
BARSHINGER
BUNCH CREEK
PARADISE TWP
STOVERSTOWN BRANCH
NORTH CODORUS TWP
YORK RD
OIL CREEK
CHURCH ST
MILL RD
FISHEL CREEK
LOGANVILLE BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
MAIN ST
SEVEN VALLEYS BORO
FISHEL CREEK
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SEAKS RUN
SOUTH BRANCH CODORUS CREEK
HANOVER RD
PENN TWP
SEAKS RUN
NORTH HOPEWELL TWP
WINTERSTOWN RD
HEIDELBERG TWP
OIL CREEK
SPRINGFIELD TWP
CHERRY RUN
BRUSH RUN
BUFFALO RUN
OIL CREEK
FORTENEY CREEK
JEFFERSON BORO
BRUSH RUN
CHERRY RUN
INTERSTATE 83
HANOVER BORO
FOUST CREEK
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
LAKEMANBURG
JEFFERSON RD
KREBS RUN
CREEK
GLEN ROCK BORO
PENN TWP
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
PIERCEVILLE RUN
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
ROUTE 216
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
SHREWSBURY TWP
FURNACE CREEK
LONG RUN
STICKS RD
CENTERVILLE CREEK
2ND ST
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
TELTZ RD

Stream
Road
Major Route
Municipal Boundary
Subwatershed
Trout Unlimited Study
Codorus Creek Watershed

Aquifer
Crystalline-Rock aquifers
Early Mesozoic basin aquifers
Piedmont and Blue Ridge carbonate-rock aquifers

N

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

CODORUS CREEK RCP

FIGURE 3.2-2
AQUIFERS MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

D. Surface Water Resources – Streams

II. Sub-Watershed Stream Classification

The Codorus Creek Watershed is comprised of four main branches, or forks: the Mainstem which begins below Indian Rock Dam, the West Branch which begins in Southwestern York County, the South Branch which begins in the southern end of the watershed near the towns of Railroad Borough and New Freedom Borough, and the East Branch which begins in the southeastern part of the watershed in Hopewell Township around the area of Spring Valley County Park. The study area for this RCP comprises all of the East, South and Main branches, as well as part of the West Branch from Spring Grove Borough north. There are approximately 28 sub-watersheds which comprise the study area watershed (Figure 1.1-1).

The Pennsylvania Department of Environmental Protection (PADEP), Bureau of Watershed Conservation, has listed several classifications for the streams in Pennsylvania. These classifications are listed by watershed in Title 25 of the Pennsylvania Code, Chapter 93 – Water Quality Standards, and represent the characteristics of the streams which are to be protected. Some of the standards found within the sub-watersheds include the following, as defined in Title 25 of the Pennsylvania Code, Chapter 93 (YCPC, Water Resources Plan 2003):

CWF (Cold Water Fishes) – Maintenance and/or propagation of fish species including the family *Salmonidae* and additional flora and fauna which are indigenous to a cold water habitat.

WWF (Warm Water Fishes) – Maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.

HQ-CWF (High Quality-Cold Water Fishes) – High quality commands special protection as noted in Section 93.4c of the Pennsylvania Code, Title 25.

The sub-watersheds and their Chapter 93 Classification are listed in Table 3.2-1 below. The subwatersheds are identified on Figure 3.2-2.

Table 3.2-1: Study Area Sub-Watersheds and Chapter 93 Designations

Sub-Watershed	Classification
1-Barshinger Creek	CWF
2-Brush Run	WWF
3-Buffalo Run	WWF
4-Centerville Creek	WWF
5-Cherry Run	WWF
6- Codorus Creek – Indian Rock Dam	WWF
7- Codorus Creek – North	WWF
8- Codorus Creek – York	WWF
9- Dee Run	WWF
10-East Branch Codorus Creek – Blymire Hollow	HQ CWF
11-East Branch Codorus Creek – Dunkard Valley	CWF
12- East Branch Codorus Creek	WWF/CWF/ HQ CWF
13-Fishel Creek	WWF
14-Foust Creek	WWF
15-Glen Rock Valley	CWF
16-Inners Creek	CWF
17- Krebs Run	WWF
18-Mill Creek	WWF
19-Pierceville Run	WWF
20- Rehmeyer's Hollow	HQ CWF
21-Seaks Run	HQ CWF
22-South Branch Codorus Creek	WWF
23-Stoverstown Branch	WWF
24-Trout Run - north	HQ CWF (source to river mile 0.3) CWF (rive mile 0.3 to mouth)
25-Trout Run - south	WWF
26- West Branch Codorus Creek- Indian Rock Dam	WWF
27-West Branch Codorus Creek - Spring Grove	WWF
28-Willis Run	WWF

The West Branch of the Codorus Creek Watershed below Lake Marburg (Codorus State Park) is a small, tailwater trout stream located in the southwestern part of York County and the entire Codorus Creek Watershed. In its early days as a trout fishery, it was managed as a stocked, catch-and-release fishery with special tackle and harvest regulations. Eventually, the wild trout population grew to a point where it was reclassified as a Class "A" Wild Trout Stream by the Pennsylvania Fish and Boat

Commission (PAFBC). A substantial portion of the stream was included in their Selective Harvest Program. Currently, the stream far exceeds the requirements to maintain its classification and contains a remarkable number of fish for its size (USACOE 2004). For a detailed analysis of the West Branch of Codorus Creek upstream of Spring Grove, please contact the York County Planning Commission and reference the Upper Codorus Creek Watershed Conservation Plan (Trout Unlimited 2002).

The entire Codorus Creek Watershed includes approximately 500 miles of stream which include all named streams and unnamed tributaries. This figure is an estimate and is based on existing and developed mapping and, as a result, may differ from other figures in other reports. Within the study area, there are approximately 340 miles of stream. Portions of the watershed are relatively stable, meaning the meander, pattern, and profile of streams is in balance. However, a significant portion of the watershed has experienced, and continues to experience, high levels of streambank and bed erosion. This is most likely the result of high growth, poor stormwater management techniques and loss of a riparian zone.

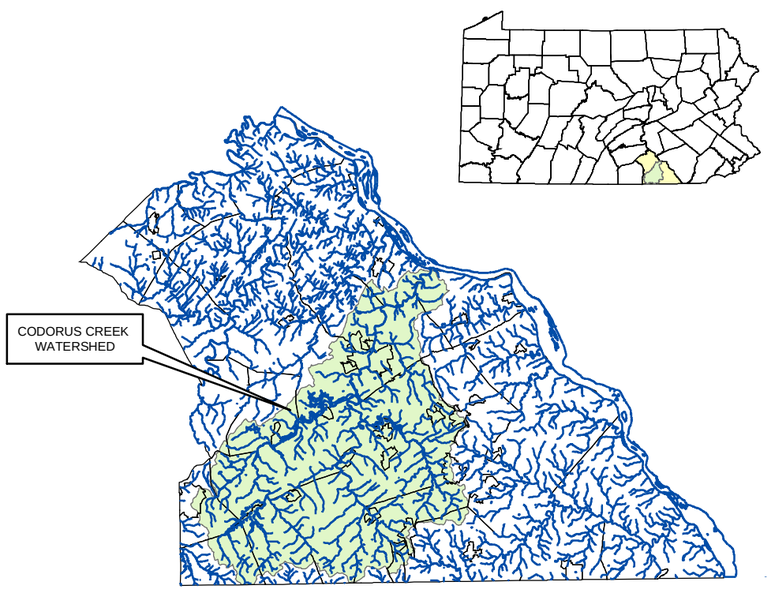
II. Stream Assessment and Water Quality

The entire watershed has been assessed to determine stream condition and stability. All streams and tributaries were assessed, classified as to stream type (Rosgen), and mapped. Regional hydraulic curves were developed during the assessments. The curves were then used to determine stream types and will serve as a tool for future restoration efforts. Bank erosion rates were monitored throughout the watershed which reveal bank soil loss and channel migration (Skelly & Loy and ARRC, 2002).

The watershed has been assessed in three separate efforts focusing on the East Branch Codorus Creek (Skelly& Loy and Aquatic Resource Restoration Company (ARRC), 2002), South Branch Codorus Creek (Skelly and Loy 2001), and West Branch/Main Stem Codorus Creek (ARRC 2003). The corresponding reports to these assessments describe in detail background information, existing conditions of the streams and the results or conclusions of each assessment. For copies of these reports, please contact the York County Planning Commission at 717-771-9870.

The assessments ranked the streams depending on the severity of the impairment. A stream with a priority 1 rating was considered severely impaired and a stream with a Priority 2 rating was considered to be moderately impaired. According to the assessments, there are approximately 66 miles of Priority 1 streams and approximately 230 miles of Priority 2 streams within the watershed (Figure 3.2-3). The Priority 1 and Priority 2 reaches range in length from as short as 50-100 feet to as much as 1000+ feet.

According to the geo-morphological assessments (Skelly & Loy and Aquatic Resource Restoration Company) the primary sources of impairment in the watershed appear to be stream bank erosion, sedimentation, lack of riparian woody vegetation, unrestricted livestock access to streams, and lack of regional stormwater management. Figure 3.2-2 shows the Priority 1 and Priority 2 streams within the entire watershed and the study area.



Location Map

Susquehanna River
CODORUS CREEK NORTH
TROUT RUN NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
I-83 EXWY
CHURCH RD
MT ZION RD
MANCHESTER TWP
SPRINGETTSBURY TWP
RT 30 BYP
NORTH YORK BORO
SPRING GARDEN TWP
WILLIS RUN
CARLISLE RD
RTE 30 BYP
I-83 EXWY
YORK CITY
WINDSOR TWP
WINDSOR TWP
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
WINDSOR TWP
EAST BERLIN RD
HOKES MILL RD
SPRING GARDEN TWP
BUSINESS ROUTE 83 EXWY
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WINDSOR TWP
TRINITY RD
SOUTH BRANCH CODORUS CREEK
YORK TWP
QUEEN ST
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
RED LION BORO
INNERS CREEK
LAKE PAHAGACO
JACKSON TWP
WBCC SPRING GROVE
BUNCH CREEK
SPRING GROVE BORO
JACOBUS BORO
PLEASANT AVE
BARSHINGER CREEK
RED LION BORO
WINDSOR TWP
WINDSOR TWP
WINDSOR TWP
PARADISE TWP
YORK RD
STOVERSTOWN BRANCH
NORTH CODORUS TWP
CHURCH ST
MILL RD
LOGANVILLE BORO
SEVEN VALLEYS BORO
EBCC/DUNKARD VALLEY
EAST BRANCH CODORUS CREEK
MAIN ST
FISHEL CREEK
WEST BRANCH CODORUS CREEK
GLEN ROCK RD
WINTERSTOWN BORO
SEAKS RUN RD
HANOVER RD
PENN TWP
SOUTH BRANCH CODORUS CREEK
NORTH HOPEWELL TWP
HEIDELBERG TWP
SEAKS RUN
OIL CREEK
SPRINGFIELD TWP
WINTERSTOWN RD
INTERSTATE 83
PORTERS CREEK
JEFFERSON BORO
BRUSH RUN
CHERRY RUN
SEVEN VALLEYS RD
FOUST CREEK
HANOVER BORO
BUFFALO RUN
WEST BRANCH CODORUS CREEK
EBCC/BLYMIRE HOLLOW
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
LAKE MARBURG
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
PENN TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
ROUTE 216
MANHEIM TWP
PIERCEVILLE RUN
FURNACE CREEK
LONG RUN
RAILROAD BORO
SHREWSBURY TWP
CENTERVILLE CREEK
WEST MANHEIM TWP
STICKS RD
2ND ST
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
STELTZ RD

Road
Stream
Major Route
Wetland
Trout Unlimited Study
Municipal Boundary
Codorus Creek Watershed
Floodplain
Subwatershed
Poorly drained soil

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.2-3
WATER RESOURCES MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.

In addition to assessing the watershed on a geomorphological basis, there have been numerous water quality studies conducted by schools, universities/colleges, public resource agencies, local non-profit groups, and industry. These additional studies have collected data on such things as aquatic benthic macroinvertebrate communities, fin fish communities, and other chemical and biological parameters.

Aquatic benthic macroinvertebrates are aquatic insects that live on the bottom of streams and lakes for most of their life cycle. Certain types of macroinvertebrates are tolerant of lower water quality, whereas other types are not tolerant. As a result, it is possible to make a qualitative decision regarding water quality by identifying the species of macroinvertebrates in a given stream or waterway. Benthic macroinvertebrates are good indicators of watershed health because they:

- live in the water for all or most of their lives
- stay in areas suitable for their survival
- are easy to collect
- differ in their tolerance of amount and types of pollution
- are easy to identify in a laboratory
- often live for more than one year
- have limited mobility
- are integrators of environmental condition

In March of 2003, the Corps collected all biological data that had been surveyed and reported (1991-2001) for the Codorus Creek Watershed. The reports were from state (PADEP, PFBC) and federal (USGS) agencies as well as consulting firms (Tetra Tech) and non-government organizations such as the National Council for Air and Stream Improvement (NCASI). Most of the reports were not in electronic format at the time, so efforts were made to incorporate the information into a usable electronic database. The development of a single database, using Microsoft Access, was finalized in early summer 2003. The database consists of site IDs and locations, agency source, collection methods, scientific names, taxonomic groupings, metric calculations, and abundance values for each collection. The results and conclusions of the existing studies are provided below. For a more detailed description of the previous studies, please see the U.S. ACOE Interim Report, 2004. Figure 2.3-A shows the locations of the existing study/survey locations.

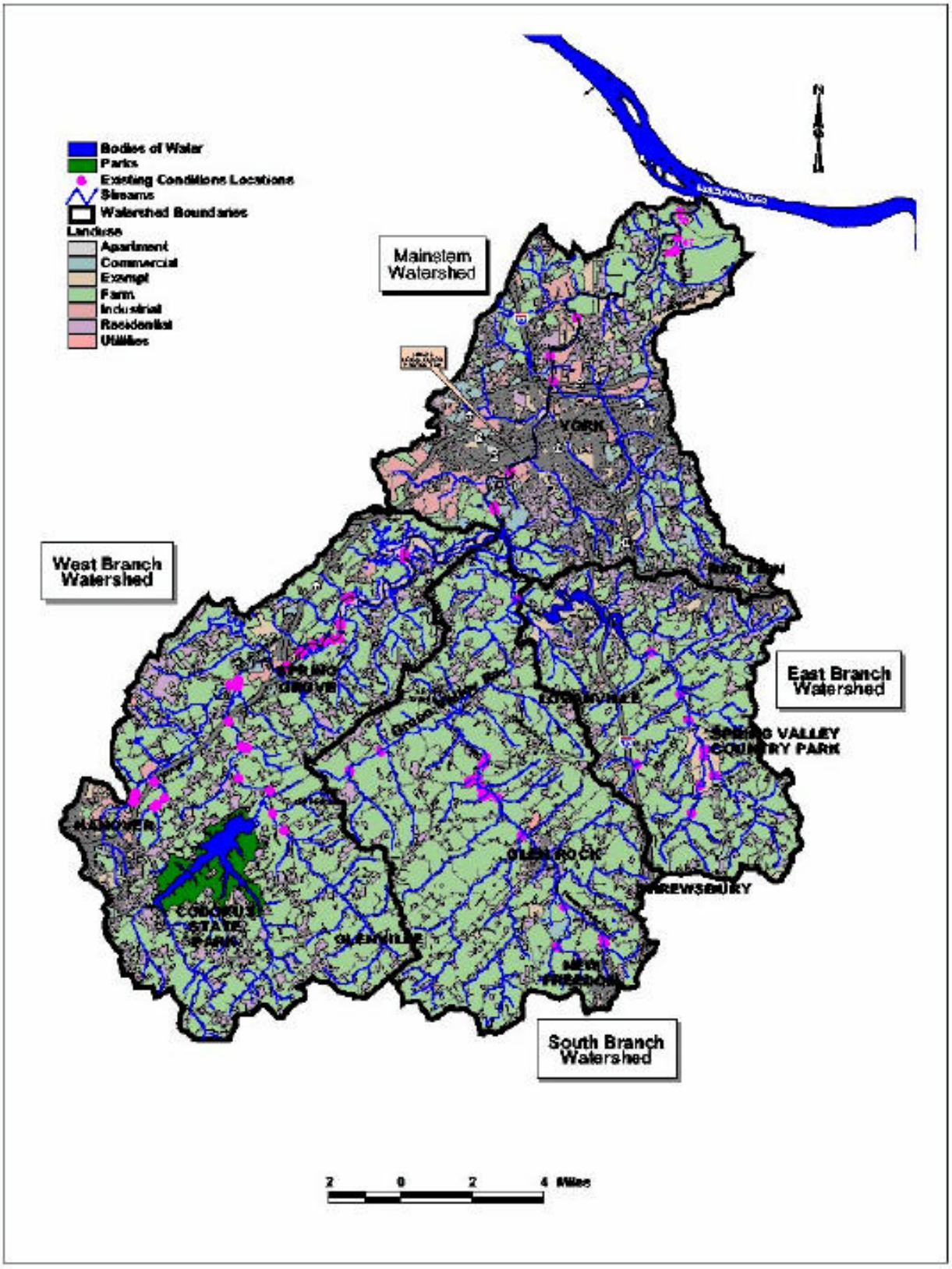


Figure 3.2-4A: Existing sampling/surveying locations for biological water quality data (1991-2001).

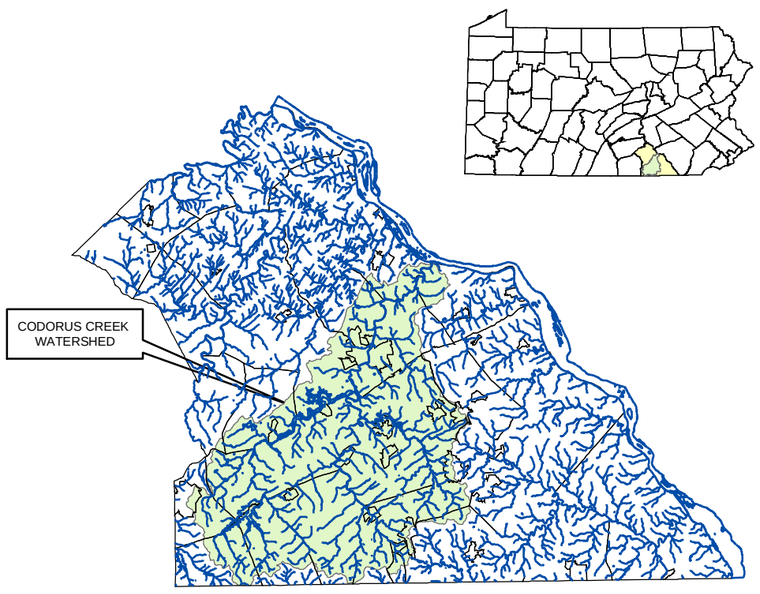
The Index of Biotic Integrity (IBI), as developed and detailed by Karr (1981) and Karr et al. (1986), is a broadly based community assessment index firmly grounded in fisheries ecology. The index was originally developed for low-gradient streams in the Midwestern United States (Karr 1981), but has since been modified and adapted for other regions throughout the US. IBI scores, which are derived from various biological metrics, representing zoogeographic, ecosystem, community, and population aspects of fisheries biology, are interpreted into narrative descriptions (Table 3.2-2) for interpretation of fish and benthic community attributes.

Table 3.2-2: Narrative descriptions of stream biological integrity associated with each of the IBI categories (Roth et al. 2000).

IBI Score	Integrity Rating	Interpretation and Community Attributes
WW: 4.0-5.0 CW: 80-60	Good	Comparable to reference streams; considered to be minimally impacted. On average, biological metrics fall within the upper 50% of reference site conditions.
WW: 3.0-3.9 CW: 50-30	Fair	Comparable to reference conditions, but some aspects of biological integrity may not resemble the quality of these minimally impacted streams. On average, biological metrics are within the lower portion of the range of reference sites (10-50th percentile).
WW: 2.0-2.9 CW: 20-10	Poor	Significant deviation from reference conditions, with many aspects of biological integrity not resembling the qualities of minimally impacted streams, indicating some degradations. On average, biological metrics fall below the 10th percentile of reference site values.
WW: 1.0-1.9 CW: 0	Very Poor	Strong deviation from reference conditions, with most aspects of biological integrity not resembling the qualities of minimally impacted streams, indicating severe degradation. On average, biological metrics fall below the 10th percentile of reference site values; most or all metrics are below this level.
WW: warmwater fish and benthic community IBI scores. CW: coldwater fish community IBI scores.		

Biological metrics were used to quantify the relative condition of benthic communities from the data provided in the existing conditions reports. Data were summarized by watershed branch (Mainstem, East, South, West) and calculated for an average Index of Biotic Integrity (IBI). Results indicate that benthic conditions range from very poor (West Branch) to poor (all other branches). Additional calculations using a more sensitive metric (EPT) indicate that benthic communities are in fair condition (EPT: 3.1-3.4) for the Mainstem, East, and South Branches; however the West Branch conditions are considered very poor (EPT: 1.5).

Several reaches within the watershed are considered by the State of Pennsylvania as a coldwater fishery. Therefore, biological data for warmwater and coldwater fish



Location Map

Monitoring Points
- Fair
- Poor
- Very Poor
- 2003 Field Survey
- WAY Monitoring Points
- Stream
- Road
- Major Route

Priority Streams
- Priority 1
- Priority 2
- Subwatershed
- Municipal Boundary
- Codorus Creek Watershed
- Trout Unlimited Study

0 3,750 7,500 15,000 Feet

1 inch equals 7,500 feet

FIGURE 3.2 - 4
WATER QUALITY MAP

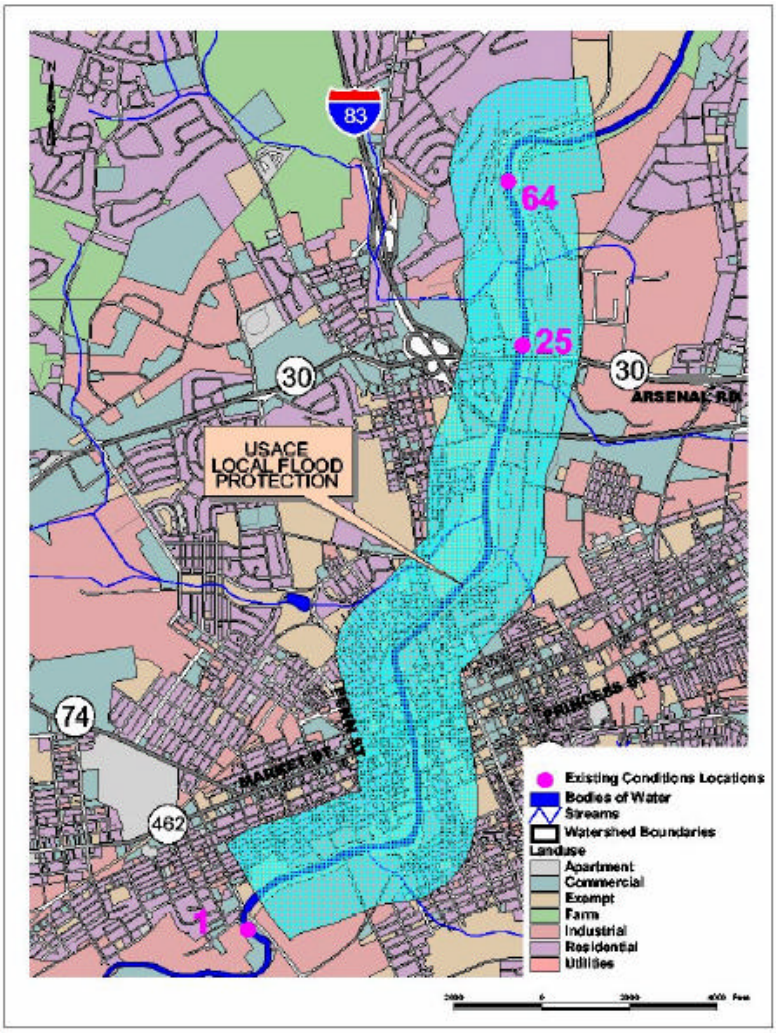
Codorus Creek Watershed Association

BUCHART HORN, INC.

communities were summarized separately by watershed branch (Mainstem/West East, South,) and calculated for an average Index of Biotic Integrity (IBI). Results indicate that coldwater fish conditions were considered poor (IBI: 21-28) in the mainstem and East Branch. Warmwater fish conditions ranged from poor to fair in all branches.

Within the flood control facility (Figure 3.2-5) in the City of York, biological metrics were used to quantify the relative condition of benthic communities from the data provided in the existing conditions reports. Data were summarized by site and calculated for an Index of Biotic Integrity (IBI). The Richland Ave Site ID was the only station that included benthic sampling from the collected database (1991-2001).Calculated IBI values for benthic communities identified for this site indicated that these communities are in fair condition (IBI: 3.2). Additional calculations using a more sensitive metric (EPT) indicate that benthic communities are in relatively good condition(IBI: 5). Site IDs, Arsenal Bridge and Pleasureville, were the only stations that included fish community sampling from the collected database (1991-2001). Calculated IBI values for warmwater fish communities identified for this site indicated that these communities are in good condition (IBI: 4.0).

Figure 3.2-5: Existing survey location within the local flood control facility in the City of York



The data compiled and collected above from existing studies does have gaps in data and sampling sites. There are/were approximately 68 sampling sites that lead to the conclusions described above. However, to fill in the gaps in data, the USACOE surveyed the Codorus Creek Watershed for biological communities and available habitat in the fall of 2003.

A total of 22 sites ((Figure 3.2-6) includes two reference sites) within seven areas were selected for survey of fish and benthos in November 2003 using U.S. EPA rapid bioassessment protocol. A habitat assessment was also conducted at each site using US EPA protocols (Barbour et al. 1999). Once on site, stations were further evaluated for stream access and sampling capability. Consequently, eight sites (1-1, 1-2,3-2, 4B-2, 5-1, 5-3, 6-3, and 7-1) were deleted from the field survey. Areas 1 and 4 are located in the West Branch, Areas 2 and 3 are located in the South Branch, and Areas 5 and 6 are located in the East Branch.

A total of 102 taxa of benthic macroinvertebrates were collected during the November 2003 survey of 14 stations within the Codorus Creek Watershed; the two additional reference stations yielded 46 total taxa. The number of taxa or taxa richness includes species, genera, and taxonomic groups (different taxa but unable to identify further) that are unique. Taxonomic groups that consisted of unidentified early life stage individuals were not counted as unique taxa. The major taxonomic group among all stations (not including reference stations) was Diptera (flies ie: black flies) with 28 taxa. Taxa richness of the sensitive EPT taxa from 14 survey stations was as follows: Ephemeroptera (mayflies) with 15 taxa, Plectoptera (stoneflies) with 6 taxa, and Trichoptera (caddis flies) with 20 taxa. Other well-represented taxonomic groups were Coleoptera (beetles) with 11 taxa and Odonata (dragonflies and damselflies) with 4 taxa. Benthic taxa from reference stations indicated that Diptera and Trichoptera were the two major taxonomic orders that comprised the samples. Taxa richness of the sensitive EPT taxa from the reference stations was as follows: Ephemeroptera (mayflies) with 9 taxa, Plectoptera (stoneflies) with 5 taxa, and Trichoptera (caddis flies) with 10 taxa.

The November 2003 survey of 16 stations resulted in a collection of over 1,400 fish distributed among 23 species. The catch among all sites was composed of six sport fish and 17 non-sport fish species. Dace (black nose, long nose, and rosy side) dominated the catch, with approximately 40% of the total abundance from all sites (including reference). Creek chub was the second most dominant species, comprising approximately 20% of the total catch. Catch results for survey stations indicated that species richness ranged from one species at Site 3-1 to 16 species at Site 5-2. Creek chub and black nose dace were the only two species collected at all stations. Fish species collected from two reference stations resulted in relatively fewer species (five total species) than survey stations, but included some sensitive indicator species (brook trout and brown trout) in the collection.

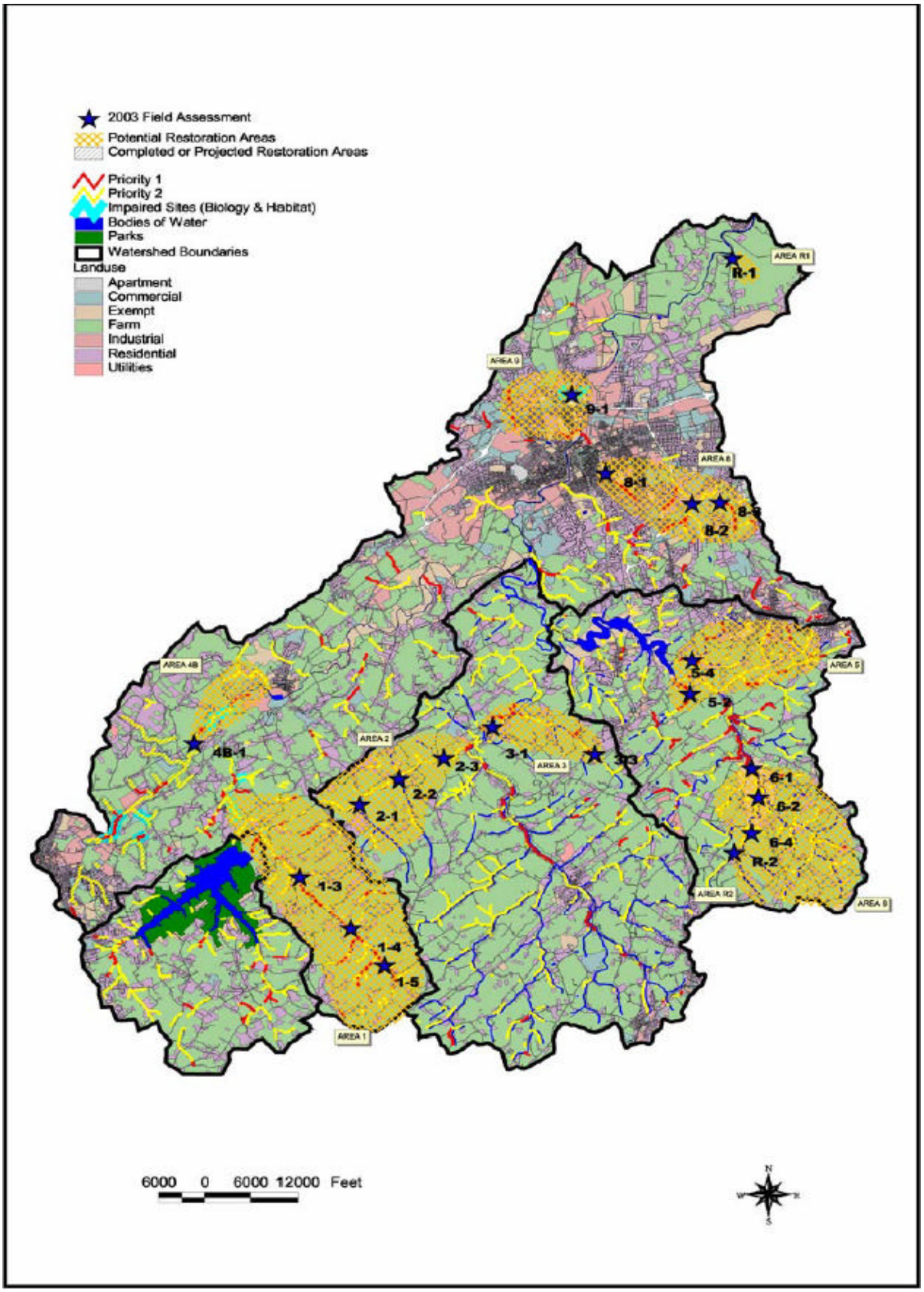


Figure 3.2-6: USACOE supplemental sampling locations.

Benthic communities identified throughout the watershed are in relatively fair to good condition. However, increases in sensitive EPT taxa could be obtained if in stream habitat (e.g. increases in riffle habitat, addition of large woody debris) and water quality were improved. While water quality parameters (conductance, dissolved oxygen, etc.) were not measured in this study, visual assessments (e.g. embeddedness, epifaunal substrate) indicate that water quality may be impaired and consequently not supporting the survival and growth of sensitive invertebrates and vertebrates. In general, warm water and coldwater fish communities throughout the watershed are in poor condition. Habitat results from the November survey indicate that reductions in abundance and diversity of biological communities are likely due to loss of habitat from eroding banks. Additionally, most of the sites had little to no riparian buffer between adjacent land use and the streambed, which contributes to excessive stormwater runoff during high flow events. Stormwater often contains levels of pollutants (e.g. oil and grease, pesticides, nutrients) that can also adversely impact aquatic communities in the short- and long-term. improvement. practices.

Within the local flood control facility in the City of York (Figure 3.2-7), benthic communities identified from tributaries entering the LFP could improve if in-stream habitat (e.g. increases in riffle habitat, addition of large woody debris) and water quality were improved. Fish community indices at these same stations reveal that conditions in these urban tributaries are not supporting growth and reproduction of sensitive vertebrates and are in need of restoration. Habitat assessments conducted during this survey indicated that bank stability and riparian zone widths were in poor to marginal condition, and increases in embeddedness and sediment deposition at some sites (8-1 and 8-3) indicate that water quality may be a contributor to biological community impacts. Habitat results from the November survey indicate that reductions in abundance and diversity of biological communities are likely due to loss of habitat from eroding banks. Urban landscapes often put added stress on biological communities due to the frequency and magnitude of storm events that transfer contaminants (e.g. oil and grease, sediment, PAHs, metals, petroleum, etc.) more quickly to receiving streams due to an increase in impervious surfaces. Without the advantage of riparian buffers to mitigate the effects of such contaminants on aquatic (and terrestrial) organisms, adverse effects can be measured in the short- and long-term.

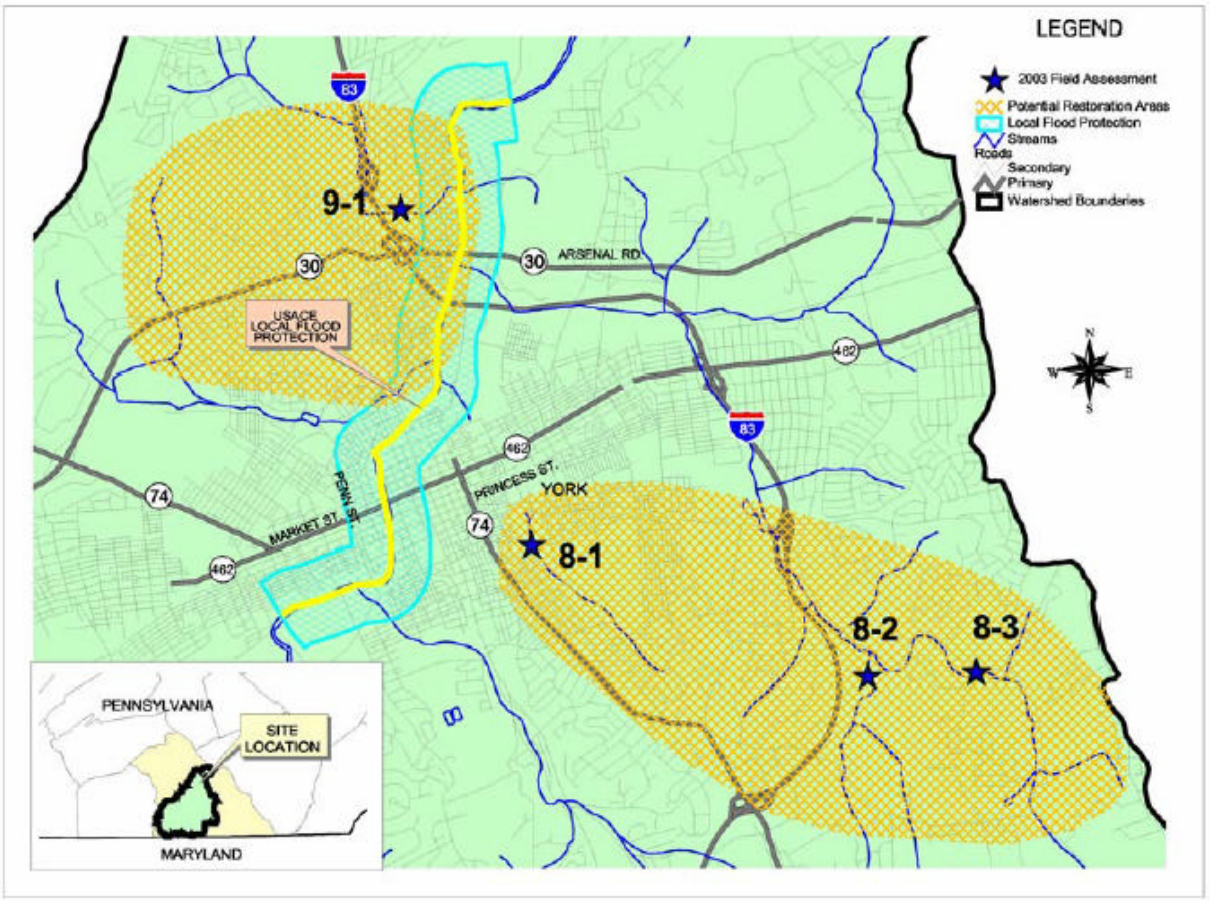


Figure 3.2-7: USACOE survey sample location within the local flood control facility in the City of York.

III. Total Maximum Daily Load/303(d) List

Under Section 303(d) of the Federal Clean Water Act, Pennsylvania is required to maintain a list of "impaired waters" that do not meet water quality standards required to protect aquatic life, human health/fish consumption, and/or recreational uses. In order for a waterbody to be included on the list, it must be determined that required technology-based treatment measures for pollution sources (point and non-point) will not be adequate to attain/maintain water quality standards. Once the waterbody is listed on the impaired waters, or 303(d) list, the Pennsylvania Department of Environmental Protection must determine conditions that would return the quality of the impaired waters to acceptable standards.

A Total Maximum Daily Load, or TMDL, is to be established for each impaired water to identify the total allowable pollutant load (from all point and non-point sources) of water that will prevent violation of it's water quality standards. Basically, a TMDL is an allowable pollution limit that will still ensure water quality standards are met and maintained.

The PADEP has determined that several streams within the watershed and specifically the study area meet the criteria to be included on the 303(d) list. Table 3.2-4 below lists those waterbodies identified by PADEP which do not meet it's TMDL.

Waterbody	Impaired Use	Source	Cause
Barshinger Creek	Aquatic Life	Agriculture	Suspended Solids
"Buffalo Run"	Aquatic Life	Agriculture	Siltation, Flow Alterations
Codorus Creek	Aquatic Life	Agriculture, Urban Runoff/Storm Sewers/Channelization, Industrial Point Source	Siltation, Organic Enrichment/Low DO, Other Habitat Alterations, Suspended Solids, Thermal Modifications, Color
Foust Creek	Aquatic Life	Agriculture, Habitat Modification	Siltation, Other Habitat Alterations
Inners Creek	Aquatic Life	Agriculture	Siltation, Flow Alterations
Krebs Run	Aquatic Life	Agriculture	Siltation, Flow Alterations
Pierceville Run	Aquatic Life	Agriculture	Siltation, Flow Alterations
South Branch Codorus Creek	Aquatic Life	Agriculture, Urban Runoff/Storm Sewers, Municipal Point Source	Nutrients, Suspended Solids, Siltation, Flow Alterations

Table 3.2-3: Codorus Creek Watershed 303(d) list of impaired waters.

It is important to understand all of the parameters that are or can be considered when determining water quality. Care must be taken when analyzing only one of those parameters such as streambank stability, macro-invertebrate richness, population and species diversity, and the 303(d) list and parameters. Analysis of a watershed has to consider all parameters and one must compare all of the available information to fully understand the condition of a watershed.

There are several other groups and organizations that are conducting their own monitoring on a regular basis. There are permanent sampling locations established where various parameters are analyzed ranging from Dissolved Oxygen (DO) to macro-invertebrates. The results are then entered into a database. Some of the organizations who have permanent sites established are the Codorus Creek Improvement Partnership, Codorus Creek Watershed Association, Watershed Alliance of York, York College of PA, Messiah College, the Pennsylvania State University, York Campus, Yorktowne Senior Environment Corps, National Council for Air and Stream Improvement, and several others. The importance of permanent sampling locations is to conduct repeated (monthly, annually, etc.) samplings which can then track the changes over a period of years. As a result, conclusions can be made as to the direction the health of the watershed is going.

Their data, while not necessarily included here, is an important resource to understanding trends in the watershed's health. It also helps in determining the locations of problems areas (seeps, spills, illegal dumping, etc.). Their data will be incorporated into future versions of this RCP.

E. Wetlands

Wetlands are among the most important ecosystems on Earth. In the great scheme of things, the swampy environment of the Carboniferous Period produced and preserved many of the fossil fuels on which we now depend. In more recent biological and human time periods, wetlands are valuable as sources, sinks and transformers of a multitude of chemical, biological, and genetic materials. Although the value of wetlands for fish and wildlife protection has been known for several decades, some of the other benefits have been identified more recently.

Wetlands are sometimes described as the "kidneys of the landscape" because of the functions they perform in hydrologic and chemical cycles and because they function as the downstream receivers of wastes from both natural and human sources. They have been found to cleanse polluted waters, prevent floods, protect shorelines, and recharge groundwater aquifers.

Wetlands have also been called "biological supermarkets" for the extensive food chain and rich biodiversity they support. They play a major role in the landscape by providing unique habitats for a wide variety of flora and fauna. Now that we have become concerned about the health of the entire planet, wetlands are being described by some experts as carbon dioxide sinks and climate stabilizers on a global scale.

These values of wetlands are now being recognized and translated in to wetland protection laws, regulations, and management plans. Wetlands have been drained, ditched, and filled throughout history but never as quickly or as effectively as was undertaken in the United States beginning in the mid-1800's. Since then more than half of the nation's original wetlands have been drained. Many scientists, engineers, lawyers, and regulators are now finding it both useful and necessary to become specialists in wetland ecology and management in order to understand, preserve, and even reconstruct these fragile ecosystems.

Wetlands include swamps, bogs, marshes, mire, fens, and other wet ecosystems found throughout the world. The exact extent of wetlands is not known even though some wetland mapping resources do exist.

The most common mapping resource for wetlands is known as the National Wetland Inventory (NWI). NWI is a series of maps overlaid on U.S. Geological Survey Topographic Maps that show the approximate location of wetlands. These maps were started in the 1960's by the U.S. Fish and Wildlife Service to map and classify the nations wetlands. The maps were created from aerial infrared imagery taken at a resolution of 1:60,000 to 1:130,000. As a result, the location of wetlands and the extent of wetlands in a given watershed can be assumed to be an estimate at best. We know

that not all wetlands have been mapped and some experts estimate that as much as 50% of all wetlands have not been mapped.

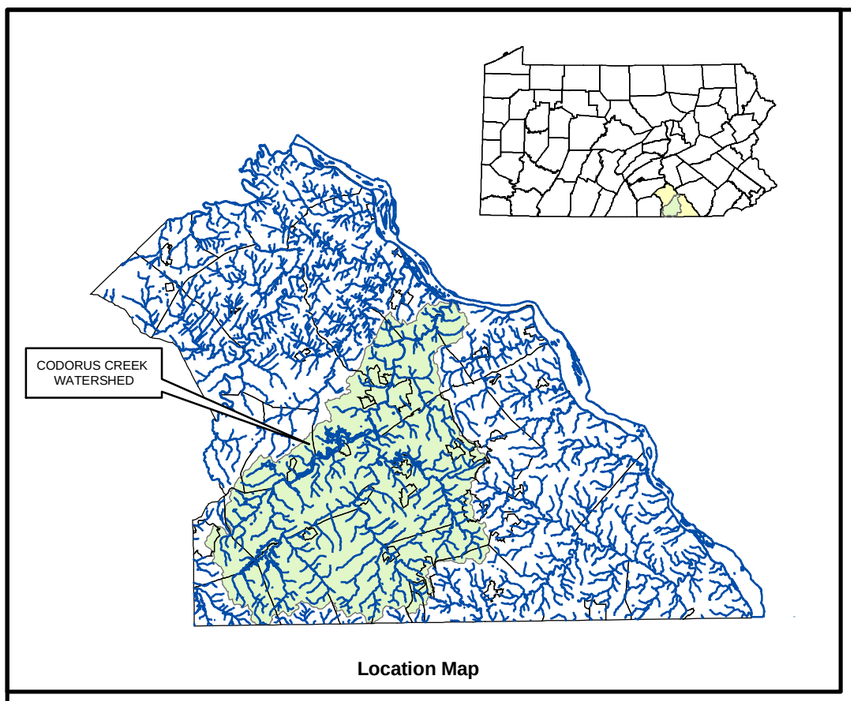
Review of the National Wetlands Inventory maps for the Codorus Creek Watershed (Figure 3.2-2) and the study area determined that there are only approximately 3,179 acres of mapped wetlands, which amounts to only 1.8% of the entire watershed area.

3.3 Biological Resources

Biological resources of a watershed are those resources related to the flora (plants and vegetation) and fauna (animals). Understanding what species live in the watershed, their relative abundance and distribution can lead to conclusions about watershed health. Those species range from game species such deer, rabbit, squirrel and wild turkey, to fish and macroinvertebrates. It also incorporates different vegetative communities such as coniferous and deciduous forests and agricultural land.

Varieties in topography and vegetative cover provide for a substantial diversity of wildlife habitats within the watershed and study area. The seeds of herbaceous plants, such as bristlegrass, smartweeds, ragweed, and pigweed, provide food for small game birds such as quail and pheasant and numerous species of song birds. The vegetation of a watershed not only provides food for foragers, but also provides shelter, shade and when adjacent to a stream, provides bank stabilization and temperature moderation. The watershed was once covered with old growth forests dominated by oak and chestnut species. As the area was developed, the watershed was logged as much as three times prior to the state it is in now. As a result, the species found within the forested areas now consist of a mix of maples, yellow poplar, oaks, hickories and other hardwood and softwood species. However, the forested areas continue to provide valuable habitat for various wildlife species. Figure 3.3-1 shows locations of suitable habitat for a few native species.

In addition to the common species of flora and fauna there are approximately 13 threatened and endangered species of plants and animals within the watershed and study area. Table 3.3-1 lists the threatened and endangered species found in the watershed and the listing agency. Figures 3.1-2 and 3.3-1 show approximate locations of habitat for various species of plants, animals, and natural areas.



Location Map

Susquehanna River

CREEK

TROUT RUN NORTH

CODORUS CREEK NORTH

HELLAM TWP

EAST MANCHESTER TWP

DEE RUN

DEE RUN

I - 83 EXWY

CHURCH RD

MT ZION RD

MANCHESTER TWP

SPRINGETTSBURY TWP

RT 30 BYP

MILL CREEK

NORTH YORK BORO

SPRING GARDEN TWP

WILLIS RUN

RTE 30 BYP

YORK CITY

I-83 EXWY

WINDSOR TWP

WINDSOR TWP

WEST YORK BORO

CODORUS CREEK YORK

MILL CREEK

WINDSOR TWP

EAST BERLIN RD

HOKES MILL RD

SPRING GARDEN TWP

WEST MANCHESTER TWP

CC INDIAN ROCK DAM

WINDSOR TWP

TRINITY RD

SOUTH BRANCH CODORUS CREEK

QUEEN ST

YORK TWP

YOE BORO

WINDSOR TWP

NEW SALEM BORO

WBCC INDIAN ROCK DAM

LAKE WILLIAMS

LAKE REDMAN

DALLASTOWN BORO

RED LION BORO

INNERS CREEK

LAKE PAHAGACO

JACKSON TWP

WBCC SPRING GROVE

SPRING GROVE BORO

JACOBUS BORO

INNERS

PLEASANT VIEW

BARSHINGER CREEK

RED LION BORO

WINDSOR TWP

BUNCH CREEK

BARSHINGER

WINDSOR TWP

BUNCH CREEK

PARADISE TWP

YORK RD

STOVERSTOWN BRANCH

NORTH CODORUS TWP

WINDSOR TWP

OIL CREEK

CHURCH ST

FISHEL CREEK

MILL RD

SEVEN VALLEYS BORO

LOGANVILLE BORO

WBCC/DUNKARD VALLEY

EAST BRANCH CODORUS CREEK

MAIN ST

FISHEL CREEK

WEST BRANCH CODORUS CREEK

WINTERSTOWN BORO

HANOVER RD

SEAKSRUN

PENN TWP

SOUTH BRANCH CODORUS CREEK

NORTH HOPEWELL TWP

HEIDELBERG TWP

SEARS RUN

SPRINGFIELD TWP

OIL CREEK

BRUSH RUN

CHERRY RUN

WINTERSTOWN RD

BUFFALO RUN

INTERSTATE 83

PORTERS CREEK

JEFFERSON BORO

BRUSH RUN

CHERRY RUN

FOUST CREEK

HANOVER BORO

BUFFALO RUN

GLEN ROCK VALLEY

EBCC/BLYMIRE HOLLOW

"REHMEYER HOLLOW"

LAKE MARBURG

WEST BRANCH CODORUS CREEK

JEFFERSON RD

KREBS RUN

GLEN ROCK BORO

HOPEWELL TWP

PENN TWP

WEST BRANCH CODORUS CREEK

CODORUS TWP

PIERCEVILLE RUN

TROUT RUN SOUTH

CODORUS CREEK

SHREWSBURY TWP

ROUTE 216

SHREWSBURY BORO

MANHEIM TWP

PIERCEVILLE RUN

RAILROAD BORO

FURNACE CREEK

LONG RUN

PIERCEVILLE RUN

CENTERVILLE CREEK

SHREWSBURY TWP

STICKS RD

2ND ST

WEST MANHEIM TWP

PIERCEVILLE RUN

NEW FREEDOM BORO

WEST BRANCH CODORUS CREEK

STELTZ RD

Road
Major Route
Stream
Municipal Boundary
Trout Unlimited Study
Codorus Creek Watershed
Subwatershed

Black Crowned Night Heron
Bog Turtle
Brook Trout
Brown Trout
Rainbow Trout
Redbelly Turtle

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.3 - 1
PRIME WILDLIFE HABITAT MAP

Codorus Creek Watershed Association

BUCHART HORN,INC.

Table 3.3-1: Summary of Threatened and Endangered Species within Codorus Creek Watershed.

Common Name	Scientific Name	Status and Listing Agency
Reptiles		
Bog Turtle	*Clemmys muhlenbergii*	Endangered (PFBC, DCNR, PNDI)
Red-Bellied Turtle	*Pseudemys rubriventris*	Threatened (PFBC)
Invertebrates		
Pennsylvania Cave Amphipod	*Crangonyx dearolfi*	Special Concern (PFBC)
Price's Cave Isopod	*Caecidotea pricea*	Special Concern (PFBC)
Plants		
Puttyroot	*Aplectrum hyemale*	Rare (PNDI)
Glade Spurge	*Euphorbia purpurea*	Endangered (DCNR)
Umbrella magnolia	*Magnolia tripetala*	Threatened (PNDI)
Dwarf Azalea	*Rhododendron atlanticum*	Endangered (DCNR)
Birds		
Black-Crowned Night Heron	*Nycticorax nycticorax*	Imperiled (PNDI)
Yellow-Crowned Night Heron	*Nyctanassa violacea*	Endangered (DCNR)
Great Egret	*Casmerodius albus*	Endangered (DCNR)
Prothonotary Warbler	*Protonotaria citrea*	Imperiled (PNDI)
Mammals		
Northern Myotis	*Myotis septentrionalis*	Vulnerable (PNDI)

PFBC – Pennsylvania Fish and Boat Commission
PNDI – Pennsylvania Natural Diversity Inventory
DCNR – Pennsylvania Department of Conservation and Natural Resources
USFWS – United States Fish and Wildlife Service

3.4 Cultural Resources

A. Recreational

York County Parks owns and operates seven parks (Figure 3.4-1), all of which are located within the watershed. Together they comprise approximately 4,000 acres of land open to the public and offer a wide variety of recreational opportunities for residents of the watershed and visitors. One State Park, Codorus State Park, is located

within the watershed but outside of the study area within the West Branch (Upper Codorus Creek) drainage. In addition to parks within the York County Parks control, there are numerous, more local municipal parks located throughout the watershed. There is a brief description below of each of the York County Parks within the study area.

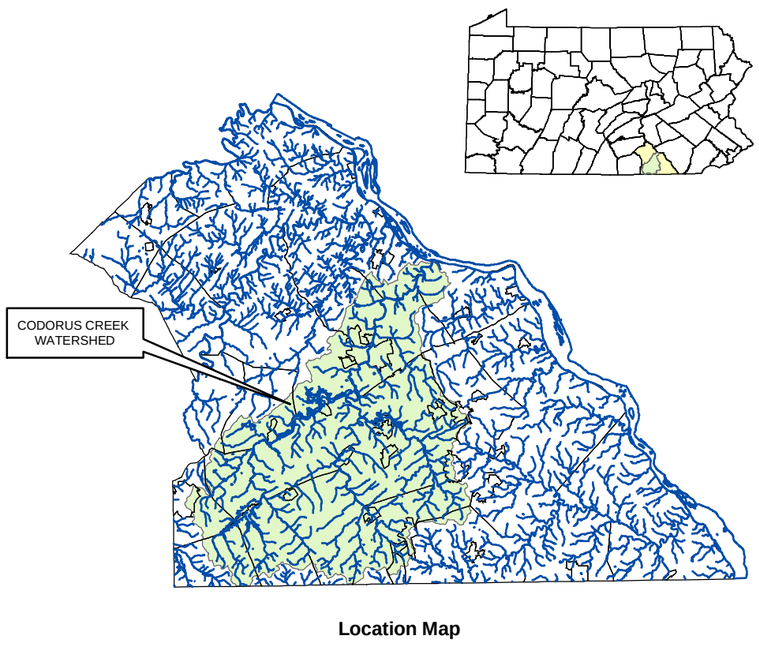
Rocky Ridge County Park - Ninety percent of this 750 acre park is a mature oak forest. Rocky Ridge was acquired in 1968, making it the first county park. It is perched on a rock-strewn hilltop northwest of Hallam, one of the first places the county's original settlers, who crossed the Susquehanna River, established homes. In addition to over 12 miles of multiuse trails, the park offers softball fields, playgrounds, observation decks, volley ball courts, horseshoe pits, hunting and pavilions. The park is famous for it's rock outcroppings making it a well known mountain biking destination.

John C. Rudy County Park – This park, situated on 143 acres near Emigsville, PA was established in 1973 from a donation and today is the home of the administrative offices for the York County Parks and Recreation Department. The park offers a 2-mile loop paved multipurpose trail, horseshoe pits, sand volleyball court, soccer fields, gardens and a cross country course.

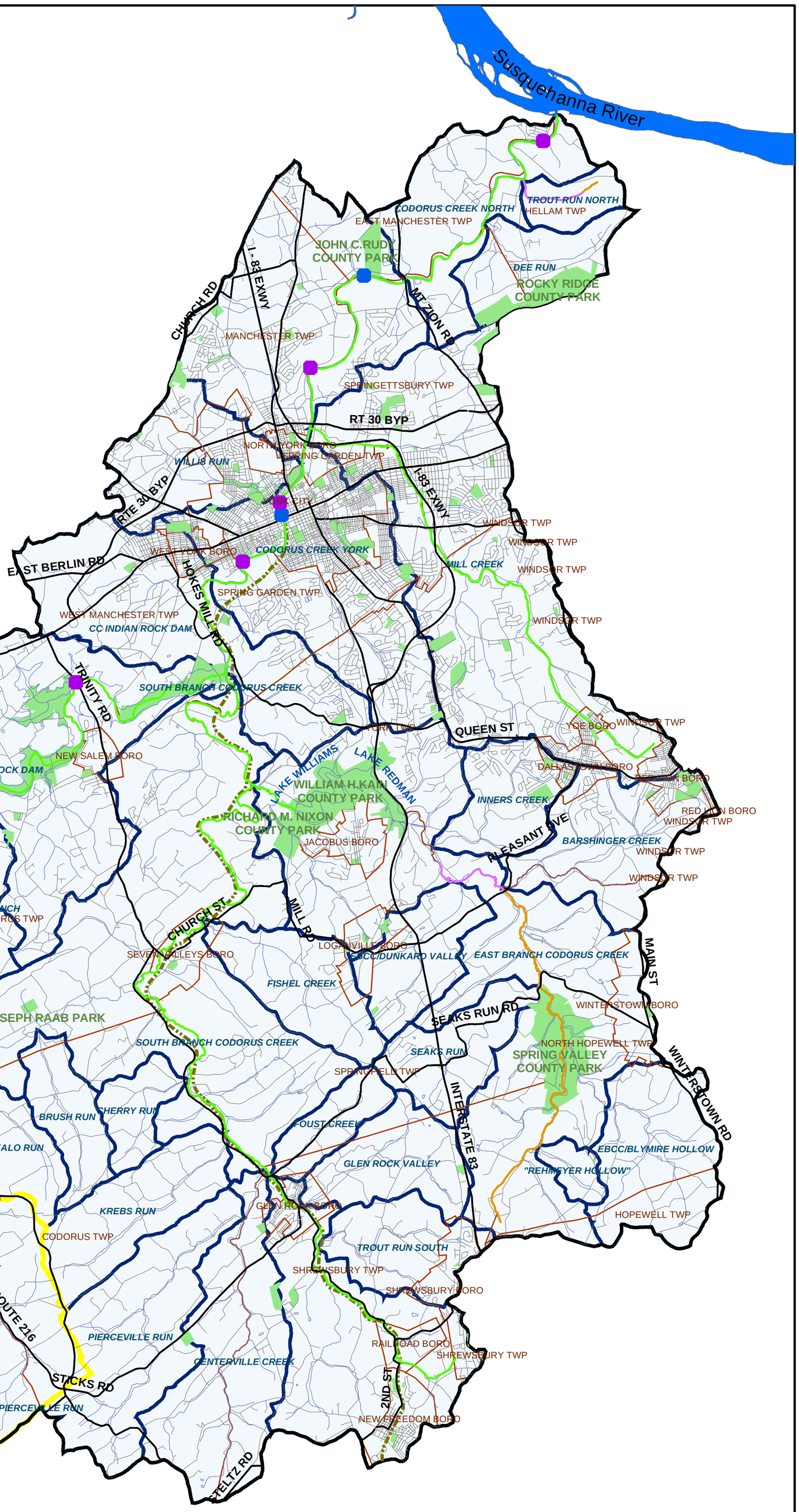
William H. Kain County Park – Including both Lakes Redman and Williams, this 1,675 acre park was established in 1977 and is located in Springfield Township on the north side of the Borough of Jacobus. Offering an extensive network of multiuse trails, the park has become a haven for the local mountain biking scene. In addition, the park offers boating opportunities including launch ramp and boat rentals, remote-control airplane landing strips, volleyball, playgrounds, hunting, and horseshoe pits. Pavilions are also available for rental. William H. Kain County Park including Lakes Redman and Williams are owned by the York Water Company but managed by the York County Parks and Recreation Department. The East Branch of the Codorus Creek flows through the park and lakes. Together, the two lakes impound about 2.2 billion gallons of water for public consumption.

Richard M. Nixon County Park – Lying adjacent to the southwest corner of William H. Kain County Park, lies this 157 acre wooded park which was established in 1968. Nixon park offers approximately 6 miles of multiuse trails which are connected to another 12 at William H. Kain county park. This park houses an environmental education center which has a live and mounted animal displays, meeting rooms, and a reference library. This center provides excellent educational opportunities for young children and adults alike.

Joseph Raab County Park – Established in 1993 and located near Seven Valleys, Pa the land is undeveloped and closed to the public, but open for staff supervised tours. The 72 acres of land was known as the York Iron Company mine site from 1854 through 1888. The land was later used as agricultural land, with seven acres as a landfill site. The landfill was reclaimed in the late 1980's and early 1990's and donated to the county by Modern Landfill and Recycling.



Location Map



- Existing Rvr Access Pt
- Potential Rvr Access Pt
- CWF
- HQCWF
- WWF
- Road
- Stream
- Major Route
- Heritage Rail Trail
- Municipal Boundary
- Subwatershed
- Recreational Site
- Trout Unlimited Study
- Codorus Creek Watershed

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.4 - 1
RECREATIONAL MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.

The former iron ore mines are home to four species of bats that live in the same environment. A gate was constructed covering the openings of one of the mines to protect the bats. A Bat Door was constructed in cooperation with the Pennsylvania Game commission and Wildlife Conservation Fund to protect the hibernating inhabitants of Joseph Raab County Park.

Spring Valley County Park – This park, and it's 868 acres, was established in 1972. Once again owned by the York Water Company but managed and maintained (leased to) by the York County Parks and Recreation Department, this park was initially purchased to be used for water supply similar to Lakes Redman and Williams. However, this is no longer the objective of the park and the park currently offers approximately 12 miles of multiuse trails and other passive recreational opportunities including hunting and targeting. The East Branch of the Codorus Creek flows through the park and is classified as a HQ CWF in this area.

Heritage Rail Trail County Park – Established in 1992 the rail trail covers 176 acres and has an estimated length of 21 miles, which runs north from the Mason Dixon Line , just south of the Borough of New Freedom, through New Freedom, Glen Rock, Hanover Junction, and Seven Valleys on its way to the Colonial Courthouse in the City of York. At the Mason-Dixon Line the trail connects to Maryland's 20 mile long Northern Central Railroad Trail which has a southern terminus in Hunt Valley Maryland. For the most part, the trail follows the South Branch of the Codorus Creek through the Borough of Glen Rock. The trail affords it's horseback riders, bicyclists, runners, walkers and joggers with a variety of sights and sounds. There are three historic resources along the trail including the Hanover Junction Train Station, the New Freedom Train Station and the Howard Tunnel. In addition to historic resources, the trail acts as a continuous passive educational experience offering information on stream condition and restoration, benefits of riparian zones, and the quality of the outdoor environment.

The Heritage Rail Trail has become such a success that there have been two separate feasibility studies prepared to determine the potential of extending the trail from York to Hanover, on the former 14 mile Hanover to York Trolley Line, and from York north along the Mainstem of the Codorus Creek to a terminus at the new Central York School District Campus in Springettsbury Township. Both studies are available from the York County Planning Commission.

In addition to the County parks described above, other forms of recreation in the watershed include, but are not limited to, golf, kayaking/canoeing, hunting, fishing, and birding. There are 8 public golf courses and 1 private. Table 3.3-2 lists the golf course and the watershed within which it is located.

Table 3.3-2: Golf Courses within the Watershed and Study Area.

Golf Course	Municipality	Sub-Watershed
Bon-Air County Club	Shrewsbury Township	South Branch CC
Copper Beach	North Hopewell Township	Barshinger Creek
Country Club of York	Spring Garden Township	South Branch CC
Hawk Lake Golf Club	West Manchester Township	Willis Run
Heritage Hills Golf Club	York Township	Mill Creek
Hickory Heights Golf Club	North Codorus Township	Stoverstown Branch
Little Creek Golf Course	North Codorus Township	West Branch CC
Springwood Golf Club	York Township	Mill Creek

Golf courses can be a source of sediments and nutrients to streams and it is not uncommon to find severely impaired streams located within a golf course. This is often the result of poor management techniques and lack of a good riparian zone with dense vegetation. This does not mean, however, that all riparian zones need to be wooded. It is possible to maintain a stable bank with low growing vegetation that would not impede normal play and would provide a good rooting depth and density far superior to typical varieties of golf course grass.

The creeks and streams of the watershed, provided they are large enough and have a substantial base flow, offer canoeing and kayaking opportunities for the residents of the watershed. Of particular popularity is the Mainstem of the Codorus Creek north of North Sherman Street Extended. In this reach, the Codorus Creek becomes more scenic and wild and offers experienced paddlers with up to Class III whitewater. However, access to this area is difficult. This is a familiar problem with direct recreational use of the creeks and streams in the watershed. It has been said that one of the most influential ways to learn about a river or stream is to paddle it. From this vantage point, one can gain an appreciation for the condition of a stream and start to draw correlations between stream condition and watershed management.

Another limiting factor for paddlers is low head dams and weirs. There are approximately 7 total low head dams/weirs within the entire watershed. Three are located within the Flood Control Facility in the City of York. The remaining four are located upstream of the City of York. Besides creating a required portage around the dam, the dams and weirs are dangerous to swimmers whether they are accidentally or intentionally swimming. Low head dams and weir create a recirculating hole at the bottom of the dam where the waters spills into a deep hydraulic pool. These recirculating pools can trap a swimmer even if the person is wearing a Personal Flotation Device (PFD).

B. Historic

The Upper Codorus Creek Watershed Conservation Plan provides a thorough history of the region from prehistory (pre-1600) through the post industrial era (1950-present). For the most part, this descriptive history is accurate for the entire watershed and not just that of the Upper Codorus Creek (West Branch above Spring Grove). As a result, only a brief summation is included in this section.

The Codorus Creek Watershed including the study area, is part of the larger Lower Susquehanna Valley Region. Archaeological findings in the area have indicated that the Lower Susquehanna Valley Region has been inhabited for more than 11,000 years. The earliest inhabitants were native peoples and nomadic hunters of now extinct big game. However, as the climate gradually changed, so did the populations.

The dominant Indian tribe in the region, at the time when European settlers were first arriving, was the Susquehannock Indian Tribe. The Susquehannock Indians were most closely related to the larger Iroquois Tribe. However, through prolonged war with other tribes and widespread disease, the Susquehannock Indians were eliminated by 1675.

By the time the area was being resettled by the European Settlers, the watershed was most likely hunting grounds for other Indian tribes.

The first colonists settled in Pennsylvania in approximately 1643 and from that point slowly progressed west across the state. Although settlers first arrived in the area around 1723, York County wasn't formed until 1749 as a result of a petition to the provincial council.

The early settlers were of three major origins: the Quakers, the Germans, and the Scotch-Irish. Within much of the watershed, the Germans were the predominant group. Initially the land was predominantly forested. As the settlers began to create homesteads, the land was cleared for agriculture.

The period between the French and Indian War and the Civil War brought great changes to the region including the watershed. Although no serious struggles were fought within the watershed, this period in time saw the first capital of the United States created in York in 1777, which is within the watershed and study area.

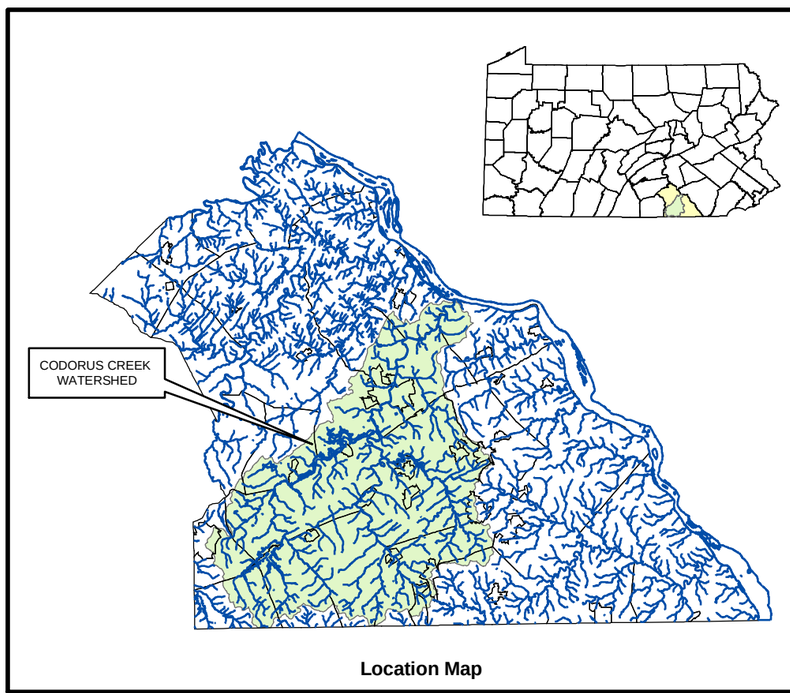
Coming out of the Civil War and heading into the industrial revolution, the watershed saw many changes in the form of growth and development. The mechanizing of factories lead to the growth in the areas of iron, cigars, shoes, paper and other types of manufacturing. Accompanying this growth were the establishment of railroads. There were several notable railroads within the watershed, the most notable being the Stewartstown Railroad which is now the York County Heritage Rail Trail County Park.

In some instances, the end of one industry, led to the formation of another. When the Spring Grove Iron Forge was shut down in 1851, Jacob Hauer established a paper mill

on the same location as the forge. The paper mill was then purchased by it's current owner, the P.H. Glatfelter Company, in 1863. The mill continues to produce many varieties of paper products to this day and is a major industrial employer in the watershed.

During the last fifty years since the industrial revolution, the watershed has once again seen dramatic changes. The use of cars as means of everyday transportation has caused a decline in rail service with many lines being abandoned. The only source of public transportation is now limited to bus service in and around the City of York. With the decline of railroads and the increase in the number of cars, there came an increase in the number of paved roads in the watershed.

Through coordination with the Pennsylvania Historic and Museum Commission (PHMC) and review of their files, it has been determined that there are numerous sites throughout the watershed which are historic, cultural resources for watershed residents. There are approximately 50 archaeological sites, 11 historic structures either eligible for or listed on the National Register of Historic Places, and 13 historic districts within the watershed and study area (Figure 3.4-2). For a detailed description or review of the historic resources within the watershed, please contact the Pennsylvania Historic and Museum Commission.



Location Map

Susquehanna River

CREEK

CODORUS CREEK NORTH

TROUT RUN NORTH

HELLAM TWP

EAST MANCHESTER TWP

DEE RUN

DEE RUN

MANCHESTER TWP

SPRINGETTSBURY TWP

MILL CREEK

NORTH YORK BORO

SPRING GARDEN TWP

WILLIS RUN

YORK CITY

WINDSOR TWP

WINDSOR TWP

WEST YORK BORO

CODORUS CREEK YORK

MILL CREEK

WINDSOR TWP

SPRING GARDEN TWP

WEST MANCHESTER TWP

CC INDIAN ROCK DAM

WINDSOR TWP

SOUTH BRANCH CODORUS CREEK

YORK TWP

YOE BORO

WINDSOR TWP

NEW SALEM BORO

WBCC INDIAN ROCK DAM

LAKE WILLIAMS

LAKE REDMAN

DALLASTOWN BORO

RED LION BORO

INNERS CREEK

RED LION BORO

WINDSOR TWP

LAKE PAHAGACO

JACOBUS BORO

INNERS

BARSHINGER CREEK

WINDSOR TWP

JACKSON TWP

WBCC SPRING GROVE

BUNCH CREEK

SPRING GROVE BORO

BARSHINGER

WINDSOR TWP

BUNCH CREEK

PARADISE TWP

STOVERSTOWN BRANCH

NORTH CODORUS TWP

OIL CREEK

FISHEL CREEK

LOGANVILLE BORO

SEVEN VALLEYS BORO

EBCC/DUNKARD VALLEY

EAST BRANCH CODORUS CREEK

FISHEL CREEK

WEST BRANCH CODORUS CREEK

WINTERSTOWN BORO

SEAKS RUN

PENN TWP

SOUTH BRANCH CODORUS CREEK

SEAKS RUN

NORTH HOPEWELL TWP

HEIDELBERG TWP

OIL CREEK

SPRINGFIELD TWP

BUFFALO RUN

BRUSH RUN

CHERRY RUN

PORTERS CREEK

JEFFERSON BORO

BRUSH RUN

CHERRY RUN

FOUST CREEK

HANOVER BORO

LAKE MARBURG

WEST BRANCH CODORUS CREEK

BUFFALO RUN

GLEN ROCK VALLEY

EBCC/BLYMIRE HOLLOW

"REHMEYER HOLLOW"

PENN TWP

WEST BRANCH CODORUS CREEK

KREBS RUN

CREEK

GLEN ROCK BORO

HOPEWELL TWP

CODORUS TWP

PIERCEVILLE RUN

TROUT RUN SOUTH

CODORUS CREEK

SHREWSBURY TWP

SHREWSBURY BORO

MANHEIM TWP

PIERCEVILLE RUN

RAILROAD BORO

SHREWSBURY TWP

FURNACE CREEK

LONG RUN

CENTERVILLE CREEK

WEST MANHEIM TWP

PIERCEVILLE RUN

NEW FREEDOM BORO

WEST BRANCH CODORUS CREEK

Archeology

Historic

Road

Stream

Historic Districts

Municipal Boundary

Subwatershed

Codorus Creek Watershed

Trout Unlimited Study

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 3.4-2
HISTORIC RESOURCES MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.

SECTION 4.0 – General Watershed Issues, Concerns, Constraints and Opportunities

4.1 Water Quality Concerns

The most significant issue or concern facing the Codorus Creek Watershed is related to water quality and quantity. As we have seen in Section 3.2, much of the watershed contains streams and waterways that are impaired by one or more variables. There are approximately 296 miles of Priority 1 & 2 impaired streams within the watershed, approximately 259 of which are located in the study area. These impairments are mostly related to stream bank erosion and fluvial geomorphological impairments such as abandoned floodplains, and loss of channel stability.

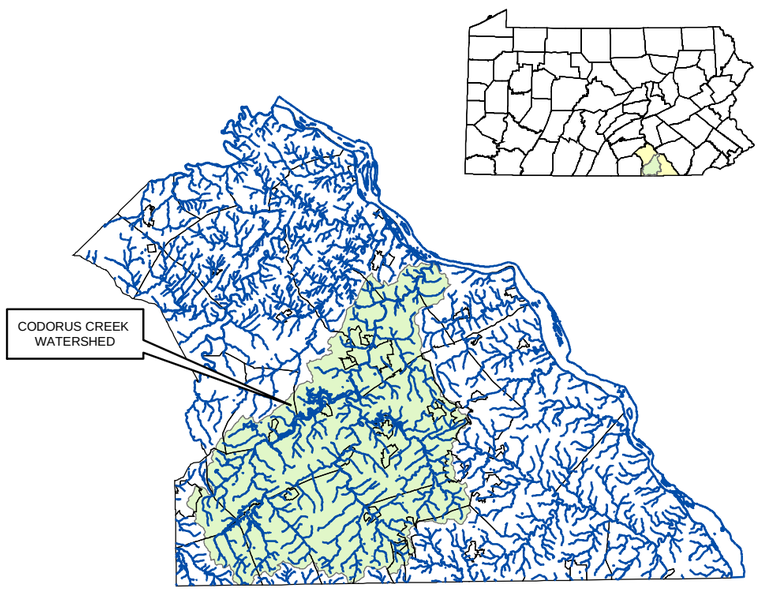
In addition to the Priority 1 & 2 streams, there are 8 subwatersheds, as listed in Table 3.2-3, that are on the Pennsylvania Department of Environmental Protection Section 303(d) list of impaired waters. These streams must maintain a Total Maximum Daily Load (TMDL) established for the source/cause of impairment.

As discussed in Section 3.2-II, historical and current data on macro-invertebrate and fish communities indicate very poor to good water quality throughout the watershed. According to the US ACOE Interim Report, abundance of sensitive EPT taxa (macro-invertebrates) could increase provided in stream habitat and general water quality (pollution) were improved.

These impairments to water quality can be attributed to a variety of causes. The increasing population in our suburban and rural areas, particularly in the south, has substantial impacts to water quality and quantity. Development of traditional rural/agricultural areas to accommodate the emigration from the urban areas threatens the aesthetics, quality of life, and quality of the environment which made these areas so appealing in the first place. Poor land use planning and dysfunctional zoning in and around the watershed and particularly the drainage corridor will destroy the values of the watershed.

Not only is the growth and development of the rural areas an issue, but traditional farming practices are also a major source of declining water quality. Too often livestock are allowed free access to streams which greatly deteriorates the stream banks and water quality. In addition poor farming techniques, such as non-contour farming, and farming directly adjacent to streams and waterways, causes massive erosion problems and results in the loss of the watersheds valuable soils that are either prime farmland soils or soils suitable for infiltration.

Figure 4.1-1 shows the locations of very poor, poor, and fair water quality locations in relation to the locations of known superfund sites, toxic release sites and others. Figure 4.1-2 shows the locations of Priority 1 & 2 streams in relation



Location Map

CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System - Superfund Sites

PCS - Permit Compliance System - Companies which have been issued permits to discharge waste water into rivers

RCRA - Resource Conservation and Recovery Act Information - All generators, transporters, treaters, storers, and disposers of hazardous waste are required to provide information about their activities

TRIS - Toxic Release Inventory - Manufacturers of Toxic Chemicals are required to report the locations and quantities of chemicals stored on-site to government

CERCLIS (superfund)
PCS (wastewater)
RCRA (haz. waste)
TRIS (toxic mat.)
CWF
HQCWF
WWF

Monitoring Sites
Fair
Poor
Very Poor

Major Route
Road
Stream
Municipal Boundary
Subwatershed
Trout Unlimited Study
Codorus Creek Watershed

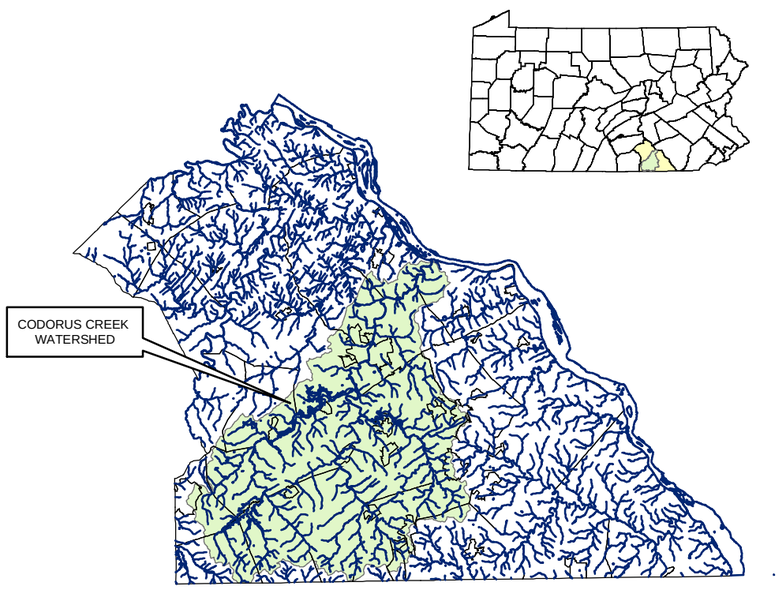
7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 4.1- 1 HAZARD ANALYSIS MAP

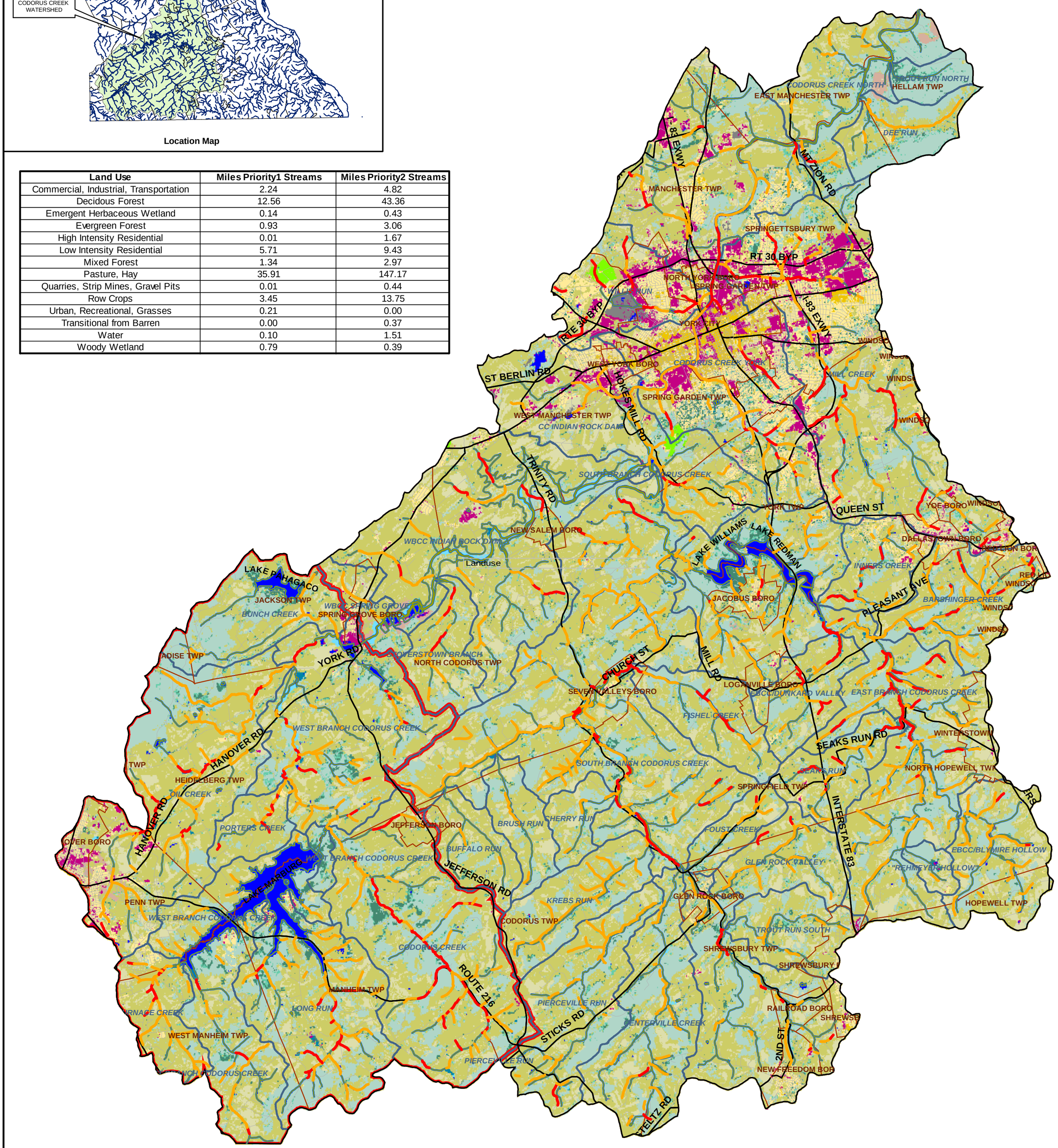
Codorus Creek Watershed Association

BUCHART HORN, INC.



Location Map

Land Use	Miles Priority1 Streams	Miles Priority2 Streams
Commercial, Industrial, Transportation	2.24	4.82
Decidous Forest	12.56	43.36
Emergent Herbaceous Wetland	0.14	0.43
Evergreen Forest	0.93	3.06
High Intensity Residential	0.01	1.67
Low Intensity Residential	5.71	9.43
Mixed Forest	1.34	2.97
Pasture, Hay	35.91	147.17
Quarries, Strip Mines, Gravel Pits	0.01	0.44
Row Crops	3.45	13.75
Urban, Recreational, Grasses	0.21	0.00
Transitional from Barren	0.00	0.37
Water	0.10	1.51
Woody Wetland	0.79	0.39



Priority 1 Stream
Priority 2 Stream
Major Route
Stream
Road
Trout Unlimited Study
Municipal Boundary
Subwatershed

Landuse / Cover

Water
Low Intensity Residential
High Intensity Residential
Commercial, Industrial, Transportation
Quarries, Strip Mines, Gravel Pits
Transitional from Barren
Deciduous Forest
Evergreen Forest
Mixed Forest
Pasture, Hay
Row Crops
Urban, Recreation Grasses
Woody Wetland
Emergent Herbaceous Wetland

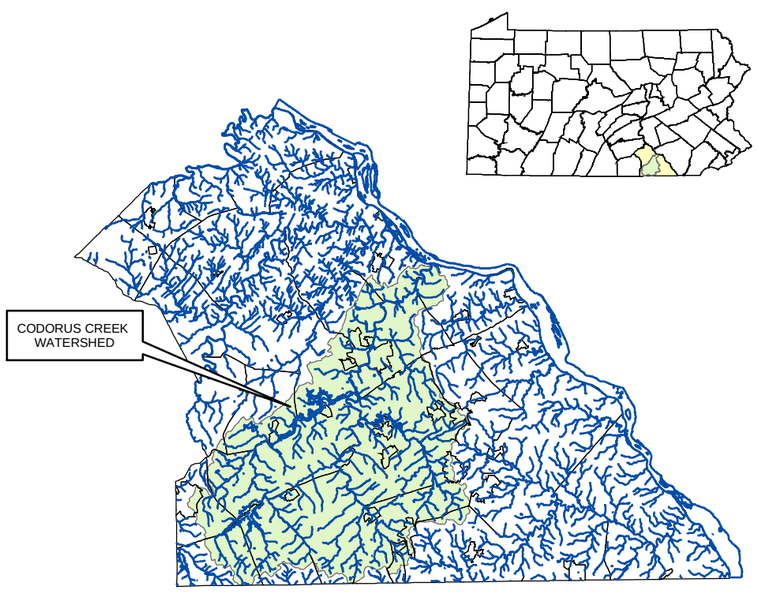
7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 4.1-2 LANDUSE ANALYSIS MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.



Location Map

Zoning	Miles Priority1 Streams	Miles Priority2 Streams
Agricultural	27.72	120.35
Apartment/Office	0.46	2.49
Business	0.00	0.05
Commercial	2.26	6.82
Conservation/Open Space	14.53	47.97
Industrial	5.02	9.63
Mixed Use	0.31	1.16
Quarry	0.03	1.20
Residential	9.23	22.34
Residential - rural/low density/open space	3.70	16.02
Slope	0.04	0.46
Village Center	0.47	1.43

Susquehanna River
CODORUS CREEK NORTH
EAST MANCHESTER TWP
HELLAM TWP
I-83 EXWY
CHURCH RD
MANCHESTER TWP
MT ZION RD
SPRINGETTSBURY TWP
RT 30 BYP
NORTH YORK BORO
SPRING GARDEN TWP
YORK CITY
RTE 30 BYP
EAST BERLIN RD
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
HOKES MILL RD
SPRING GARDEN TWP
WINDSOR TWP
TRINITY RD
QUEEN ST
YOE BORO
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
INNERS CREEK
LAKE PAHAGACO
JACKSON TWP
JACOBUS BORO
PLEASANT AVE
BARSHINGER CREEK
WBCC SPRING GROVE
BUNCH CREEK
SPRING GROVE BORO
PARADISE TWP
YORK RD
STONERSTOWN BRANCH
NORTH CODORUS TWP
MILL RD
CHURCH ST
LOGANVILLE BORO
SEVEN VALLEYS BORO
EAST BRANCH CODORUS CREEK
FISHEL CREEK
MAIN ST
WEST BRANCH CODORUS CREEK
HANOVER RD
SEAKS RUN RD
WINTERSTOWN BORO
PENN TWP
SOUTH BRANCH CODORUS CREEK
HEIDELBERG TWP
NORTH HOPEWELL TWP
SPRINGFIELD TWP
INTERSTATE 83
WINTERSTOWN RD
PORTERS CREEK
JEFFERSON BORO
BRUSH RUN
CHERRY RUN
FOUST CREEK
HANOVER BORO
BUFFALO RUN
EBCC/BLYMIRE HOLLOW
LAKE MARBURG
WEST BRANCH CODORUS CREEK
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
JEFFERSON RD
KREBS RUN
GLEN ROCK BORO
HOPEWELL TWP
PENN TWP
CODORUS TWP
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
ROUTE 216
SHREWSBURY BORO
MANHEIM TWP
PIERCEVILLE RUN
RAILROAD BORO
SHREWSBURY TWP
LONG RUN
STICKS RD
CENTER VALLEY CREEK
FURNACE CREEK
2ND ST
WEST MANHEIM TWP
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
STELTZ RD

Priority1 Stream
Priority2 Stream
Stream
Major Route
Road
Trout Unlimited Study
Municipal Boundary
Subwatershed

Agricultural
Apartment/Office
Business
Commercial
Industrial
Institutional
Mixed Use
Quarry
Residential
Slope
Village Center
Commercial/Industrial
Conservation/Open Space
Residential - rural/low density/open space

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

CODORUS CREEK RCP

FIGURE 4.1 - 3 ZONING ANALYSIS MAP

Codorus Creek Watershed Association

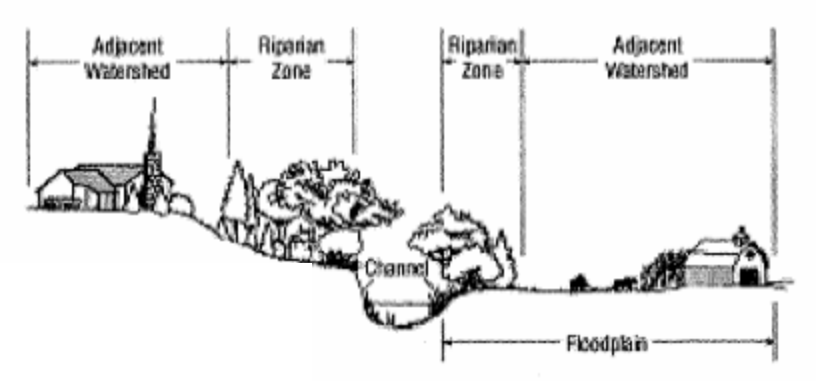
BUCHART HORN, INC.

to land use and Figure 4.1-3 shows the location of Priority 1 & 2 streams in relation to zoning.

4.2 Riparian Zone

Riparian zones are transitional areas between land and water environments. Riparian areas have unique plant and soil characteristics often much different than the land and water environments they connect.

Figure 4.2-1: Riparian Zone



Undisturbed riparian zones teem with wildlife and dense vegetation such as grasses, shrubs, and larger tree species such as willows, oaks, maples, hemlocks, and sycamores. Riparian areas protect and stabilize the adjacent waterbody and perform many vital functions including, but not limited to: stream bank/shoreline stabilization, moderation of temperature, attenuation of flood waters, improve water quality, and enhance wildlife habitat.

According to the Watershed Assessments, the Codorus Creek lacks riparian zones and what riparian areas are in tact, are not in good condition. Many of the riparian zones are too narrow to offer any benefits and most are not forested and contain vegetation that cannot stabilize the bank nor offer temperature moderation.

Riparian areas, sometimes referred to as buffers, are one of the most important features of a landscape for the protection of water quality and quantity. Understanding the functions and benefits of riparian areas is critical to watershed planning. Many of the improvements to water quality and quantity needed in a watershed, can be achieved through the restoration of these areas. In Section 5.0-A.1. Riparian Zones are discussed in more detail.

4.3 Soil Erosion/Loss

Due to poor land management and uses, the watershed is experiencing significant soil erosion and loss. While it is tough to estimate the amount of soil lost each year, some estimates of soil loss through streambank erosion amount to more than

60,000 tons/year. These estimates only account for streambank erosion and do not consider soil loss through streambeds, agricultural lands, barren land, and construction sites with malfunctioning erosion control measures.

Soil and sediment deposition is one of, if not the most, significant causes of the decline in productivity of the Chesapeake Bay Estuary, of which the Codorus Creek is a major tributary through the Susquehanna River. Sedimentation of the bay causes complete communities of clams, oysters, kelp beds, and the famous Maryland Blue Crab to disappear. Suspended sediments in the bay block valuable light from reaching the organisms on the bay floor. These same sediments often have nutrients bonded to them from agricultural, commercial and recreational (golf courses) sources. Because of the increase in nutrient load, algal blooms form which also block sunlight from reaching the bay floor. Some of these algal blooms can be toxic to fish and humans. This process is known as *eutrophication.*

Natural eutrophication is the process by which lakes gradually age and become more productive. It normally takes thousands of years to progress. However, humans, through their various cultural activities, have greatly accelerated this process in thousands of lakes around the globe. Cultural or anthropogenic "**eutrophication**" is water pollution caused by excessive plant nutrients.

Humans add excessive amounts of plant nutrients (primarily phosphorus, nitrogen, and carbon) to streams and lakes in various ways. Runoff from agricultural fields, field lots, urban lawns, and golf courses is one source of these nutrients. Untreated, or partially-treated, domestic sewage is another major source. Sewage was a particular source of phosphorus to lakes when detergents contained large amounts of phosphates. The phosphates acted as water softeners to improve the cleaning action, but they also proved to be powerful stimulants to algal growth when they were washed or flushed into lakes.

The excessive growth, or"blooms", of algae promoted by these phosphates changed water quality in Lake Erie and many other lakes. These algal blooms led to oxygen depletion and resultant fish kills. Many native fish species disappeared, to be replaced by species more resistant to the new conditions. Beaches and shorelines were fouled by masses of rotting, stinking algae. A means to control this problem became a paramount need.

Using small, natural lakes as experimental systems, scientists at the Experimental Lakes Area (ELA) were able to add various combinations of nutrients and determine which of the major plant nutrients (carbon, nitrogen, phosphorus) was the key to controlling cultural eutrophication in lakes. Over a number of years, seven different ELA lakes were experimentally fertilized in various ways. Two of these lakes were particularly important in demonstrating that phosphorus was the key nutrient for the control of eutrophication.

Although eutrophication is not a significant problem within the watershed, sound watershed planning principles must take into account the effects to downstream receiving waters and communities. As discussed earlier, the Codorus Creek is a major tributary to the Susquehanna River which is in turn a major tributary to the Chesapeake Bay estuary. As a result, understanding eutrophication including the causes of it, is important in a watershed management plan.

It is understood that within the Codorus Creek watershed there is excessive amounts of sediment being lost from riparian areas, agricultural fields, and the streams themselves. What is not known, is the amount of phosphorus that is being transported with this sediment. As a result, reducing soil loss and erosion should be a major priority of watershed stakeholders.

4.4 Stormwater Management Concerns/Issues

Stormwater management is the detention, retention, control, and release of stormwater runoff often associated with impervious surfaces. Stormwater management is a relatively new (past 40 years) technique that is part of almost every sub-division/land development ordinance.

Often, developers and land owners are required to match the post-development runoff to that of the pre-development conditions. On a small scale, and on a project-by-project basis, this works. However, stormwater from impervious surfaces is a major cause of stream degradation, soil loss, and streambank instability.

Every stream has a natural sediment load balance for a given watershed. If there is too much sediment in the water, such as from agricultural runoff, that sediment can settle out onto the bed of the stream and cause islands and significant point bars. If there is not enough sediment in the water, the stream will pull sediment from it's banks and bed, cause down cutting of the stream channel which then causes bank instability and collapse. This sediment is then transported downstream.

To be effective in our stormwater management we must begin to look at regional stormwater management on a watershed scale. When doing so, we are connecting different regions so our releases are timed to minimize damage.

4.5 Biological Resource Issues

Invasive species are of great concern in the watershed. Invasive species are very aggressive and adaptable to environmental change and result in decreased biological diversity and can create economic hardships. Of special concern is mile-a-minute weed (*Polygonum perfoliatum*), purple loosestrife (*Lythrum salicaria),* Japanese knotweed (*Polygonum cuspidatum*), garlic mustard (*Alliaria petiolata*), autumn olive (*Elaeagnus umbellate*), multiflora rose (*Rosa multiflora*),

and Japanese honeysuckle (*Lonicera japonica*). Invasive species often take over native communities and usually offer little habitat to other native species of birds and mammals. This is compounded by the continued growth and construction in the watershed. The subsequent loss of wetlands, floodplains, riparian areas, and forested habitats reduces habitat for threatened and endangered species.

Because of the aggressive and adaptable nature of invasive species, exposed and/or disturbed ground is particularly vulnerable to growth and establishment of these species. Once established, eradication can be difficult hence the need to stabilize exposed areas with native vegetation. Invasive species often out-compete native species for available resources. Of high priority in the watershed is mile-a-minute weed which acts as a vegetative blanket over native low-growing vegetation.

4.6 Cultural Resource Issues

At first it might appear that there are sufficient recreational areas within the watershed, however, most of those areas have seen an increasing number of visitors. As the population of the watershed increases and becomes redistributed, there will be a strain on the existing facilities. Review of Figure 3.4-1 shows that most of the county parks are located toward the northern section of the county. There is a recreational resource gap located in the south central portion of the watershed. The York County Heritage Rail Trail County Park does traverse this area, however, due to its layout and size, only affords watershed residents in this area with minimal recreational opportunities.

4.7 Funding

A major obstacle to conservation, restoration and preservation of watershed resources is funding. Depending on what recommendations are provided for a given area, restoration of watershed resources can be expensive. There are several sources of funding available for a variety of non-profit and government agencies, however, these funding sources are subject to the whims of budgetary constraints and political changes. This is why proper planning is important so that our watersheds don't require as much restoration as they do preservation. Preservation of resources can be as simple and inexpensive (compared to stream restoration) as fencing off a stream corridor to keep livestock away from the channel and provide an opportunity for the riparian zone to get re-established.

4.8 Current Efforts (Opportunities)

Fortunately for the watershed, there are numerous school groups, universities, non-profit organizations, municipalities, and government resource agencies which are conducting studies and completing projects that analyze and protect the watershed. These projects range from stream restoration using natural channel design principles and detailed water quality surveys to community involvement

programs such as stream clean-ups. By partnering with other agencies and organizations, groups can form alliances that make an effort more feasible and stronger. Below is a brief list of current projects within the Codorus Creek Watershed. Please note that this is not an exhaustive list and may not contain some projects.

A. Act 167

The York County Planning Commission is currently completing an Act 167 Stormwater Management Plan for the Codorus Creek Watershed. The plan addresses stormwater management on a watershed level as opposed to a municipal level. When completed, the Codorus Creek Act 167, Stormwater Management Plan will compliment the objectives of the River Conservation Plan.

B. Geomorphological Assessments

As described in Section 3.2, there are three separate geomorphic assessment reports for the entire Codorus Creek Watershed. These assessments were completed between 2001 and 2003. The goals of the assessments were to determine the stability of the watersheds streams and streambanks and develop a list of prioritized reaches for restoration.

These assessments should be used as a tool for the eventual restoration of the Priority 1 and 2 stream reaches within the watershed. The reports for the assessments are available at the York County Planning Commission and contain valuable information about the locations for restoration and the techniques that should be incorporated into the design of the restoration.

C. U.S. Army Corps of Engineers (USACOE) Interim Environmental Restoration Report

The Interim Environmental Restoration Report is a combination of two previously initiated feasibility studies being conducted under the Continuing Authorities Program (CAP). Both feasibility studies were initiated in January 2003 but were subsequently halted in Fiscal Year 2004 due to limited CAP funding. In November 2004, Congress reinstated the funding to the Army Corps of Engineers for the continuation of this effort. The two feasibility studies were the Section 206 of the Water Resources Development Act of 1996 for the aquatic resources restoration within the watershed and the Section 1135 of the Water Resources Development Act of 1986 which provides the ACOE the authority to make modifications to existing structures for the improvement of the environment. Section 1135 relates to the Flood Control Project on the Codorus Creek through the City of York.

Officials from the City of York and the York County Commissioners requested the USACOE, Baltimore District, conduct two studies to investigate the potential for environmental improvements and restoration. These studies used a watershed based ecosystem approach to identify problems and restoration opportunities in the watershed, focusing on restoration of aquatic life and stream habitat.

The interim report documents the efforts of the USACOE until the project was halted. It provides an overview of the general characteristics of the watershed and in large part, resembles the ideas, goals, and objectives of an RCP. As a result, to reduce duplication of efforts the interim report was used extensively with other documents and data sets in the preparation of this RCP.

SECTION 5.0 – General Recommendations

In general, the Codorus Creek River Conservation Plan has been prepared in accordance with the *Growing Smarter Toolkit, a Catalog of Financial and Technical Resources* prepared by the Governor's Center for Local Government Services. The entire document is provided as an attachment in Appendix A.

The Growing Smarter Toolkit lists the current technical and financial assistance programs available for Pennsylvania communities as they strive to address issues related to farmland preservation, open space preservation, environmental protection and conservation, infrastructure, transportation, historic preservation, urban revitalization, affordable housing, brownfield restoration and land recycling, and intergovernmental cooperation. As with the RCP, the Growing Smarter Toolkit is designed to aid municipalities as they address these issues now and in the future. Many of the recommendations within the Codorus RCP are built around sound principles which can be addressed by utilizing the Growing Smarter Toolkit.

This section provides general recommendations for the preservation, conservation, and restoration of watershed resources for the entire watershed. These are general recommendations and not project specific. They represent some basic principles that residents of a watershed should incorporate into zoning, land use, and their everyday lives.

As previously described, the watershed has been broken down into smaller watersheds based on data from the Commonwealth of Pennsylvania, the York County Planning Commission, and the PASDA GIS webservice. As a result, these sub-watersheds do not necessarily represent those listed elsewhere.

In Section 6.0 of this document we look at each of those sub-watersheds in more detail and provide more specific recommendations for each one.

A. Land Use and Zoning

As has been discussed in this document, current land use and zoning practices while common, do not necessarily make an attempt to preserve the watershed and it's resources. Many of the features of a watershed that appeal to so many of it's residents are not protected, and the most important of which, is water.

1. Riparian Buffer Overlay Zone

Streams need to be protected and preserved for they provide residents with many benefits ranging from water supply and healthy ecosystems to recreational opportunities. To minimally preserve streams and waterbodies, we must first adopt overlay zones that represent a buffer on both sides of all streams. Various sources site different dimensions of the buffer. The Tennessee Forestry BMP

manual indicates as little as 25' is sufficient while Virginia's Forestry BMP manual indicates a 50' minimum buffer and Wisconsin's Forestry BMP manual indicates as much as 100' should be the minimum buffer width. Forestry BMP manuals are not the only documents to discuss buffer widths. Other sources, such as the Pennsylvania Handbook of Best Management Practices for Developing Areas (PA BMP), indicate that buffer widths can vary depending on the objectives of the buffer. The best buffers are those that are forested adjacent to the stream. Forested buffers provide numerous benefits over grasses; benefits including, but not limited to: temperature moderation, increased streambank stabilization, and forested habitat corridors for forest dwelling species of animals.

According to the PA BMP manual, one accepted standard for riparian forest buffers is called the *3-zone buffer*. The width of each of the three zones in a 3-zone buffer will vary depending on the size of the stream and the topographic setting. However, according to the PA BMP manual, 85 feet is sufficient in most small and medium sized streams to incorporate the functions of the three zones. Figure 5.1-1 below illustrates the 3-zone forested buffer.

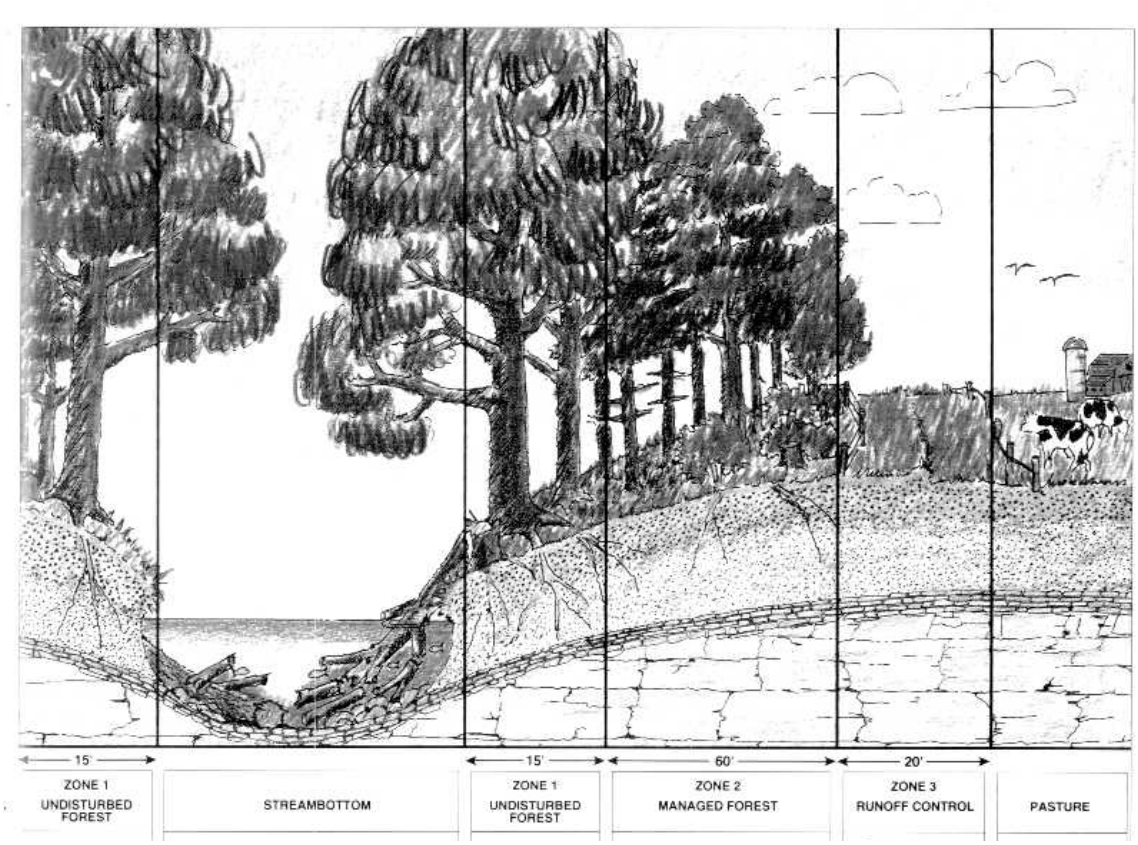
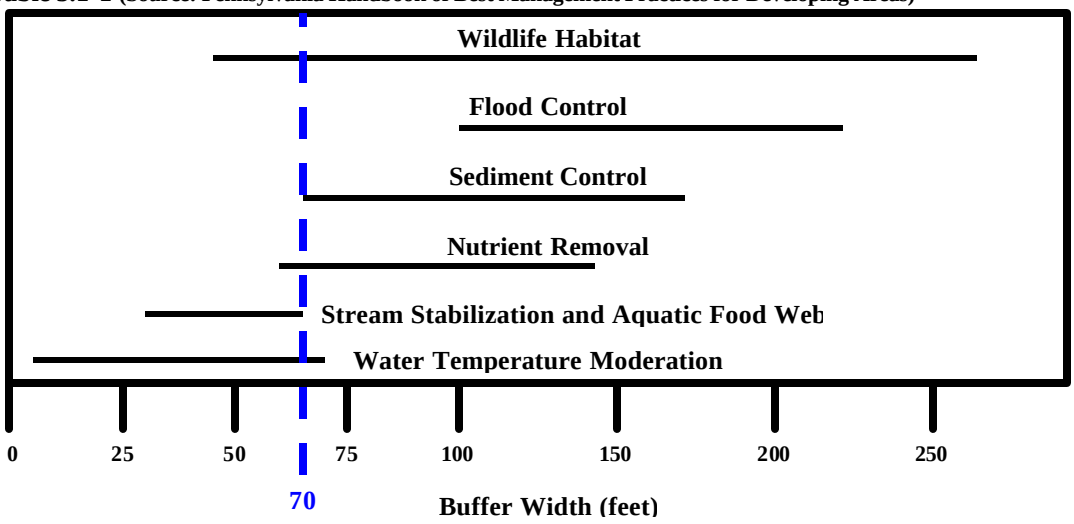


Figure 5.1-1: *3-zone* buffer for riparian areas.
(Source: Pennsylvania Handbook of Best Management Practices for Developing Areas)

As was described above, riparian buffers can vary greatly in width depending on which method/manual is used to establish the buffer. Table 5.1-1 below was taken from the PA BMP manual and is a graphical representation of the benefits

Table 5.1-1 **(Source: Pennsylvania Handbook of Best Management Practices for Developing Areas)**



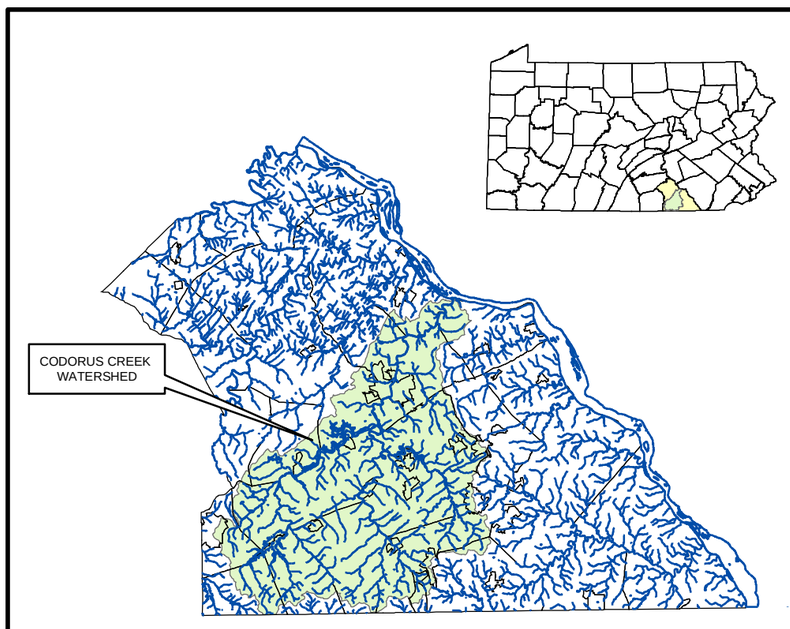
achieved for various buffer widths. To determine the appropriate buffer widths, the consultant for the project, in conjunction with planners at the York County Planning Commission, assessed Table 5.1-1 above to determine what the recommended width of a Riparian Buffer Zone should be. One of the most significant issues affecting the streams throughout the watershed is stream instability. Other issues include water temperature, nutrient and sediment load, and forest fragmentation (lack of habitat). It was determined that the goals of a Riparian Buffer Zone should be to stabilize the stream banks, moderate water temperature, reduce sediment and nutrient loads, increase wildlife habitat, and to the extent possible, flood attenuation. After deciding on the goals and objectives of the buffer, it was determined that the most prudent yet feasible buffer width to capture as many of the goals and objectives as possible, is 70' on both sides of all streams. This has been established based on the needs of the watershed and the feasibility of implementation. A 70' buffer incorporates as many functions as possible without being too restrictive to landowners. However, some municipalities may wish to increase the size of the buffer, which is beneficial to the environment, and should be permitted. It is important to understand that it is the first 25-30 feet of a buffer which stabilizes the streambanks the most. The most important functionality within the Codorus Creek Watershed that buffers can play, is that of streambank stabilization.

The exact restrictions of use within a buffer zone can vary greatly from no use, to limited uses, to limited uses within varying distances from the bank. For instance within a 70' buffer the first 25' (Zone A) should be a "no use" or "limited use" zone where most types of activities are prohibited. This could include restriction of mowing/removal of the vegetation and restricted livestock access. Approved impacts may be such things as non-impervious (crushed stone or gravel) recreational trails (pedestrian, bicycling, and/or equestrian) which require very little or no removal of vegetation. Within the remaining 45' (Zone B) the restrictions are less, but there may still be restrictions on earth disturbances such as buildings and other impervious surfaces. However, mowing and other "soft" impacts (those which don't create exposed soils, or impervious surfaces) are permitted. Zone B is the preferable location for such things as linear trails. Zone A is the preferable location for perpendicular or skewed direct access trails. However, neither one of these Zones should allow impervious trails such as bituminous paving.

On-site sewage disposal systems should be exempted from earth disturbance and buffer restrictions as such systems are permitted within 50 feet of surface waters by PADEP regulations. This Riparian Buffer Zone should be adopted by all municipalities within a watershed. Figure 5.1-2 shows the recommended Riparian Overlay Zone.

2. Natural Resource Zone

In addition to the Riparian Buffer Zone, all unique or natural areas identified on mapping should be protected with a Natural Resource Overlay Zone. Natural features protected within this zone could include, but not be limited to: wetlands, floodplains, natural areas (such as those identified in the York County Natural Areas Inventory Figure 2.7-1), unique geologic features, and other areas of local significance. In some cases, the natural resource overlay zone may overlap the riparian buffer zone. In which case, the natural resource overlay zone would take jurisdiction over the riparian buffer zone since the natural resource overlay zone would be more restrictive. Because of the sensitive nature of those features protected by the natural resource overlay zone, uses would be very restricted. Figure 5.1-2 shows the recommended Natural Resource Overlay Zone areas.



Location Map

Susquehanna River

CREEK
UT RUN
TROUT RUN NORTH
CODORUS CREEK NORTH
HELLAM TWP
EAST MANCHESTER TWP
DEE RUN
DEE RUN
I - 83 EXWY
CHURCH RD
MT ZION RD
MANCHESTER TWP
SPRINGETTSBURY TWP
RT 30 BYP
MILL CREEK
NORTH YORK BORO
SPRING GARDEN TWP
ROUTE 30
CARLISLE RD
WILLIS RUN
I-83 EXWY
RTE 30 BYP
YORK CITY
WINDSOR TWP
WINDSOR TWP
EAST BERLIN RD
WEST YORK BORO
CODORUS CREEK YORK
MILL CREEK
WINDSOR TWP
HOKES MILL RD
SPRING GARDEN TWP
BUSINESS ROUTE 83 PKWY
WEST MANCHESTER TWP
CC INDIAN ROCK DAM
WINDSOR TWP
TRINITY RD
WEST BRANCH
SOUTH BRANCH CODORUS CREEK
YORK TWP
QUEEN ST
YOE BORO
WINDSOR TWP
NEW SALEM BORO
WBCC INDIAN ROCK DAM
LAKE WILLIAMS
LAKE REDMAN
DALLASTOWN BORO
RED LION BORO
CREEK
INNERS CREEK
RED LION BORO
WINDSOR TWP
LAKE PAHAGACO
JACOBUS BORO
INNERS
PLEASANT AVE
BARSHINGER CREEK
WINDSOR TWP
JACKSON TWP
WBCC SPRING GROVE
SPRING GROVE BORO
BUNCH CREEK
BARSHINGER CREEK
WINDSOR TWP
BUNCH CREEK
PARADISE TWP
YORK RD
STOVERSTOWN BRANCH
NORTH CODORUS TWP
CHURCH ST
FISHEL
MILL RD
LOGANVILLE BORO
EAST BRANCH CODORUS CREEK
OIL CREEK
SEVEN VALLEYS BORO
EBCC/DUNKARD VALLEY
MAIN ST
CREEK
SWAMP RD
ROUTE 516
FISHEL CREEK
GLEN ROCK RD
WEST BRANCH CODORUS CREEK
WINTERSTOWN BORO
SEAKS RUN
SEAKS RUN
PENN TWP
HANOVER RD
SOUTH BRANCH CODORUS CREEK
NORTH HOPEWELL TWP
HEIDELBERG TWP
OIL CREEK
BRUSH
CHERRY RUN
SPRINGFIELD TWP
INTERSTATE 83
WINTERSTOWN RD
PORTERS CREEK
BUFFALO
RUN
CHERRY RUN
FOUST CREEK
FOUST CREEK
JEFFERSON BORO
BRUSH RUN
SEVEN VALLEYS BORO
EBCC/BLYMIRE HOLLOW
HANOVER BORO
PORTERS CREEK
BUFFALO RUN
GLEN ROCK VALLEY
"REHMEYER HOLLOW"
WEST BRANCH CODORUS CREEK
LAKE MARBURG
KREBS RUN
KREBS
RUN
CREEK
GLEN ROCK BORO
PENN TWP
HOPEWELL TWP
WEST BRANCH CODORUS CREEK
CODORUS TWP
PIERCEVILLE
RUN
TROUT
RUN
TROUT RUN SOUTH
CODORUS CREEK
SHREWSBURY TWP
SHREWSBURY BORO
MANHEIM TWP
ROUTE 216
PIERCEVILLE RUN
RAILROAD BORO
SHREWSBURY TWP
FURNACE CREEK
LONG RUN
CENTERVILLE CREEK
2ND ST
WEST MANHEIM TWP
STICKS RD
PIERCEVILLE RUN
NEW FREEDOM BORO
WEST BRANCH CODORUS CREEK
STELTZ RD

Road
Stream
Major Route
Trout Unlimited Study
Subwatershed
Municipal Boundary
Codorus Creek Watershed
70 Ft. Stream Buffer
Natural Resource Overlay Zone

7,500 3,750 0 7,500 Feet

1 inch equals 7,500 feet

FIGURE 5.1-2
GENERAL RECOMMENDATIONS MAP

Codorus Creek Watershed Association

BUCHART HORN, INC.

3. Stormwater Management

As discussed, stormwater management is critical to the protection of our streams and waterways. Even though there are some municipalities within the watershed that do not have stormwater ordinances, those municipalities which do have a stormwater ordinance are not managing stormwater in a way which protects the environment. Stormwater management was born out of the need to manage stormwater for environmental reasons. Unfortunately, it has become apparent that in the presence of good intentions, stormwater management techniques that are employed in most stormwater management ordinances do not manage on a regional level. Rather they are site specific which, when the stormwater is released, causes several problems. Several of those problems include, but are not limited to, increase in energy and quantity of flows after a storm's peak discharge, release of stormwater into conveyances instead of back into the aquifers, and increased sediment load.

One way to alleviate just one of the multiple problems with stormwater is to infiltrate as much stormwater runoff as possible. The presence of soils potentially suitable for infiltration (Figure 2.3-2) was previously discussed in Section 2.3. Municipal stormwater management ordinances and the upcoming Codorus Creek Act 167 Plan(s) should require infiltration on those sites where there are potentially suitable soils. This will recharge the watershed's aquifers and maintain base flows in the streams.

Pennsylvania's Stormwater Management Act (Act 167) was enacted in 1978. This legislation directs counties to develop stormwater management plans for designated watersheds within their boundaries. Once a plan is complete and approved by the PA DEP, municipalities within the plan's watershed are required to adopt ordinances to implement the plan. It is the purpose of Act 167 to deal with stormwater runoff throughout an entire watershed by preventing or mitigating the adverse impacts related to the conveyance of excessive rates and volumes of stormwater discharges. Although the Pennsylvania Municipalities Planning Code (MPC) allows local governments to provide for stormwater management through comprehensive planning, zoning ordinances, and subdivision and land development ordinances; the MPC does not require an individual municipality to implement stormwater plans or consider effects of runoff outside of it's boundaries. Act 167 requires stormwater planning and runoff controls which consider effects on a watershed level. However, Act 167 is applicable only to future development and thus will not fix pre-existing conditions or problems.

4. Alternative Development Designs

Many existing ordinances, whether they involve stormwater management, subdivision/land development, or zoning are restrictive to alternate designs, especially with regard to new development. Most ordinances have a specific set

of requirements for how developments should be designed. Such regulations include a number of criteria from how wide the streets are to be, to requiring curbs, and, in some instances, may not permit alternate land use practices such as low impact or cluster developments. Municipalities should be concerned with protection of environmental resources and in particular, water. Therefore, ordinances should protect environmental resources and, where appropriate, allow options for alternate designs. Such designs may involve streets of reduce widths, and cluster developments or development designs preserving open space in addition to more standard land development design.

The York County Water Resources Plan, a component of the York County Comprehensive Plan, describes in more detail planning and management best management practices ranging from comprehensive planning to low impact development. The objective with these BMPs is to protect the environment while providing for managed growth. The following is an abbreviated list from the York County Water Resources Plan, of best management practices and a brief description of each one:

Cluster Development – This technique provides design flexibility to permit the concentration of development on smaller lot sizes with lesser setbacks in the least sensitive areas of a parcel. This permits the remaining area of the site to be integrated as open space and preserves the environmentally sensitive areas such as steep slopes, woodlands, wetlands, floodplains, natural areas, and prime agricultural lands.

Comprehensive Plan – A comprehensive plan is a community's guide for future growth and development. The plan creates a blueprint for future land use patterns and provides an opportunity for a municipality to balance environmental needs with local economic needs.

Low Impact Development – Low impact development minimizes site alteration by utilizing multiple small scale structural BMPs uniformly distributed throughout a development in order to mimic the natural hydrology of the site and reduce the impacts of development.

Overlay Zoning – This technique involves the establishment of a special purpose zoning district that is superimposed over an existing zoning district or districts. The overlay zone provides additional standards for a particular area based on special conditions such as environmentally sensitive factors. Examples include floodplain overlay districts, steep slope overlay districts, natural resource overlay districts, and wellhead protection overlay districts.

Stormwater Ordinance – A stormwater ordinance is a planning tool used to establish standards by which to manage stormwater runoff resulting from land development.

Subdivision and Land Development Ordinance – A subdivision and land development ordinance is a tool used to implement a comprehensive plan. It sets forth provisions regulating the layout and design for the subdivision and development of land in a community.

Zoning Ordinance – A zoning ordinance is a tool which divides all land in a municipality into zones or districts and thereby regulates the use of the land, location of development, and the density of development.

Watershed Based Planning – This type of planning is based on watershed boundaries, not municipal boundaries. Developmental impacts occur in watersheds whose boundaries do not necessarily match municipal boundaries. Therefore, problems with these effects are best resolved on a watershed level as opposed to a municipal level.

B. Best Management Practices (BMPs) – Stormwater Management & Erosion Control

BMPs are structural and non-structural stormwater management, soil erosion facilities/techniques, forestry practices, sound planning practices, and agricultural practices that can and should be used to reduce pollution of the environment, and specifically water resources. Structural BMPs are such things as bioretention, constructed treatment wetlands, infiltration trenches, grass swales, permeable paving, portable sediment tanks, inlet protection such as a filter insert, riparian corridor management, sediment basins, agricultural grass strips, and other erosion control measures.

In addition to new development, existing stormwater management systems should be retrofitted to incorporate BMPs. It is not always possible to retrofit existing systems to incorporate BMPs and still get the intended results as if it were a new development. Site constraints and other limiting factors can sometimes hinder the effectiveness of BMPs. However, in all cases some level of pollution attenuation is achieved through retrofitting of BMPs. Some common BMPs used for retrofitting of stormwater management include, but are not limited to, vegetated filter strips, infiltration devices, and retrofitting detention devices such as use of rooftop storage and modification of outlet structures. The PA BMP For Developing Areas manual is an excellent resource for municipalities. The manual describes in detail some of the BMPs available for developing areas. Some of these apply to agricultural areas as well. Table 5.1-C below lists some BMPs from the the PA BMP handbook. For a complete description of the BMP's listed, please reference the PA BMP manual or call the York County Planning Commission for details.

In the list below there are 9 highlighted BMPs which are described in more detail after the list. These 9 BMPs are selected because they offer benefits that achieve

the goals of the management plan. However, the remaining BMPs on this list are also excellent BMPs for what they were designed to accomplish.

Table 5.1-C: Summary of BMP Descriptions

BMP	Type (Structural/Vegetation)	Permanence
Bioretention	Vegetative	Permanent
Constructed Treatment Wetland	Structural/vegetative	Permanent
Critical Area Planting	Vegetative	Permanent
Diversion	Structural	Permanent/Temporary
Energy dissipater	Structural	Permanent
Filter Bag	Structural	Temporary
Filter Strip	Vegetative	Permanent
Grass swale	Vegetative	Permanent
Infiltration Trench and Dry Well	Structural	Permanent
Inlet Protection, Block and Gravel	Structural	Temporary
Inlet Protection, Excavated Drain	Structural	Temporary
Inlet Protection/Fabric Insert	Structural	Temporary
Interim Stabilization	Vegetative	Temporary
Lined Channel	Structural	Permanent
Outlet Stabilization Structure	Structural	Permanent/Temporary
Permanent Vegetative Stabilization	Vegetative	Permanent
Permeable Paving System	Structural	Permanent
Pond, Dry	Structural	Permanent
Pond, Wet	Structural	Permanent
Portable Sediment Tank	Structural	Permanent
Riparian Corridor Management	Vegetative	Permanent
Riparian Forested Buffer	Vegetative	Permanent
Rooftop Runoff Management	Structural	Permanent
Sand Filter, Closed	Structural	Permanent
Sand Filter, Open	Structural	Permanent
Sediment Basin	Structural	Temporary
Sediment Trap	Structural	Temporary
Silt Curtain	Structural	Temporary
Silt Fence	Structural	Temporary
Slope Drain	Structural	Permanent
Stabilized Construction Entrance	Structural	Temporary
Straw Bale Barrier	Structural	Temporary
Stream Bank Stabilization	Structural/Vegetative	Permanent
Temporary Stream Crossing	Structural	Temporary
Tree Preservation and Protection	Structural	Temporary
Trench Plug	Structural	Permanent
Water Quality Inlet	Structural	Termporary

Biorentention – There are two types of bioretention: off-line and on-line areas. Off-line bioretention areas consist of sand and soils mixtures planted with native plants, which receive runoff from overland flow or from a diversion structure in a traditional drainage system. On-line bioretention areas have the same composition as off-line areas, but are located in grass swales or other conveyance systems that have been modified to enhance pollutant removal by settling and biofiltration

Bioretention is an efficient method for removing a wide variety of pollutants, such as suspended solids and nutrients. It can also be an effective means of reducing peak runoff rates and recharging groundwater by infiltrating runoff.

Critical Area Planting – Critical area planting consists of planting vegetation (native), such as trees, shrubs, vines, grasses, and/or legumes, on highly erosive or critically eroding areas. Vegetating critical areas stabilizes the soil, reduces damage from sediment and runoff to downstream areas, and improves wildlife habitat and aesthetic resources.

Filter Strip – A filter strip is a vegetated boundary characterized by uniform mild slopes. Filter strips may be forested or vegetated with turf grasses. Filter strips are provided downslope of developed tracts and agricultural fields to trap sediment and sediment-borne pollutants and to reduce imperviousness.

Infiltration Trench and Dry Swale – Infiltration trenches are excavated stone-filled trenches in which stormwater runoff is collected and percolated to the surrounding soil. Dry wells are below-grade stormwater retention structures that are open at the base, allowing water to percolate to the underlying soil. Unlike infiltration trenches, dry wells are not filled with stone. Infiltration trenches and dry wells reduce runoff volume and recharge groundwater.

Permeable Paving System – Permeable paving materials include porous bituminous concrete mixtures, permeable interlocking concrete paving blocks, concrete grid pavers, perforated brick pavers, and compacted gravel. Permeable paving systems are used to reduce the imperviousness of trafficked surfaces such as patios, walkways, driveways, and parking areas, for the purpose of reducing surface runoff and increasing infiltration.

Riparian Corridor Management/Riparian Forested Buffer – Structural measures and management policies designed to restore and enhance the beneficial hydrologic properties of natural stream corridors. Riparian buffers are described in more detail throughout this document.

Stream Bank Stabilization – Stream bank stabilization is a collection of methods for stabilizing stream banks by vegetative and mechanical means. These methods protect critical sections of a stream bank where standard vegetative practices are not feasible or offer insufficient protection.

Tree Preservation and Protection – Protection of desirable (native) species of trees from mechanical and other injury during land-disturbing and construction activity. This ensures the survival of desirable species of trees where they will be effective for erosion and sediment control, watershed protection, aesthetic beautification, dust and pollution control, noise reduction, shade and other environmental benefits during and after the land is being converted from forested to other uses (urban).

Again, for a more detailed description of those BMPs identified above and listed in Table 5.1-C above, please reference the Pennsylvania Handbook of Best Management Practices for Developing Areas (PA BMP).

C. Agricultural BMP's

Agriculture plays a major role in the Codorus Creek Watershed's economy and land use patterns. Pollutants from the watershed's farmlands can have a major impact upon the watershed's water resources. As a result, it is important that farms throughout the watershed incorporate agricultural BMP's into conservation plans that preserve the economic productivity of farms, as well as preserve the quality of water resources. The following are some agricultural best management practices from the Pennsylvania Conservation Partnership publication "A Conservation Catalog Practices for the Conservation of Pennsylvania's Natural Resources."

Contour Farming

Contour farming is the practice of farming around hills or slopes near to the contour of the land to reduce soil erosion. This is already a widely used practice throughout the watershed.

Contour Stripcropping

This BMP incorporates contour farming with the practice of alternating narrow strips of different crops on the contour of the land to again, reduce soil erosion. This practice is also widely used throughout the watershed.

Conservation Buffers

Conservation buffers utilize areas of land maintained in permanent vegetation that help control pollutants from runoff as well as improving wildlife habitat. Various

types of conservation buffers include contour buffer strips, filter strips, field borders, and riparian forest buffers.

Crop Residue Management

This is the practice whereby crop residue (parts of the crop not harvested, such as corn stalks) is incorporated into a conservation plan to help protect soil surfaces. The crop residue remains on the soil surface and is not plowed under during the next sowing season. Soil erosion is reduced at the same time soil quality is enhanced due to retained soil moisture and increased organic matter.

Grassed Waterway

A grassed waterway is a natural or constructed swale that directs and controls concentrated runoff from agricultural fields. A grassed waterway can slow runoff and prevent excess soil erosion by directing runoff away from fields.

Nutrient Management

Nutrient management plans establish methods for applying farm produced nutrient sources to agricultural lands in order to maximize crop production while minimizing water pollution. Such plans often include structural best management practices to control barnyard runoff while collecting manure in properly designed manure storage facilities. A manure storage facility can prevent contamination of clean water while allowing farmers to maximize the application process to farm fields.

Terraces and Diversions

Terraces and diversions are channels that are constructed across slopes and are designed to transform long sloped areas into a series of shorter slopes. These practices slow runoff rates and direct flow from slopes in a non-erosive manner. Terraces are designed so crops can be planted on them. Diversions are built to be permanently vegetated on steeper slopes.

Additional information on the above listed agricultural BMPs can be obtained by calling the Natural Resource Conservation Service, United States Department of Agriculture.

D. Cultural and Recreational Resource Needs

By far the largest cultural need within the Codorus Creek Watershed is education. Key to homeowner compliance and public "buy-in" for preserving and managing a watershed is educating the public about the watershed, raising awareness, and instilling in the public a sense of value for the watershed. Currently, there are several groups who have begun education programs. The Codorus Creek

Improvement Partnership works with local schools to provide education and field trips throughout the watershed to educate younger generations on what a watershed is, and why we need to protect and manage it. There are several other groups conducting similar exercises throughout the watershed. However, it is not just the younger generations who need educated. Too often are streams, wetlands, and other water resources overlooked as being valuable resources. Our streams are littered with trash, our wetlands are constantly being impacted, and our forests and farmland is being developed at an alarming rate. All of which affect the watershed. One way to educate the public is through an interpretive stream watershed signage program at trail heads, stream crossings, and at stream access points. It is important for municipalities to incorporate a watershed education campaign into their municipal planning objectives. Such a program has far reaching affects and will benefit the entire watershed.

Although there appear to be many opportunities for recreation within the watershed, the existing facilities may not suffice when considering the growth and redistribution of the population within the watershed and study area. There is a significant lack of access to streams and waterways, in particular the West Branch and main stem of the Codorus Creek, north to the Creek's confluence with the Susquehanna River. Based on correspondence with the Conewago Canoe Club and other organizations, parking is extremely limited and as a result residents are forced to park illegally if they wish to utilize the creek for canoeing, kayaking and fishing. There are 7 locations shown on Figure 3.4-1 where access points are desperately needed and there are 2 locations where public access exists. One access point exists across from John C. Rudy County Park, however, it is in a state of disrepair, there are few parking areas, and there is no safe access to the Creek if trying to launch a canoe or kayak, or access for fishing. The other public access point is in downtown York at the existing boat basin between Market St. and Philadelphia St. Although the boat basin access is in relatively good condition, it is rarely used. One of the problems with this access is the amount of sludge/sediment within the immediate vicinity of the boat basin. This is caused by the eddying effects of the walls of the boat basin and the recessed nature of the access ramp. Efforts should be made to modify the basin to allow easier access to the Creek.

Access points are needed throughout the watershed, not just in the locations shown on Figure 3.4-1. Figure 3.4-1 shows needed access points on the main stem from Indian Rock Dam to the confluence with the Susquehanna River and on the West Branch – Indian Rock Dam watershed between Spring Grove and Indian Rock Dam. An access point is desperately needed downstream (north) of the Rudy Park access. One does not exist at this time and boaters are forced to either take out on river right to River Farm Road (dirt road) or travel to the Creek's confluence with the Susquehanna River and take out in Wrightsville. Currently, there are no parking or access points along River Farm Road. The York County Parks and Recreation Department in cooperation and conjunction with the York County Planning Commission, York County Rail Trail Authority,

the Conewago Canoe Club, the Codorus Creek Improvement Partnership and the Codorus Creek Watershed Association should develop a plan for establishing parking and access areas to the Creek. Parking areas and access points should be designed to be complimentary to the Riparian Buffer Zone and not conflict with the goals and objectives of riparian buffers. Such things as pervious surfaces, a minimum distance of at least 25' from the edge of the stream bank, and non-invasive access (trails and paths as opposed to steps) can be considered in the design of access points.

In some instances, access points along a stream can be combined with other projects creating a larger project which may make it easier to identify project partners and receive funding. The York County Rail Trail Authority (YCRTA) contracted with Buchart-Horn, Inc. to conduct the Northern Extension of the Heritage Rail Trail County Park Feasibility Study which was completed in July, 2003. The purpose of the study was to determine the potential for extending the Heritage Rail Trail County Park (HRTCP) from its existing trailhead (northern terminus) at Lafayette Plaza at the Pershing/Philadelphia Street Intersection, on a northern heading along the Codorus Creek, to John C. Rudy County Park in East Manchester Township. The completion of the Northern Extension of the HRTCP would have long lasting positive effects on the watershed and is a recreational need connecting John C. Rudy County Park with other recreational facilities throughout the watershed. This plan, in general, supports such projects as they both protect valuable watershed resources (riparian areas) and provide for a much needed recreational use. Through the completion of such projects, access points can be established allowing easier and more direct access to the Codorus Creek. Efforts should be made to support the YCRTA with the implementation of the Northern Extension of the HRTCP.

In addition to the Northern Extension of the HRTCP, the YCRTA also conducted a Feasibility Study to determine the potential to extend the HRTCP to Hanover from York along the historic York-Hanover Trolley Line. Most of this alignment is within the Codorus Creek Watershed. Again, efforts should be made to support the YCRTA with the implementation of York-Hanover Trolley Line extension of the HRTCP.

In general, trails, pedestrian, cycling, or otherwise, are valuable recreational facilities that serve to not only provide recreational opportunities, but also as a measure of preserving valuable watershed resources both through the preservation of riparian areas and as educational tools about streams, wetlands, wildlife and other watershed resources. This plan supports such trails as recreational, preservation, and educational facilities throughout the watershed. According to the YCRTA, there is a need for additional trails on other branches of the Codorus Creek and efforts should be made to construct trails along other branches of the Codorus Creek and it's tributaries.

The Codorus Creek offers canoeists and kayakers unique opportunities for whitewater boating which is rare in this part of Pennsylvania. However, between the lack of access points and several dams on the main stem of the Codorus Creek, very few boaters are utilizing this aspect of the Codorous. Abandoned dams which impede flow and cause safety hazards should be removed. Specifically, there are three dams on the main stem of the Codorus Creek between just upstream of Richland Avenue in the City of York and just downstream of Mundis Mill Road in Springettsbury/Manchester Townships. Two of the dams are old mill or water supply dams and the third, in the City of York, is a bascule dam designed to provide deep water around the boat basin between Market Street and Philadelphia Street in the City of York.

The two mill/water supply dams are no longer in use. However, the bascule dam in York remains functional at establishing a small boating area within the immediate vicinity. Although this dam can be lowered, it is still dangerous to boaters attempting to cross it. There are other natural alternatives, rock structures such as cross-veins, j-hooks, and "w"-weirs, which can allow safe passage of boaters and dam enough water to maintain the boat basin. Efforts should be made to remove the bascule dam and restore the area to a more natural environment that reestablishes flow through the City of York while maintaining the boat basin characteristics.

Additionally, the south central portion of the study area, in the vicinity of Krebs Run, Pierceville Run and Centerville Creek watersheds, is in need of a county park offering similar opportunities to those offered at other county parks. The York County Department of Parks and Recreation in cooperation with the York County Planning Commission should conduct an assessment to determine the actual need for a county park in this area. A county park in this area would not only preserve some of the headwater areas of the South Branch of the Codorus Creek but would offer residents of this region recreational and educational opportunities.

In addition to recreational needs within the watershed, there are also possibilities for cultural needs in the form of historic renovation and re-use. The watershed is host to a number of historic resources, both architectural and archaeological sites. Steps should be made to preserve archaeological sites and impacts to these resources should be avoided.

Development greatly affects a watershed's health. To developers, it appears to be much more advantageous to develop vacant land than it is to renovate or demolish, and subsequently rebuild, existing buildings. Re-development of abandoned commercial, industrial, and to some extent residential buildings has many benefits to a community and a watershed. The York County Economic Development Corporation (YCEDC) is conducting a "brownfield re-development project" aimed at targeting those sites within the City of York which can and should be renovated into useable facilities. The U. S. Environmental Protection

Agency (EPA) defines "brownfields" as real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped land which improves and protects the environment. There are usually incentives given to developers who consider brownfield sites. The YCEDC is inventorying and documenting known brownfield sites within a corridor through the City of York centered around the Codorus Creek. This is an important project and other municipalities should consider conducting similar projects. Grants are available from various sources, such as PA DEP and the Governor's Center for Local Government Services Department of Community and Economic Development (DCED), for conducting such projects. Aside from re-using existing facilities, brownfield development can preserve buildings of historical significance such as the former York Manufacturing Company's plant located within the City of York. The facility, after being renovated, is now an office complex. Through this adaptive reuse, not only was vacant land spared from development, but a piece of York's industrial history was preserved.

E. Build Municipal Partnerships with Watershed Groups and Non-Profit Organizations

There are several watershed organizations and other non-profit groups throughout the watershed which are routinely involved with the restoration, preservation or conservation of watershed resources. The municipalities in the watershed should build working partnerships with these and other groups to form stronger alliances which will help the municipalities achieve some of their goals.

These watershed groups have strong networks of volunteers which they can pull together for various projects ranging from streambank planting days to watershed cleanup days. These groups also have experience preparing grants and as a result can help municipalities write and apply for various grants to do various projects ranging from park development to stream restoration and habitat enhancement.

F. Formation of Municipal Environmental Advisory Councils (EACs)

An Environmental Advisory Council is a group of 3-7 community residents, appointed by local elected officials that advise elected officials on the protection, conservation, management, promotion and use of natural resources within its territorial limits. EAC members devote time and energy to assist elected and appointed officials in protecting the environment. EACs **do not regulate**, they advise. They can act on a municipal or multi-municipal level. Municipalities are authorized to establish EACs through Act 177 of 1996, originally Act 148 of 1973.

Through the legislature, Pennsylvania has chosen to delegate much of its power to regulate land to the local government. As a result, the Commonwealth of

Pennsylvania has 2,572 local governing bodies. The decisions these governing bodies make on a variety of issues, from land use designations to stream corridor protection, have direct impacts on natural resources within individual municipalities and beyond. EACs, as part of local government, work directly with municipal officials to help them make environmentally sound decisions and protect the health and quality of life of our communities. York Township is the first municipality within the watershed to form an EAC. For additional information on EACs, including how to form an EAC and an EACs responsibility, please contact the Pennsylvania Environmental Council at 717-230-8044 or via the internet at www.eacnetwork.org.

G. Wetland Preservation

Municipalities should incorporate the requirement, in subdivision and land development ordinances, that all subdivision and land development plans provide a delineation of wetlands. It is important to understand that the delineation of wetlands involves scientific research and field investigations to determine the site conditions that may, or may not, qualify an area as wetlands. Therefore, all wetland studies should be performed by a qualified wetland scientist. Persons deemed qualified are to have at a minimum a bachelor's degree in biology, botany, zoology, ecology, or environmental sciences. In general, other professionals, such as engineers, landscape architects, surveyors, planners, and geologists are not considered qualified until they can provide proof of specialized training and experience beyond their discipline. An example of an ordinance with a wetlands section, provided by East Caln Township, is provided in Appendix B.

Additionally, all wetlands should be surveyed and mapped with the mapping submitted to the York County Planning Commission for inclusion in the Watershed Toolbox. As we have discussed, the existing mapping for the watershed's wetlands is inaccurate and does not depict all of the wetlands within the watershed. By requiring all of the wetlands to be identified, surveyed and mapped, we can then begin to build an accurate inventory of wetlands within the watershed. This is needed to update known wetlands on the NWI maps as discussed in Section 3.2-E.

H. Codorus Creek RCP and Codorus Creek Watershed Toolbox

The Codorus Creek River Conservation Plan and Codorus Creek Watershed Toolbox were developed as a tool for municipalities to use to make better land and watershed use decisions. As such, this tool should be referenced on a regular basis for information relating to specific issues within each sub-watershed and municipality. The Codorus Creek Watershed Toolbox (CCWT) is a municipality's tool and has been developed to eliminate the need for referencing this document. All of the information contained within this document is included in the CCWT in a PDF format document for reference purposes. The municipalities are strongly encouraged to use this tool as it was intended, to keep

track of projects and developments, to aid developers in making sound land use decisions, and to plan and implement projects identified as a priority.

SECTION 6.0 – Sub-Watershed Detailed Analysis

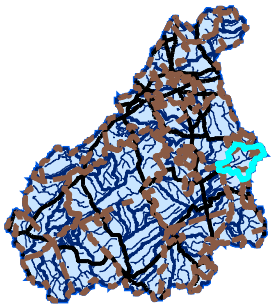
The study area of the Codorus Creek Watershed was divided into sub-watersheds based on data received from PASDA and the York County Planning Commission. Some of the sub-watersheds had to be unofficially named in order for the CCWT to distinguish one from the other. Table 6.1 below lists (alphabetically) the sub-watersheds studied in more detail and their designated use(s).

Table 6.1: Sub-watersheds studied in more detail and their designated use(s).

Section in Report	Sub-Watersheds	Use(s)
A	Barshinger Creek	CWF
B	Brush Run	WWF
C	Buffalo Run	WWF
D	Centerville Creek	WWF
E	Cherry Run	WWF
F	Codorus Creek - Indian Rock Dam	WWF
G	Codorus Creek - North	WWF
H	Codorus Creek - York	WWF
I	Dee Run	WWF
J	East Branch Codorus Creek	WWF
K	East Branch Codorus Creek - Blymire Hollow	HQ CWF
L	East Branch Codorus Creek - Dunkard Valley	CWF
M	Fishel Creek	WWF
N	Foust Creek	WWF
O	Glen Rock Valley	CWF
P	Inners Creek	CWF
Q	Krebs Run	WWF
R	Mill Creek	WWF
S	Pierceville Run	WWF
T	Rehmyer's Hollow	HQ CWF
U	Seaks Run	HQ CWF
V	South Branch Codorus Creek	WWF
W	Stoverstown Branch	WWF
X	Trout Run - north	HQ CWF (source to river mile 0.3) CWF (river mile 0.3 to mouth)
Y	Trout Run - south	WWF
Z	West Branch Codorus Creek - Indian Rock Dam	WWF
AA	West Branch Codorus Creek - Spring Grove	WWF
BB	Willis Run	WWF

WWF – Warm Water Fishes
CWF – Cold Water Fishes
HQ CWF – High Quality Cold Water Fishes

Included in each of the following sub-watershed sections is a printed report from the Codorus Creek Watershed Toolbox. Included in those reports are data specific to each sub-watershed. A brief discussion of those reports with recommended projects or changes to land use and zoning are included after the printed reports.



REPORT FOR THE BARSHINGER CREEK WATERSHED

Total Area of SubWatershed: 3473.09acres
Total Stream Length = 10.75 miles
Total Road Length = 39.17 miles
Total Wetland Area = 8.58 acres
Total Public Land Area = 75.51 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 141.88 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 3110.3 acres

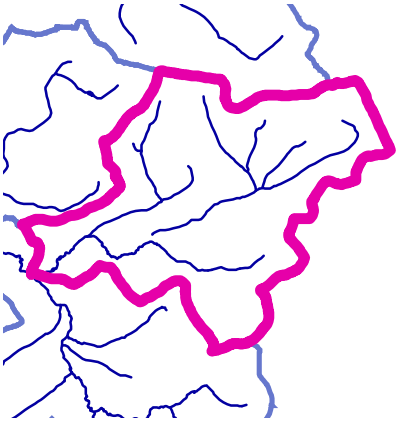
LANDUSE
Commercial, Industrial, Transportation: 38.9 acres
Deciduous Forest: 747.9 acres
Evergreen Forest: 61.73 acres
High Intensity Residential: 35.23 acres
Low Intensity Residential: 223.42 acres
Mixed Forest: 82.86 acres
Pasture, Hay: 1869.76 acres
Row Crops: 413.3 acres

ZONING
Agricultural: 2357.34 acres
Apartment/Office: 5.35 acres
Commercial: 34.44 acres
Conservation/Open Space: 75.38 acres
Industrial: 16.13 acres
Residential: 613.95 acres
Residential - rural/low density/open space: 323.02 acres
Slope: 47.46 acres

Total Preserved Agricultural Land: 548.34 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 93.39 acres
Total Miles of Priority 1 Stream: 1.6151miles
Total Miles of Priority 2 Stream: 11.0802miles
Total Designated Growth Area: 1392.49acres
Total Area of Possible Restoration: 1968.57acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
WINTERSTOWN BORO,
WINDSOR TWP,
NORTH HOPEWELL TWP,
RED LION BORO,
YORK TWP,
DALLASTOWN BORO,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC



A. Barshinger Creek Watershed

Municipalities: York Township, North Hopewell Township, Red Lion Borough, and Dallastown Borough

I Issues and Concerns

Barshinger Creek is a tributary to the East Branch of the Codorus Creek. Encompassing 3,473 total acres, Barshinger Creek begins in the Red Lion and Dallastown Borough areas and flows southwest. There are approximately 11 miles of stream in the watershed.

The major issue facing Barshinger Creek Watershed is growth and development in the headwaters around the Boroughs of Dallastown and Red Lion. The majority of the population that lives in the watershed lives within a 1 mile radius of the headwaters. As a result, most of the streams in the watershed are impaired.

Fortunately, most of the watershed contains soils suitable for infiltration and provides opportunities for stormwater retrofit BMPs. Only about 18% of the watershed is preserved open space (agricultural preservation and open space). According to the USACOE Interim Report, approximately 56% of the watershed is a possible restoration area.

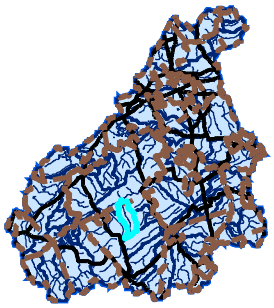
II. Recommendations

Because most of the people living in the watershed live in close proximity to the headwater streams, York Township, North Hopewell Township, Red Lion Borough and Dallastown Borough should adopt resolutions requiring BMPs on all new development and should develop a 70' Riparian Buffer Zone in their zoning ordinances.

Additionally, attempts should be made by the municipalities to increase the open space and preserved land to about 30% to match other small watersheds in the area. There are approximately 1.6 miles of highly impaired streams (Priority 1 stream) which should be restored and/or stabilized. There are approximately 8.58 acres of known wetlands within the watershed which should be permanently protected with a natural resource overlay zone. There are approximately 141 acres of floodplain which should be permanently protected through the adoption of a natural resource overlay zone.

North Hopewell Township, Red Lion Borough, and Dallastown Borough should establish an EAC.

Photo A: Facing west along Barshinger Creek from Stine Hill Road.



REPORT FOR THE BRUSH RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

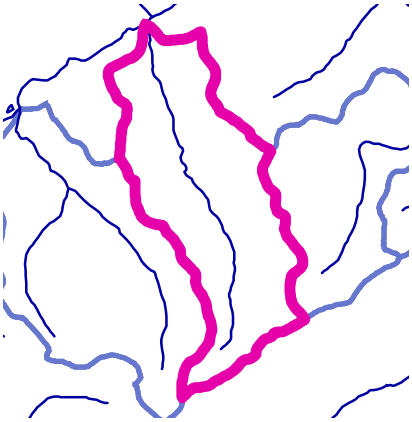
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 1569.8acres
Total Stream Length = 2.99 miles
Total Road Length = 6.66 miles
Total Wetland Area = 1.26 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 42.2 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1569.8 acres

LANDUSE
Deciduous Forest: 323.46 acres
Evergreen Forest: 5.36 acres
Mixed Forest: 13.18 acres
Pasture, Hay: 939.92 acres
Row Crops: 287.88 acres

ZONING
Agricultural: 1531.46 acres
Residential - rural/low density/open space: 38.34 acres

Total Preserved Agricultural Land: 652.07 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 1.0693miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 728.91acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
CODORUS TWP,
NORTH CODORUS TWP,



B. "Brush Run" Watershed

Municipalities: North Codorus Township and Codorus Township

I. Issues and Concerns

Brush Run watershed is a small unnamed tributary of the South Branch Codorus Creek and is located mostly in Codorus Township with the mouth located in North Codorus Township. Comprising only 1570 acres it is one of the smaller watersheds in the study area.

Generally the watershed appears to be in good health. Of the approximately 3 miles of stream located in the watershed, only 1 mile is listed as a Priority 2 stream. About 41% of the watershed is preserved agricultural land and about 90% is zoned agricultural. Fortunately for the watershed, all of the soils are suitable for infiltration.

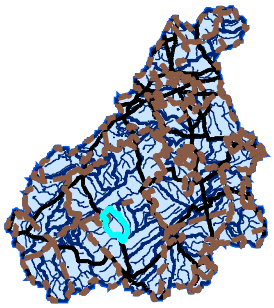
According to the Interim Report there are approximately 729 acres of possible restoration area in the watershed. The most significant problems facing the watershed are related to agricultural runoff, sedimentation, and streambank erosion due to livestock access to the streams.

II. Recommendations

Codorus and North Codorus Townships should adopt a 70' Riparian Buffer Zone within their zoning ordinances. Additionally, wetlands and floodplains in the watershed should be permanently preserved/protected with a natural resource overlay zone. The municipalities should require wetland identification and delineations on all new developments.

North Codorus Township and Codorus Township should establish EACs.

Photo B: Brush Run from Gladfelter Road.



REPORT FOR THE BUFFALO RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

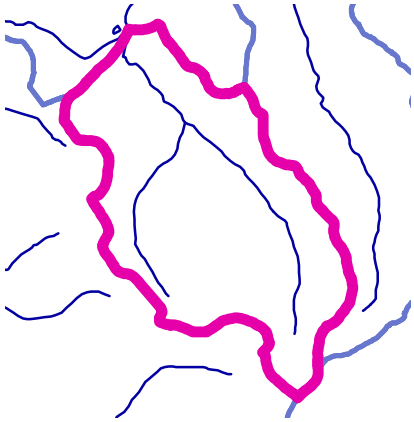
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 1797.53acres
Total Stream Length = 4.14 miles
Total Road Length = 11.02 miles
Total Wetland Area = 1.87 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 50.7 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1797.53 acres

LANDUSE
Deciduous Forest: 92.88 acres
Evergreen Forest: 33.45 acres
Low Intensity Residential: 28.67 acres
Mixed Forest: 32.72 acres
Pasture, Hay: 1323.05 acres
Row Crops: 286.76 acres

ZONING
Agricultural: 1594.29 acres
Residential: 203.24 acres

Total Preserved Agricultural Land: 921.28 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 0.5173miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 974.67acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
JEFFERSON BORO,
CODORUS TWP,
NORTH CODORUS TWP,



C. "Buffalo Run" Watershed

Municipalities: North Codorus Township, Codorus Township, and Jefferson Borough

I. Issues and Concerns

"Buffalo Run" is a tributary to the South Branch Codorus Creek and is adjacent to Brush Run. It drains parts of Jefferson Borough, North Codorus Township, and Codorus Township.

Of it's 1798 acres approximately 51% are either preserved agricultural land or preserved open space. Approximately 89% of the watershed is zoned Agricultural with the remaining 11% zoned residential.

According to the Interim Report there are approximately 974 acres of possible restoration area. Of the watershed's 4.14 miles of stream, approximately 12% are listed as a Priority 2 stream.

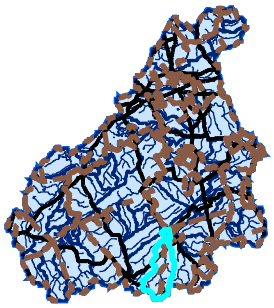
Generally the watershed appears to be in good health. The most significant issue facing the watershed is related to stream instability.

II. Recommendations

Codorus, North Codorus Township, and Jefferson Borough should adopt a 70' Riparian Zone into their Zoning Ordinances. Additionally, there are only 1.87 acres of known wetlands and approximately 50 acres of floodplain within the watershed which should be permanently preserved through the adoption of a natural resource overlay zone. The municipalities should require wetland identification and delineations on all new developments.

North Codorus Township, Codorus Township, and Jefferson Borough should establish EACs.

Photo C: Facing up Buffalo Run valley from Buffalo Valley Road.



REPORT FOR THE CENTERVILLE CREEK WATERSHED

Total Area of SubWatershed: 4790.2acres
Total Stream Length = 12.95 miles
Total Road Length = 27.32 miles
Total Wetland Area = 39.49 acres
Total Public Land Area = 48.41 acres
Total Miles of Heritage Rail Trail: 0.14miles
Total Floodplain Area = 240.96 acres
Total Area of Hydric Soils = 43 acres
Total Area of Soils Suitable for Infiltration = 4731.96 acres

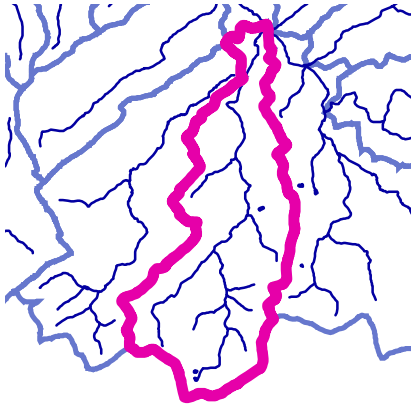
LANDUSE
Commercial, Industrial, Transportation: 9.94 acres
Deciduous Forest: 1838.72 acres
Evergreen Forest: 41.71 acres
Mixed Forest: 218.77 acres
Pasture, Hay: 2122.22 acres
Row Crops: 532.46 acres
Woody Wetland: 26.38 acres

ZONING
Agricultural: 3730.75 acres
Commercial: 6.21 acres
Conservation/Open Space: 588.22 acres
Residential: 28.94 acres
Residential - rural/low density/open space: 290.4 acres
Village Center: 145.7 acres

Total Preserved Agricultural Land: 1370.62 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.4425miles
Total Miles of Priority 2 Stream: 4.9554miles
Total Designated Growth Area: 43.39acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
GLEN ROCK BORO,
CODORUS TWP,
SHREWSBURY TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC



D. Centerville Creek Watershed

Municipalities: Codorus Township, Shrewsbury Township, and Glen Rock Borough

I. Issues and Concerns

Centerville Creek Watershed is located in the south-central portion of the watershed and drains portions of Codorus Township, Shrewsbury Township, and a small portion of Glen Rock Borough. Of it's 4,790 acres, approximately 41% are either preserved agricultural land or preserved conservation/open space.

Of the watershed's 13 miles of streams, approximately 3% (0.44 mi) are listed as Priority 1 and approximately 38% (5.0 mi) are listed as Priority 2.

There are approximately 40 acres of mapped wetlands and 90% of the soils in the watershed are potentially suitable for infiltration.

The most significant problem facing the Centerville Creek Watershed is related to stream degredation.

II. Recommendations

Codorus Township, Shrewsbury Township, and Glen Rock Borough should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances.

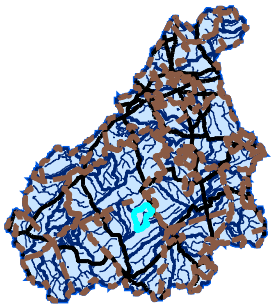
Additionally, each municipality should also adopt infiltration requirements into their respective stormwater management ordinances.

There are approximately 40 acres of wetlands and 240 acres of floodplains within the watershed which should be permanently protected with a natural resource overlay zone. A plan should be adopted and implemented to restore the streams with a Priority 1 rating.

The Centerville Creek is uniquely situated between the growth areas of New Freedom/Shrewsbury and Codorus State Park/Hanover Area. As a result, the Centerville Creek Watershed would be a possible location for a southern county park which should include, where appropriate, linear trails along the creek for recreational purposes.

Codorus Township, Shrewsbury Township, and Glen Rock Borough should establish EACs.

Photo D: Facing northwest toward headwaters of Centerville Creek from Birthday Club Road.



REPORT FOR THE CHERRY RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

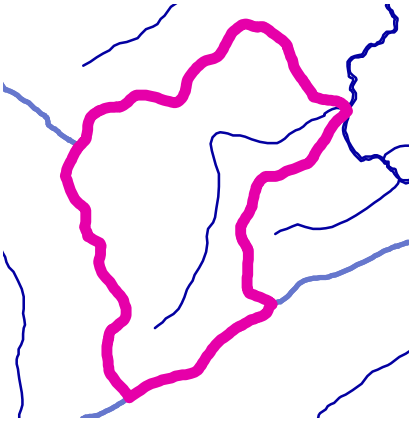
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 1058.67acres
Total Stream Length = 2.02 miles
Total Road Length = 5.56 miles
Total Wetland Area = 0.3 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 19.47 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1058.67 acres

LANDUSE
Deciduous Forest: 252.54 acres
Evergreen Forest: 3.3 acres
Low Intensity Residential: 13.18 acres
Pasture, Hay: 675.52 acres
Row Crops: 114.12 acres

ZONING
Agricultural: 1015.96 acres
Commercial: 3.09 acres
Conservation/Open Space: 0 acres
Residential - rural/low density/open space: 39.62 acres

Total Preserved Agricultural Land: 284.59 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.0097miles
Total Miles of Priority 2 Stream: 0.8862miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SPRINGFIELD TWP,
CODORUS TWP,



E. Cherry Run Watershed

Municipality: Codorus Township

I. Issues and Concerns

The Cherry Run watershed a small tributary watershed of the South Branch Codorus Creek and comprises approximately 1,058 acres of mostly agricultural land and is located entirely in Codorus Township.

Of the watersheds 2 miles of stream, approximately 49% of the them are listed as either Priority 1 (0.01 mi) or Priority 2 (0.89 mi) streams. According to the Interim Report, there are no possible restoration areas located within the watershed.

There are virtually no wetlands (0.3 acres) in the watershed and there are only 19 acres of floodplain. Total preserved agricultural land or open space/conservation is 285 acres or 25% of the watershed.

The most significant issues facing the Cherry Run Watershed are the lack of preserved open space, lack of wetland area and the amount of impaired streams.

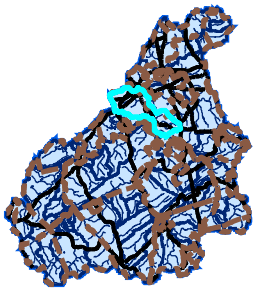
II. Recommendations

As previously mentioned, Codorus Township should adopt a 70' Riparian Buffer Zone into their zoning ordinance.

Additionally, the small amount of wetlands and floodplains in the watershed should be permanently preserved with a natural resource overlay zone. A stream restoration plan should be adopted to restore and stabilize the Priority 1 streams in the watershed. Those plans should incorporate wetland creation where applicable.

Codorus Township should establish an EAC.

Photo E: Facing up (west) Cherry Run valley from Catholic Valley Road.



REPORT FOR THE
CC INDIAN ROCK DAM WATERSHED

Total Area of SubWatershed: 6379.26acres
Total Stream Length = 16.75 miles
Total Road Length = 78.41 miles
Total Wetland Area = 33.03 acres
Total Public Land Area = 109.22 acres
Total Miles of Heritage Rail Trail: 1.26miles
Total Floodplain Area = 423.11 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 4672.28 acres

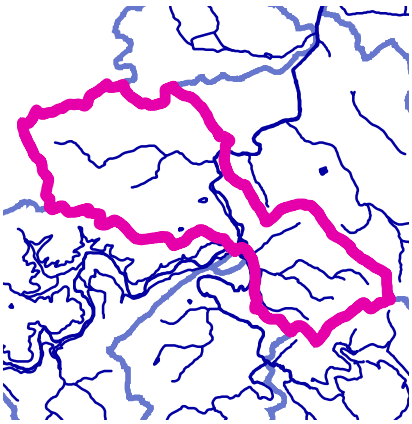
LANDUSE
Commercial, Industrial, Transportation: 288.07 acres
Deciduous Forest: 615.41 acres
Evergreen Forest: 74.84 acres
High Intensity Residential: 101.24 acres
Low Intensity Residential: 611.01 acres
Mixed Forest: 132.29 acres
Pasture, Hay: 3083.31 acres
Quarries, Strip Mines, gravel Pits: 58.87 acres
Row Crops: 1154.12 acres
Urban, Recreation Grasses: 108.55 acres
Water: 125.23 acres
Woody Wetland: 26.32 acres

ZONING
Agricultural: 1341.08 acres
Apartment/Office: 243.57 acres
Commercial: 123.66 acres
Conservation/Open Space: 273.19 acres
Industrial: 1042.98 acres
Quarry: 1289.8 acres
Residential: 1132.71 acres
Residential - rural/low density/open space: 932.28 acres

Total Preserved Agricultural Land: 1252.86 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 7
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.6002miles
Total Miles of Priority 2 Stream: 9.9467miles
Total Designated Growth Area: 4144.85acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 24.14 acres
Total Number of PNDI Sites: 1
Municipalities in this Watershed:
NORTH CODORUS TWP,
YORK TWP,
SPRING GARDEN TWP,
WEST YORK BORO,
WEST MANCHESTER TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Preservation of Open Space
5. Support of York-Hanover Trolley Line Rail Trail Extension



F. Codorus Creek "Indian Rock Dam" Watershed

Municipalities: West Manchester Township, Spring Garden Township, and York Township

I. Issues and Concerns

The "Indian Rock Dam" portion of the Codorus Creek Watershed is located on the Mainstem of the Codorus Creek from the start of the flood control facility in the City of York upstream to the Indian Rock Dam. It drains parts of West Manchester Township, Spring Garden Township, and York Township.

Of the watershed's 6,379 acres, approximately 24% is preserved as agricultural land or open space/conservation. There are approximately 33 acres of known wetlands within the watershed.

Of the watershed's 16.75 miles of stream, approximately 10.50 miles are listed as Priority 1 (0.6 mi) or Priority 2 (9.9 mi) streams. There are approximately 24 acres of "natural areas" within the watershed.

Approximately 65% of the watershed is designated as a growth area and there are only 1,341 acres of land zoned agricultural.

The most significant problem facing the Codorus Creek "Indian Rock Dam" watershed is the percentage of stream miles that are listed as Priority 1 and Priority 2. In addition, the majority of the watershed is designated as a growth area.

II. Recommendations

This watershed is one of the fastest growing regions of the Codorus Creek Watershed according to the Brookings Institute. Spring Garden Township, York Township, and West Manchester Township should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances.

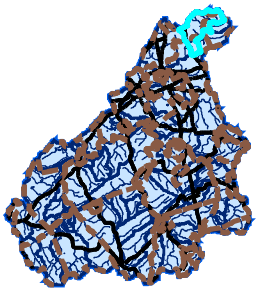
Approximately 70% of the watershed contains soils suitable for infiltration and as a result, the municipalities should consider retrofit BMP's, particularly infiltration trenches and porous paving.

Wetland, floodplains, natural areas, unique features, and Threatened and Endangered species should be permanently protected through the adoption of a natural resource overlay zone, and the municipalities should adopt ordinances that require wetland identification and delineation on all new development sites to avoid loss of wetlands. The municipalities should also strive to preserve open space.

The municipalities should support the York County Rail Trail Authority's project to extend the Heritage Rail Trail County Park along the York-Hanover Trolley Line between York and Hanover.

West Manchester and Spring Garden Townships should form EACs.

Photo F: Facing southwest toward Codorus Creek downstream of Indian Rock Dam.



REPORT FOR THE CODORUS CREEK NORTH WATERSHED

Total Area of SubWatershed: 3986.7acres
Total Stream Length = 17.92 miles
Total Road Length = 21.67 miles
Total Wetland Area = 81.78 acres
Total Public Land Area = 6.88 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 280.93 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 3880.6 acres

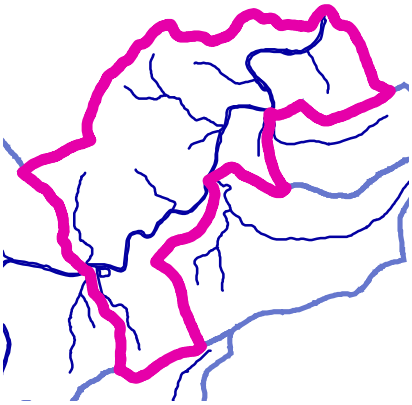
LANDUSE
Commercial, Industrial, Transportation: 13.14 acres
Deciduous Forest: 1379.96 acres
Emergent Herbaceous Wetland: 9.76 acres
Evergreen Forest: 63.73 acres
Low Intensity Residential: 24.17 acres
Mixed Forest: 114.64 acres
Pasture, Hay: 2067 acres
Row Crops: 212.03 acres
Transitional from Barren: 101.77 acres
Water: 0.49 acres

ZONING
Agricultural: 918.88 acres
Conservation/Open Space: 1227 acres
Residential: 220.1 acres
Residential - rural/low density/open space: 1618.42 acres
Village Center: 5.22 acres

Total Preserved Agricultural Land: 873.11 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 4
Total Area of Historic Districts: 18.19 acres
Total Miles of Priority 1 Stream: 0.3731miles
Total Miles of Priority 2 Stream: 2.3643miles
Total Designated Growth Area: 1059.91acres
Total Area of Possible Restoration: 16.07acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SPRINGETTSBURY TWP,
HELLAM TWP,
EAST MANCHESTER TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Access Point along River Farm Rd &/or Confluence with Susquehanna River



G. Codorus Creek "North" Watershed

Municipalities: East Manchester Township and Hellam Township

I. Issues and Concerns

The Codorus Creek "North" Watershed is located north of the North Sherman St. Bridge over the Codorus Creek in East Manchester and Hellam Townships. The watershed encompasses approximately 3,987 acres of which 53% are preserved as either open spaces or agricultural preservation.

There are approximately 82 acres of known wetlands within the watershed. Of it's 18 miles of streams there are approximately 2.7 miles listed as Priority 1 and Priority 2. According to the Interim Report there are 16 acres of possible restoration area located in the watershed.

Fortunately for the watershed approximately 95% of the soils are potentially suitable for infiltration. However, approximately 25% of the land area is designated as a growth area.

The most significant problem facing the Codorus Creek "North" Watershed is related to growth and stream degradation.

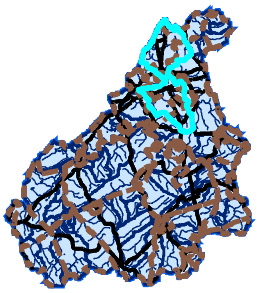
II. Recommendations

East Manchester and Hellam Townships should adopt a 70' Riparian Buffer Zone into their zoning ordinances. Additionally, the municipalities should also adopt ordinances that require wetland identification and delineations on new development sites to ensure the preservation of wetlands. A natural resource overlay zone should be adopted to permanently protect wetlands, floodplains and other natural features.

The Codorus Creek in this region of the watershed is unique and provides recreational opportunities to canoeists, kayakers, and anglers. However, access is greatly limited. The municipalities should partner with local organizations to identify areas where access is needed and locations of possible parking areas. There is at least one area where access is needed along River Farm Road (dirt road, see Figure 3.4-1). Another area may be the confluence with the Susquehanna River. A plan should be implemented to accomplish these tasks.

East Manchester and Hellam Townships should form EACs.

Photo G: Facing upstream along Codorus Creek "north" watershed from Codorus Furnace Road.



REPORT FOR THE CODORUS CREEK YORK WATERSHED

Total Area of SubWatershed: 14200.62acres
Total Stream Length = 40.9 miles
Total Road Length = 306.5 miles
Total Wetland Area = 141.39 acres
Total Public Land Area = 508.83 acres
Total Miles of Heritage Rail Trail: 2.12miles
Total Floodplain Area = 1196.65 acres
Total Area of Hydric Soils = 8 acres
Total Area of Soils Suitable for Infiltration = 7709.11 acres

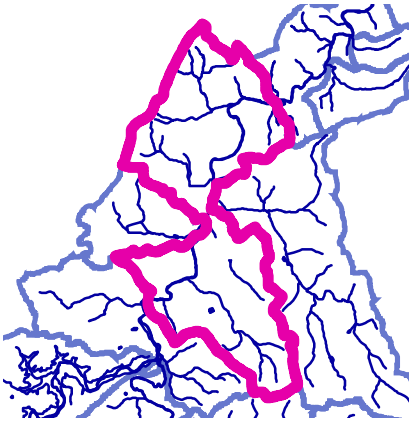
LANDUSE
Commercial, Industrial, Transportation: 1602.63 acres
Deciduous Forest: 1695.72 acres
Emergent Herbaceous Wetland: 13.16 acres
Evergreen Forest: 503.65 acres
High Intensity Residential: 1247.4 acres
Low Intensity Residential: 2895.51 acres
Mixed Forest: 422.78 acres
Pasture, Hay: 4671.6 acres
Quarries, Strip Mines, gravel Pits: 22.92 acres
Row Crops: 1075.99 acres
Urban, Recreation Grasses: 7.63 acres
Water: 41.63 acres

ZONING
Agricultural: 39.35 acres
Apartment/Office: 560.82 acres
Business: 123.79 acres
Commercial: 1110.14 acres
Conservation/Open Space: 1090.86 acres
Industrial: 2997.75 acres
Institutional: 33.66 acres
Residential: 5950.26 acres
Residential - rural/low density/open space: 2293.93 acres

Total Preserved Agricultural Land: 1131.82 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 20
Total Area of Historic Districts: 831.09 acres
Total Miles of Priority 1 Stream: 5.728miles
Total Miles of Priority 2 Stream: 16.7618miles
Total Designated Growth Area: 13667.67acres
Total Area of Possible Restoration: 2347.5acres
Total Area of 'Natural Areas': 4 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
YORK TWP,
WEST MANCHESTER TWP,
WEST YORK BORO,
NORTH YORK BORO,
SPRING GARDEN TWP,
YORK CITY,
SPRINGETTSBURY TWP,
EAST MANCHESTER TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Access Points Along Mainstem, Bantz Park and Northwest Triangle
5. Modify Boat Basin To Include "Bulkhead" out to Edge of Basin Walls
6. Modify Creek Banks to Include Native Vegitation
7. Possible Removal of Bascule Dam North of Philadelphia St.
8. Preservation of Open Space
9. Potential Overlook at Stormwater Outfall off of Kings Mill Road ("Blue Spew")
10. Support of Northern Extension of Rail Trail County Park



H. Codorus Creek "York" Watershed

Municipalities: City of York, Spring Garden Township, York Township, North York Borough, Springettsbury Township, East Manchester Township, and West York Borough

I. Issues and Concerns

The Codorus Creek "York" Watershed is generally located around the City of York which contains the flood control facility in the City. The watershed encompasses approximately 14,200 acres of which only 15% are preserved for open space or agricultural preservation. Of the watersheds 41 miles of streams, 22.5 are listed as either Priority 1 (5.7 mi) or Priority 2 (16.8 mi). Approximately 96% of the watershed is designated as a growth area.

The Interim Report identifies approximately 2347 acres of possible restoration areas and there are 4 "natural areas" within the watershed.

There are almost 7710 acres of soils suitable for infiltration. In addition to the 141 acres of known wetlands, there are an additional 8 acres of mapped hydric soils.

The most significant problem facing the Codorus Creek "York" Watershed is development and loss of riparian habitat. This section of the Codorus Creek Watershed is located in an urban area and as a result affords very little room for restoration.

II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. Because this section of the watershed is located in an urban area, a buffer zone may not always be possible. However, due to recent projects such as "Recapture the Riverfront", the USACOE project, and the York County Rail Trail Authority's project to extend the Heritage Rail Trail County Park north along the Codorus Creek to John C. Rudy County Park, there is considerable momentum to enhance this section of the Codorus Creek. The municipalities should work together to keep the momentum and continue working toward a "New" Codorus Creek within the City of York.

Wetland preservation is especially important in urban areas where the benefits of wetlands can be realized. Wetlands, floodplains, natural areas, and unique features should be permanently protected through the adoption of a natural resource overlay zone.

Due to the existence of soils potentially suitable for infiltration, every effort should be made to retrofit stormwater management systems to incorporate

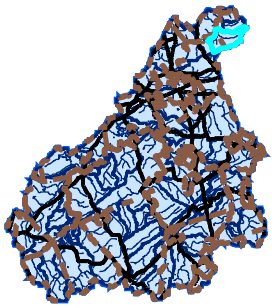
infiltration trenches and modified rooftop designs that permit rooftop attenuation of stormwater.

The municipalities should support/implement the following projects: the Northern Extension of the Heritage Rail Trail County Park, a potential overlook along the main stem (stormwater outfall off of Kings Mill Road which should include access from HRTCP), the removal of the bascule dam in York (with alternative measures which would **not** render the boat basin useless), restoration of the creek banks in York to include more native vegetation, modification of the existing boat basin between Market St. and Philadelphia St. to extend out to match the basin walls (so as not to be recessed), and access points at Bantz Park, John C. Rudy County Park, vicinity of Black Bridge Road, and between Philadelphia St. and North George St.

To the extent possible, the municipalities should make attempts to increase the amount of preserved open space through conservation easements or similar programs.

The City of York, Spring Garden Township, Springettsbury Township, West York Borough, and East Manchester Township should form EACs.

Photo H: Codorus Creek flowing under Route 30 (background) and Interstate 83 (foreground).



REPORT FOR THE DEE RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

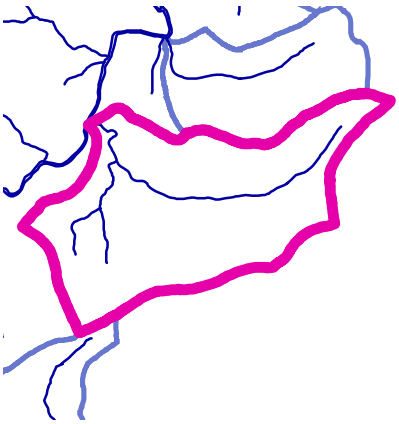
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 2004.59acres
Total Stream Length = 4.37 miles
Total Road Length = 10.06 miles
Total Wetland Area = 3.77 acres
Total Public Land Area = 370.6 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 0.9 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1973.08 acres

LANDUSE
Deciduous Forest: 1224.38 acres
Emergent Herbaceous Wetland: 8.18 acres
Evergreen Forest: 26.21 acres
Low Intensity Residential: 8.42 acres
Mixed Forest: 97.8 acres
Pasture, Hay: 574.88 acres
Row Crops: 47.7 acres
Transitional from Barren: 17.01 acres

ZONING
Conservation/Open Space: 1289.48 acres
Residential: 168.14 acres
Residential - rural/low density/open space: 546.99 acres

Total Preserved Agricultural Land: 318.73 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 3.1397miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 0.32acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SPRINGETTSBURY TWP,
EAST MANCHESTER TWP,
HELLAM TWP,



I. Dee Run Watershed

Municipalities: Hellam and Springettsbury Townships

I. Issues and Concerns

The Dee Run Watershed is a small watershed located in the northern section of the Codorus Creek Watershed. It drains parts of Hellam and Springettsbury Townships and encompasses approximately 2,004 acres.

Of the 4.37 miles of streams in the watershed approximately 72% are listed as Priority 2.

80% of the watershed is preserved as open space or agricultural preservation and most of the soils, approximately 90%, are potentially suitable for infiltration.

According to the Interim Report, there are 0.32 acres of possible restoration areas.

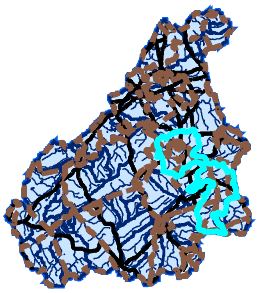
The most significant problem facing the Dee Run Watershed is the amount of Priority 2 steams.

II. Recommendations

Hellam and Springettsbury Townships should adopt a 70' Riparian Buffer Zone to compliment the preserved land. Additionally, wetlands and floodplains should be permanently protected through the adoption of a natural resource overlay zone.

Hellam and Springettsbury Townships should form EACs.

Photo I: Facing east toward Dee Run from Range Road.



REPORT FOR THE
EAST BRANCH CODORUS CREEK WATERSHED

Total Area of SubWatershed: 14989.55acres
Total Stream Length = 52.29 miles
Total Road Length = 117.1 miles
Total Wetland Area = 497.87 acres
Total Public Land Area = 1853.42 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 956.93 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 14120.54 acres

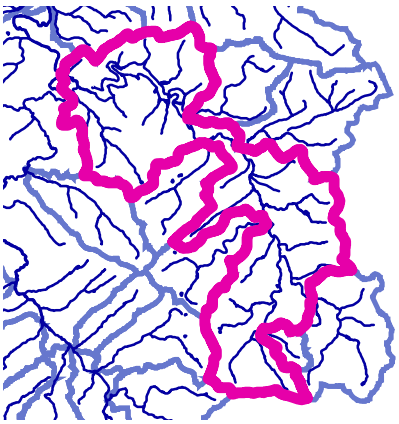
LANDUSE
Commercial, Industrial, Transportation: 31.27 acres
Deciduous Forest: 4208.87 acres
Emergent Herbaceous Wetland: 71.68 acres
Evergreen Forest: 470.78 acres
High Intensity Residential: 24.15 acres
Low Intensity Residential: 193.18 acres
Mixed Forest: 325.17 acres
Pasture, Hay: 7488.59 acres
Row Crops: 1712.37 acres
Water: 458.91 acres
Woody Wetland: 4.58 acres

ZONING
Agricultural: 8198.38 acres
Apartment/Office: 0.12 acres
Commercial: 173.64 acres
Conservation/Open Space: 3157.35 acres
Industrial: 106.16 acres
Residential: 1029.4 acres
Residential - rural/low density/open space: 1958.71 acres
Village Center: 365.79 acres

Total Preserved Agricultural Land: 3885.25 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 2
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 5.2803miles
Total Miles of Priority 2 Stream: 30.2471miles
Total Designated Growth Area: 3520.09acres
Total Area of Possible Restoration: 3508.61acres
Total Area of 'Natural Areas': 765.35 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration of Priortiy 1 Streams
5. Riparian Restoration Along Priority 2 Streams
6. Preservation of Open Space
7. Access to Stream for Recreation



J. East Branch Codorus Creek

Municipalities: York Township, Springfield Township, North Hopewell Township, Hopewell Township, Jacobus Borough, Loganville Borough, and Winterstown Borough

I. Issues and Concerns

Approximately 80% of the watershed is preserved as open space or agricultural preservation. The watershed contains both Lake Redman and Lake Williams. There are approximately 498 acres of wetlands identified, however, some of those wetlands are the two lakes within the watershed.

Of the 52 miles of stream in the watershed there are 5.3 miles of Priority 1 and 30.2 miles of Priority 2 streams. The East Branch Codorus Creek upstream of PA Route 214 (Lake Redman area) is classified as a HQ-CWF. The Interim Report identifies 3,508 acres of possible restoration area.

There are approximately 765 acres of "natural" areas within the watershed and the watershed contains three county parks; William H. Kain, Spring Valley, and Nixon Parks.

Considering the High Quality nature of the streams within the watershed, the most significant problem facing the East Branch Codorus Creek Watershed is the amount of Priority 1 and Priority 2 streams, and the amount of possible restoration areas identified by the USACOE.

II. Recommendations

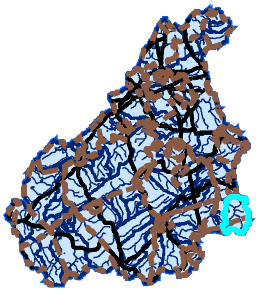
In order to stabilize the Priority 2 streams, the municipalities should adopt a 70' Riparian Buffer Zone and develop a riparian restoration strategy. All wetlands, floodplains, natural areas, and unique features should be permanently preserved through the adoption of a natural resource overlay zone due to the sensitive nature of the watershed. There are two natural areas identified in the York County Planning Commission's Natural Areas Inventory located within this watershed. These areas would benefit from additional permanent protection through the adoption of natural resource overlay zones.

The municipalities should partner with other organizations and agencies to develop a restoration plan to repair and restore the 5.3 miles of Priority 1 streams.

Open space should be preserved and access points to the stream should be developed and additional trails for recreation should be installed.

Springfield Township, North Hopewell Township, Hopewell Township, Jacobus Borough, Loganville Borough, and Winterstown Borough should form EACs.

Photo J: Facing upstream along East Branch Codorus Creek from within Spring Valley County Park.



REPORT FOR THE EBCC/BLYMIRE HOLLOW WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

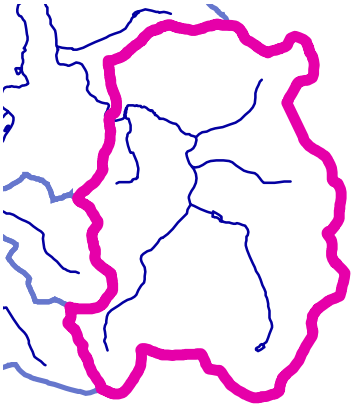
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Preservation of Open Space

Total Area of SubWatershed: 3345.18acres
Total Stream Length = 7.63 miles
Total Road Length = 19.84 miles
Total Wetland Area = 17.57 acres
Total Public Land Area = 0.15 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 39.63 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 3273.2 acres

LANDUSE
Deciduous Forest: 831.89 acres
Evergreen Forest: 41.69 acres
Low Intensity Residential: 18.4 acres
Mixed Forest: 8.44 acres
Pasture, Hay: 1524.15 acres
Row Crops: 907.43 acres
Water: 13.19 acres

ZONING
Agricultural: 2971.98 acres
Conservation/Open Space: 371.08 acres
Industrial: 2.12 acres

Total Preserved Agricultural Land: 1454.06 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.376miles
Total Miles of Priority 2 Stream: 6.3862miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 2967.68acres
Total Area of 'Natural Areas': 20.54 acres
Total Number of PNDI Sites: 1
Municipalities in this Watershed:
HOPEWELL TWP,
WINTERSTOWN BORO,
NORTH HOPEWELL TWP,



K. EBCC/Blymire Hollow Watershed

Municipalities: North Hopewell and Hopewell Townships

I. Issues and Concerns

The "Blymire Hollow" Watershed is a High Quality tributary to the East Branch of Codorus Creek and drains portions of North Hopewell and Hopewell Townships.

Of the watershed's 3,345 acres, approximately 55% is set aside as open space or agricultural preservation. There are 18 acres of known wetlands within the watershed.

The watershed contains approximately 7.63 miles of stream of which 5% (0.38 mi) are listed as Priority 1 and 84% (6.39 mi) are listed as Priority 2.

There are approximately 20 acres of "natural areas" and 17.57 acres of wetlands within the watershed and the Interim Report identifies 2967 acres as possible restoration areas.

Most of the watershed contains soils potentially suitable for infiltration.

The most significant problem facing the Blymire Hollow Watershed is the amount of impaired streams considering this is a high quality watershed.

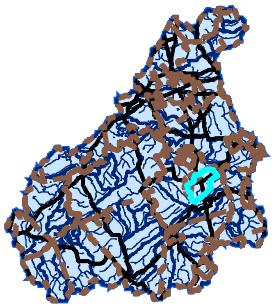
II. Recommendations

North Hopewell and Hopewell Townships should adopt a 70' Riparian Buffer Zone into their zoning ordinance. The municipalities should also permanently preserve all wetlands, floodplains, natural areas, and unique features through the adoption of a natural resource overlay zone and require a wetland identification and delineation on all new development sites or expansions.

The municipalities should also work with other groups, organizations and agencies to restore the Priority 1 impaired streams within the watershed starting toward the headwaters and working downstream.

North Hopewell and Hopewell Townships should form EACs.

Photo K: Facing upstream toward Blymire Hollow.



REPORT FOR THE EBCC/DUNKARD VALLEY WATERSHED

Total Area of SubWatershed: 2108.78acres
Total Stream Length = 4.59 miles
Total Road Length = 16.13 miles
Total Wetland Area = 17.41 acres
Total Public Land Area = 14.67 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 65.67 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2045.34 acres

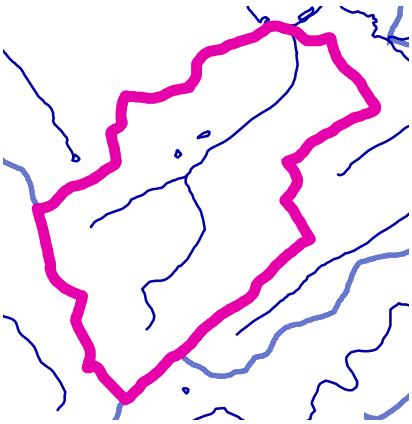
LANDUSE
Deciduous Forest: 420.09 acres
Emergent Herbaceous Wetland: 6.72 acres
Evergreen Forest: 36.78 acres
Low Intensity Residential: 98.52 acres
Mixed Forest: 14.79 acres
Pasture, Hay: 1329.03 acres
Row Crops: 186.23 acres
Water: 4.6 acres
Woody Wetland: 12.01 acres

ZONING
Agricultural: 1459.81 acres
Commercial: 1.33 acres
Conservation/Open Space: 307.58 acres
Industrial: 23.72 acres
Residential: 296.49 acres
Residential - rural/low density/open space: 14.06 acres
Village Center: 5.8 acres

Total Preserved Agricultural Land: 1196.04 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 2.3942miles
Total Miles of Priority 2 Stream: 1.5938miles
Total Designated Growth Area: 336.25acres
Total Area of Possible Restoration: 278.7acres
Total Area of 'Natural Areas': 50.81 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
LOGANVILLE BORO,
YORK TWP,
SPRINGFIELD TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC



L. EBCC Dunkard Valley Watershed

Municipalities: Springfield Township and Loganville Borough

I. Issues and Concerns

The "Dunkard Valley" Watershed is a small tributary to the East Branch Codorus Creek. Encompassing 2,108 acres there are approximately 1,503 acres preserved as agricultural land or open space/conservation. The watershed drains portions of Springfield Township and Loganville Borough.

There are approximately 17.41 acres of wetlands within the watershed and 51 acres of "natural areas".

There are 4.59 miles of stream in the watershed of which more than 50% are Priority 1 and another 1.6 miles are Priority 2. The interim report identifies 278 acres of possible restoration areas.

The most significant problems facing the "Dunkard Valley" Watershed are the amount of impaired streams, particularly Priority 1 streams, and the USACOE's identification of possible restoration areas.

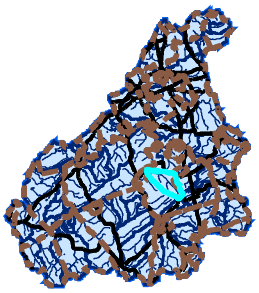
II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their zoning ordinances. In addition wetlands, floodplains, natural areas, and other unique features should be permanently preserved through the adoption of a natural resource overlay zone. A wetland identification and delineation should be required on all new developments or expansions.

The municipalities should partner with local watershed groups, organizations, and agencies to develop a stream restoration plan to restore the Priority 1 stream reaches first.

Springfield Township and Loganville Borough should form EACs.

Photo L: Facing east down Dunkard Valley.



REPORT FOR THE FISHEL CREEK WATERSHED

Total Area of SubWatershed: 2463.51acres
Total Stream Length = 5.45 miles
Total Road Length = 14.53 miles
Total Wetland Area = 1.19 acres
Total Public Land Area = 1.73 acres
Total Miles of Heritage Rail Trail: 0.14miles
Total Floodplain Area = 33.65 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2463.38 acres

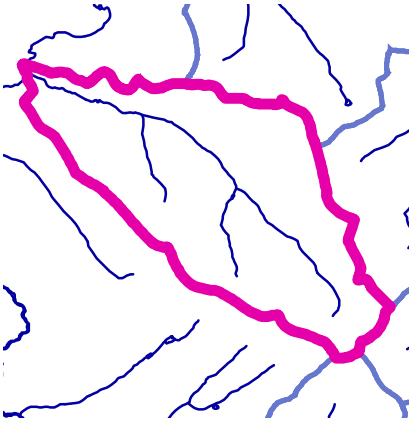
LANDUSE
Deciduous Forest: 666.04 acres
Evergreen Forest: 16.19 acres
Mixed Forest: 46.78 acres
Pasture, Hay: 1346.33 acres
Row Crops: 388.18 acres

ZONING
Agricultural: 1870.19 acres
Commercial: 0.6 acres
Conservation/Open Space: 307.32 acres
Residential: 134.54 acres
Residential - rural/low density/open space: 122.14 acres
Village Center: 28.72 acres

Total Preserved Agricultural Land: 766.07 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 1.4296miles
Total Miles of Priority 2 Stream: 2.0796miles
Total Designated Growth Area: 165.35acres
Total Area of Possible Restoration: 1279.93acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
LOGANVILLE BORO,
SPRINGFIELD TWP,
SEVEN VALLEYS BORO,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration of Priority 1 Streams
5. Riparian Restoration/Stabilization Along Priority 2 Streams



M. Fishel Creek Watershed

Municipalities: Springfield Township, Loganville Borough, and Seven Valleys Borough

I. Issues and Concerns

The Fishel Creek Watershed is a small tributary to the South Branch Codorus Creek. Of the watershed's 2,463 acres, approximately 44% are set aside as preserved agricultural land or conservation/open space. There are only 1.19 acres of known wetlands within the watershed.

There are 5.45 miles of stream located in the watershed of which 1.4 miles are listed as Priority 1 streams and 2.1 miles are listed as Priority 2 streams. 99% of the soils in the watershed are potentially suitable for infiltration.

The Interim Report identifies 1279 acres of possible restoration areas within the watershed.

The most significant problem facing the Fishel Creek Watershed is the amount of impaired streams and lack of a healthy riparian area.

II. Recommendations

Springfield Township along with Loganville Borough and Seven Valleys Borough should adopt a 70' Riparian Buffer Zone into their zoning ordinances.

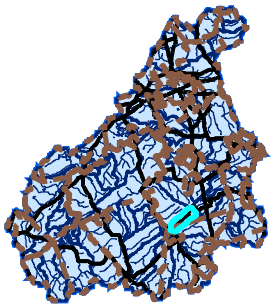
The municipalities should also permanently preserve all wetlands, floodplains and natural areas through the adoption of a natural resource overlay zone and require a wetland identification and delineation on all new developments.

The municipalities should partner with watershed groups, organizations, and agencies to develop a plan for restoration of the impaired streams focusing on the Priority 1 listed streams first.

The municipalities should make attempts to increase the amount of preserved open space in the watershed through agricultural preservation, conservation easements, or similar programs.

Springfield Township, Seven Valleys Borough, and Loganville Borough should form EACs.

Photo M: Facing upstream along Fishel Creek from Fishel Creek Road.



REPORT FOR THE FOUST CREEK WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

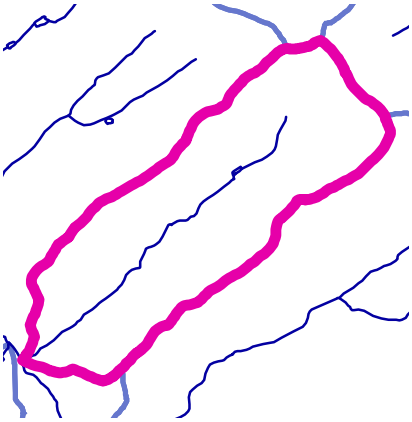
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 1131.3acres
Total Stream Length = 2.29 miles
Total Road Length = 7.9 miles
Total Wetland Area = 2.08 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 12.96 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1131.3 acres

LANDUSE
Deciduous Forest: 210.24 acres
Emergent Herbaceous Wetland: 4.73 acres
Evergreen Forest: 13.18 acres
Low Intensity Residential: 0.97 acres
Mixed Forest: 0.02 acres
Pasture, Hay: 720.18 acres
Row Crops: 181.98 acres

ZONING
Agricultural: 887.44 acres
Conservation/Open Space: 126.15 acres
Residential: 24.09 acres
Village Center: 93.63 acres

Total Preserved Agricultural Land: 549.75 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.1546miles
Total Miles of Priority 2 Stream: 1.4544miles
Total Designated Growth Area: 39.95acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
GLEN ROCK BORO,
SHREWSBURY TWP,
SPRINGFIELD TWP,



N. Foust Creek Watershed

Municipalities: Springfield Township, Shrewsbury Township, and Glen Rock Borough.

I. Issues and Concerns

Foust Creek Watershed is a small tributary watershed to the South Branch Codorus Creek. It encompasses only 1,131 acres of which 60% are set aside as preserved agricultural land and conservation/open space. All of the soils in the watershed are potentially suitable for infiltration.

There are only 2.1 acres of known wetlands within the watershed. Of the watershed's 2.29 miles of streams, approximately 1.6 miles are either Priority 1 or Priority 2 listed streams.

The most significant problem facing the Foust Creek Watershed is the number of Priority 1 and Priority 2 streams within the watershed.

II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. Additionally, the municipalities should permanently preserve all wetlands and floodplains through the adoption of a natural resource overlay zone and all new developments should be surveyed for the presence or absence of wetlands by a qualified person. The municipalities should require infiltration BMPs be used on all new developments including expansions.

The municipalities should partner with watershed groups, organizations, and agencies to develop a plan for the restoration of the Priority 1 impaired streams.

Springfield Township, Shrewsbury Township, and Glen Rock Borough should form EACs.

Photo N: Facing west down Foust Creek from Foust Road.

REPORT FOR THE GLEN ROCK VALLEY WATERSHED

Total Area of SubWatershed: 2279.46acres
Total Stream Length = 4.95 miles
Total Road Length = 16.84 miles
Total Wetland Area = 11.02 acres
Total Public Land Area = 13.18 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 27.3 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2267.65 acres

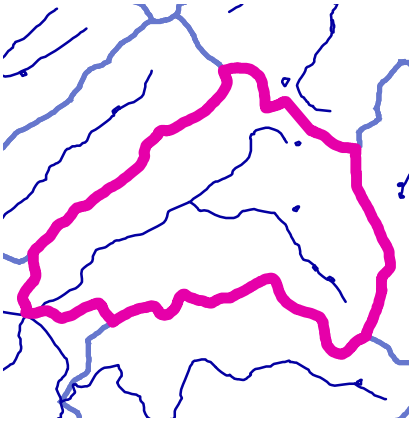
LANDUSE
Deciduous Forest: 248.83 acres
Emergent Herbaceous Wetland: 8.44 acres
Evergreen Forest: 66.07 acres
Low Intensity Residential: 36.35 acres
Mixed Forest: 35.1 acres
Pasture, Hay: 1410.49 acres
Row Crops: 438.78 acres
Water: 22.21 acres
Woody Wetland: 13.18 acres

ZONING
Agricultural: 1763.68 acres
Commercial: 64.25 acres
Conservation/Open Space: 280.31 acres
Industrial: 49.57 acres
Residential: 105.47 acres
Village Center: 16.2 acres

Total Preserved Agricultural Land: 950.63 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.5183miles
Total Miles of Priority 2 Stream: 3.3861miles
Total Designated Growth Area: 281.66acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SHREWSBURY BORO,
GLEN ROCK BORO,
SHREWSBURY TWP,
SPRINGFIELD TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration/Stabilization of Riparian Area Along Priority 2 Streams



O. Glen Rock Valley Watershed

Municipalities: Springfield Township, Shrewsbury Township, and Glen Rock Borough

I. Issues and Concerns

The Glen Rock Valley Watershed is a small tributary watershed to the South Branch Codorus Creek. The watershed encompasses 2,279 acres of which 1,230 acres, or 54%, are set aside as preserved agricultural land or conservation/open space. Approximately 97% of the soils in the watershed are potentially suitable for infiltration.

There are approximately 11 acres of known wetlands located within the watershed and of the 4.95 miles of stream, 79% are either a Priority 1 or Priority 2 stream.

The most significant problem facing the Glen Rock Valley Watershed is the amount of impaired streams.

II. Recommendations

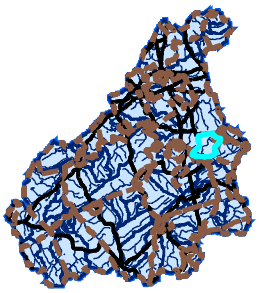
The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances and permanently preserve wetlands and floodplains through the adoption of a natural resource overlay zone.

Municipalities should require wetland identification and delineation on all new developments and expansions.

The municipalities should partner with watershed groups, organizations, and agencies to develop a plan for the restoration/stabilization of the riparian zone of Priority 2 streams.

Springfield Township, Shrewsbury Township and Glen Rock Borough should form EACs.

Photo O: Facing north toward Glen Rock Valley watershed from Hametown Road.



REPORT FOR THE INNERS CREEK WATERSHED

Total Area of SubWatershed: 1987.99acres
Total Stream Length = 4.91 miles
Total Road Length = 28.39 miles
Total Wetland Area = 3.6 acres
Total Public Land Area = 61.51 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 101.37 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1552.45 acres

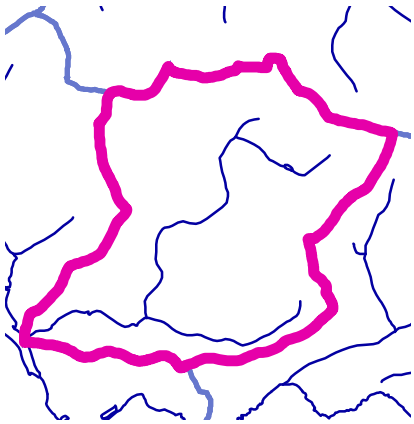
LANDUSE
Commercial, Industrial, Transportation: 46.55 acres
Deciduous Forest: 267.85 acres
Emergent Herbaceous Wetland: 3.47 acres
Evergreen Forest: 35.35 acres
Low Intensity Residential: 230.62 acres
Mixed Forest: 43.73 acres
Pasture, Hay: 1198.58 acres
Row Crops: 155.94 acres
Water: 5.89 acres

ZONING
Agricultural: 1042.66 acres
Commercial: 14.27 acres
Residential: 611.62 acres
Residential - rural/low density/open space: 319.44 acres

Total Preserved Agricultural Land: 536.99 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 1.1875miles
Total Miles of Priority 2 Stream: 2.132miles
Total Designated Growth Area: 950.42acres
Total Area of Possible Restoration: 1393.81acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
DALLASTOWN BORO,
YORK TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restore/Stabilize Riparian Zone of Priority 2 Streams
5. Restore Priority 1 Streams



P. Inners Creek Watershed

Municipalities: Dallastown Borough and York Township

I. Issues and Concerns

The Inners Creek Watershed is a tributary watershed to the East Branch Codorus Creek just upstream of Lake Redman. It's headwaters are located in Dallastown Borough. The Inners Creek Watershed drains portions of York Township and Dallastown Borough. Of it's 1987 acres, approximately 27% are set aside for agricultural preservation and approximately 48% are in a designated growth area.

There are only 3.6 acres of wetlands and most of the population in the watershed lives in close proximity to the headwaters.

Of the watershed's 4.9 miles of stream, 1.2 miles are listed as a Priority 1 stream and 2.1 miles are listed as a Priority 2 stream.

The interim report identifies 1393 acres of possible restoration areas. Approximately 78% of the soils within the watershed are suitable for infiltration.

The most significant problem facing the Inners Creek Watershed is the development and growth in the headwaters of the watershed which is close to the Borough of Dallastown. In addition, the number of impaired streams is also a major concern. This is the result of growth in and around the headwaters.

II. Recommendations

York Township and specifically Dallastown Borough should adopt a 70' Riparian Buffer Zone into their zoning ordinances to protect the headwaters. Additionally, these municipalities also need to incorporate infiltration practices because most of the soils in the watershed are potentially suitable for infiltration of stormwater. Where feasible, retrofitting of infiltration BMPs should be installed.

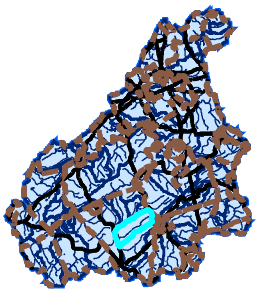
The municipalities should permanently preserve wetlands and floodplains through the adoption of a natural resource overlay zone and the municipalities should require wetland investigations on all new developments.

Attempts should be made to increase the amount of preserved open space through the use of agricultural programs, conservation easements, or similar programs.

The municipalities should partner with watershed groups, organizations, and agencies to develop a plan for the restoration of the Priority 1 impaired streams.

Dallastown Borough should form it's own EAC or team with York Township's EAC.

Photo P: Facing east toward Inners Creek watershed from Hess Farm Drive.



REPORT FOR THE KREBS RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

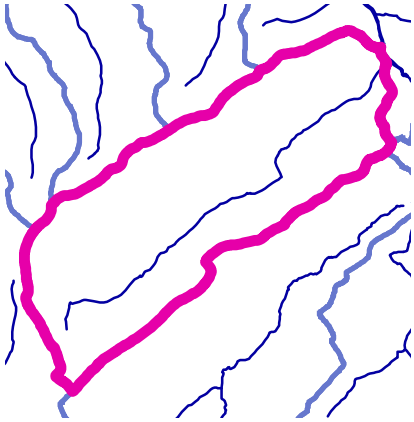
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration/Stabilization of Riparian Zone of Priority 2 Streams

Total Area of SubWatershed: 2778.09acres
Total Stream Length = 4.13 miles
Total Road Length = 11.51 miles
Total Wetland Area = 5.59 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0.15miles
Total Floodplain Area = 75.67 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2776.56 acres

LANDUSE
Deciduous Forest: 559.53 acres
Evergreen Forest: 10.45 acres
Low Intensity Residential: 12.77 acres
Mixed Forest: 43.99 acres
Pasture, Hay: 1878.47 acres
Row Crops: 272.88 acres

ZONING
Agricultural: 2745.95 acres
Commercial: 15.01 acres
Conservation/Open Space: 0.01 acres
Residential - rural/low density/open space: 17.11 acres

Total Preserved Agricultural Land: 1296.49 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.1359miles
Total Miles of Priority 2 Stream: 6.3261miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 2.72acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
CODORUS TWP,



Q. Krebs Run Watershed

Municipality: Codorus Township

I. Issues and Concerns

The "Krebs Run" Watershed is a small tributary watershed to the South Branch Codorus Creek upstream of Glen Rock Borough. It's 2,778 acres drains portions of Codorus Township.

There are 4.13 miles of mapped streams in the watershed, there are approximately 0.13 miles of Priority 1 stream and 6.32 miles (mapped and unmapped) of Priority 2 streams in the watershed.

There are approximately 5.6 acres of wetlands and approximately 1,300 acres of preserved agricultural land. Approximately all of the soils within the watershed are potentially suitable for infiltration.

Although in relatively good condition, the most significant problem facing the Krebs Run Watershed is the amount of impaired streams, most of which are Priority 2.

II. Recommendations

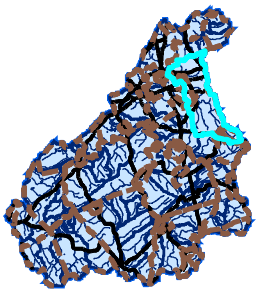
Codorus Township should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances and permanently preserve all wetlands and floodplains through the adoption of a natural resource overlay zone. The municipality should require a wetland identification and delineation on all new developments and expansions.

Due to the dominance of soils potentially suitable for infiltration, Codorus Township should require infiltration of stormwater where feasible.

Codorus Township work with local organizations and watershed groups to restore/stabilize the riparian zones of the Priority 2 streams.

Codorus Township should form an EAC.

Photo Q: Facing east toward Krebs Run from intersection of Krebs Road and S chuman Road.



REPORT FOR THE MILL CREEK WATERSHED

Total Area of SubWatershed: 11831.58acres
Total Stream Length = 27 miles
Total Road Length = 209.13 miles
Total Wetland Area = 41.9 acres
Total Public Land Area = 333.62 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 809.68 acres
Total Area of Hydric Soils = 6 acres
Total Area of Soils Suitable for Infiltration = 7184.49 acres

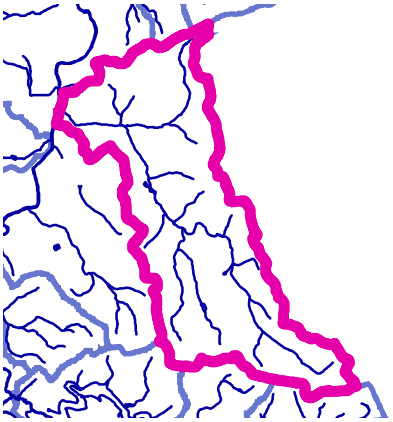
LANDUSE
Commercial, Industrial, Transportation: 1451.41 acres
Deciduous Forest: 1771.28 acres
Emergent Herbaceous Wetland: 26.31 acres
Evergreen Forest: 231.1 acres
High Intensity Residential: 154.38 acres
Low Intensity Residential: 2771.93 acres
Mixed Forest: 253.91 acres
Pasture, Hay: 4390.25 acres
Quarries, Strip Mines, gravel Pits: 3.37 acres
Row Crops: 729.16 acres
Transitional from Barren: 26.31 acres
Water: 13.16 acres
Woody Wetland: 9.01 acres

ZONING
Agricultural: 1779.56 acres
Apartment/Office: 387.68 acres
Commercial: 1088.64 acres
Conservation/Open Space: 427.39 acres
Industrial: 1087.48 acres
Residential: 4531.56 acres
Residential - rural/low density/open space: 2529.28 acres

Total Preserved Agricultural Land: 433.93 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 5
Total Area of Historic Districts: 274.4 acres
Total Miles of Priority 1 Stream: 8.3666miles
Total Miles of Priority 2 Stream: 11.0008miles
Total Designated Growth Area: 11459.33acres
Total Area of Possible Restoration: 2896.88acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
DALLASTOWN BORO,
RED LION BORO,
WINDSOR TWP,
YOE BORO,
YORK TWP,
SPRING GARDEN TWP,
YORK CITY,
MANCHESTER TWP,
SPRINGETTSBURY TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration of Priority 1 Streams
5. Demonstration Restoration Project Along Camp Betty Washington Road



R. Mill Creek Watershed

Municipalities: York Township, Spring Garden Township, City of York, Red Lion Borough, Dallastown Borough, and Yoe Borough

I. Issues and Concerns

The Mill Creek Watershed encompasses 11,831 acres of which only 7% is preserved agricultural land or open space/conservation.

There are approximately 42 acres of known wetlands within the watershed, 6 additional acres of hydric soils, and 27 miles of stream. There are 8.4 miles of Priority 1 streams and 11 miles of Priority 2 streams in the watershed.

97% of the watershed is considered a growth area and there are approximately 7,200 acres of soils potentially suitable for infiltration.

Mill Creek Watershed is the one of the most, if not the most, rapidly developing sub-watersheds of the Codorus Creek Watershed. The most significant problems facing this watershed are related to that development and growth. Most of the new home sites are in close proximity to Mill Creek and it's smaller tributaries. As with other sub-watersheds in the study area, there is increasing pressure on the headwaters of the watershed. As a result, there is significant degradation along much of Mill Creek particularly along Camp Betty Washington Road and Interstate 83.

II. Recommendations

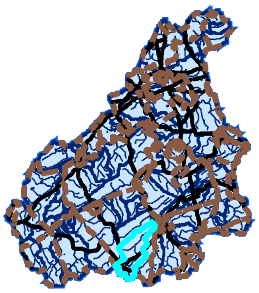
The municipalities need to adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. In addition, where feasible, infiltration must be required on all new developments and expansions. This watershed is also lacking critical open space. Efforts should be made to require all new developments to incorporate an open space plan and municipalities should adopt policies that allow alternate forms of development such as cluster development and low impact development.

All wetlands and floodplains must be preserved through the adoption of a natural resource overlay zone and the municipalities should require all new developments prepare a wetland identification and delineation report to be submitted to the municipality and the York County Planning Commission.

In addition, the municipalities should partner with watershed groups, organizations, and agencies to develop a plan for the restoration of the Priority 1 impaired streams, of which there are many. The Mill Creek Watershed, particularly along Camp Betty Washington Road, is a prime location for a demonstration restoration project and possible location of a Township Park.

Spring Garden Township and the City of York should form EACs. Red Lion Borough, Dallastown Borough, and Yoe Borough should form EACs or team with York Townships EAC.

Photo R: Facing downstream toward Mill Creek from Camp Betty Washington Road in York Township.



REPORT FOR THE PIERCEVILLE RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

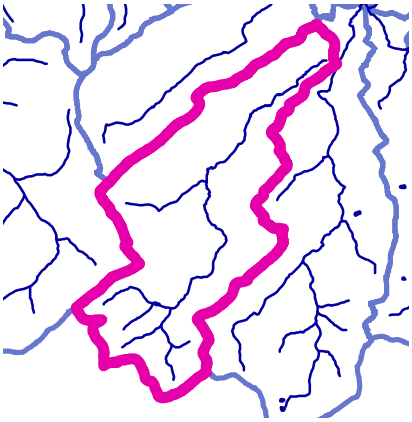
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Riparian Restoration/Stabilization of Priority 2 Streams

Total Area of SubWatershed: 4494.12acres
Total Stream Length = 9.67 miles
Total Road Length = 25.11 miles
Total Wetland Area = 18.73 acres
Total Public Land Area = 12.24 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 192.13 acres
Total Area of Hydric Soils = 20 acres
Total Area of Soils Suitable for Infiltration = 4471.64 acres

LANDUSE
Deciduous Forest: 1247.64 acres
Emergent Herbaceous Wetland: 8.45 acres
Evergreen Forest: 50.97 acres
Mixed Forest: 116.69 acres
Pasture, Hay: 2557.01 acres
Row Crops: 513.36 acres

ZONING
Agricultural: 4475.82 acres
Residential - rural/low density/open space: 18.3 acres

Total Preserved Agricultural Land: 1205.43 acres
Total Number of CREP Sites: 4
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.4708miles
Total Miles of Priority 2 Stream: 6.4162miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 8.71acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
MANHEIM TWP,
CODORUS TWP,



S. Pierceville Run Watershed

Municipality: Codorus Township

I. Issues and Concerns

Pierceville Run is a tributary watershed to the South Branch Codorus Creek and is located in the south-central portion of the Codorus Creek Watershed. Of it's 4,494 acres, only 1,205 (27%) acres are preserved agricultural land/open space. There are approximately 18.73 acres of known wetlands and 9.67 miles of stream. There are 0.47 miles of Priority 1 stream and 6.42 miles of Priority 2 streams. According to the Interim Report, there are 8.71 acres of possible restoration areas.

Approximately 97% of the soils within the watershed are potentially suitable for infiltration.

The Pierceville Run Watershed is a possible location for a southern county park that would protect watershed resources while providing residents of the Glen Rock, New Freedom, and Shrewsbury area with recreational opportunities.

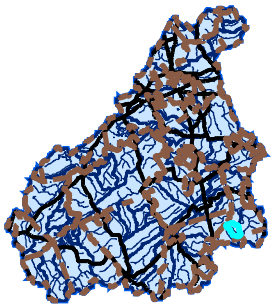
II. Recommendations

Codorus Township should adopt a 70' Riparian Buffer Zone into their zoning ordinance. They should also permanently preserve the few wetlands and floodplains that exist through the adoption of a natural resource overlay zone and require a wetland identification and delineation on all new developments and expansions.

Efforts should be made to increase the amount of preserved open space through agricultural preservation, conservation easements, or similar programs. Codorus Township should partner with local watershed groups, organizations, and agencies to develop a restoration plan for the Priority 1 impaired streams.

Codorus Township should form an EAC.

Photo S: Facing southwest toward Pierceville Run from Sticks Road.



REPORT FOR THE "REHMEYER HOLLOW" WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

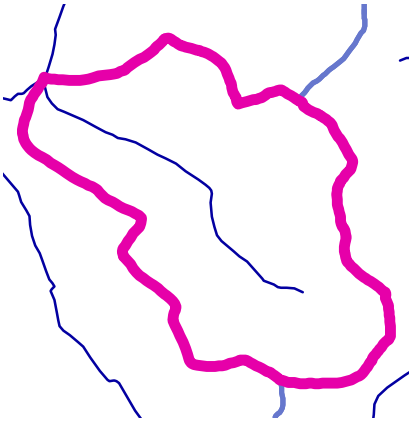
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 493.61acres
Total Stream Length = 1.19 miles
Total Road Length = 3.47 miles
Total Wetland Area = 0.34 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 0.74 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 493.4 acres

LANDUSE
Deciduous Forest: 233.13 acres
Emergent Herbaceous Wetland: 13.18 acres
Evergreen Forest: 25.35 acres
Mixed Forest: 8.87 acres
Pasture, Hay: 95.05 acres
Row Crops: 118.03 acres

ZONING
Agricultural: 347.92 acres
Conservation/Open Space: 145.7 acres

Total Preserved Agricultural Land: 197.62 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 0.2063miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 479.98acres
Total Area of 'Natural Areas': 127.23 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
NORTH HOPEWELL TWP,



T. "Rehmeyer Hollow" Watershed

Municipality: North Hopewell Township

I. Issues and Concerns

The Rehmeyer Hollow Watershed is the smallest watershed within the study area and encompasses only 493 acres. It is located entirely in North Hopewell Township. Of the 1.2 miles of stream within the watershed, only 0.2 miles are listed as Priority 2 streams. The entire watershed contains soils potentially suitable for infiltration.

There are approximately 127 acres of "natural areas" and there is evidence of a threatened and endangered species within the watershed. This watershed is considered a High Quality Cold Water Fishery. Approximately 70% of the watershed is preserved open space or agricultural land.

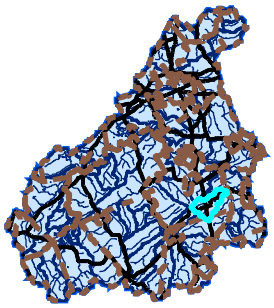
The most significant problem facing this watershed is the lack of riparian buffer protection.

II. Recommendations

North Hopewell Township should adopt a 70' Riparian Buffer Zone into their zoning ordinance and efforts should be made to permanently preserve the natural areas, wetlands, and any threatened and endangered species, through the adoption of a natural resource overlay zone. Any and all ground disturbance projects must first coordinate with the Pennsylvania Natural Diversity Inventory to evaluate a project's impacts on the threatened and endangered species.

North Hopewell Township should establish an EAC.

Photo H: Facing east toward Rehmyer Hollow.



REPORT FOR THE SEAKS RUN WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

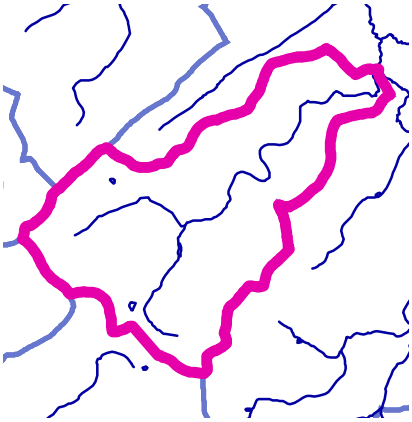
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 2062.01acres
Total Stream Length = 5.32 miles
Total Road Length = 15.46 miles
Total Wetland Area = 13.29 acres
Total Public Land Area = 11.35 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 42.76 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2022.15 acres

LANDUSE
Deciduous Forest: 432.48 acres
Emergent Herbaceous Wetland: 27.8 acres
Evergreen Forest: 30.88 acres
Low Intensity Residential: 23.38 acres
Pasture, Hay: 1308.88 acres
Row Crops: 238.6 acres

ZONING
Agricultural: 980.19 acres
Commercial: 38.9 acres
Conservation/Open Space: 435.18 acres
Industrial: 486.55 acres
Residential: 103.29 acres
Village Center: 17.91 acres

Total Preserved Agricultural Land: 574.47 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 1.6722miles
Total Miles of Priority 2 Stream: 2.468miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 4.26acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SHREWSBURY TWP,
NORTH HOPEWELL TWP,
SPRINGFIELD TWP,



U. Seaks Run Watershed

Municipalities: Springfield Township and Shrewsbury Township

I. Issues and Concerns

The Seaks Run Watershed is almost entirely located in Springfield Township with a small portion draining a small area of Shrewsbury Township. Comprising 2062 acres, the watershed is a small tributary to the East Branch Codorus Creek.

There are approximately 13.29 acres of wetlands and approximately 49% of the watershed is set aside as preserved agricultural land or conservation/open space. Approximately 98% of the soils within the watershed are potentially suitable for infiltration.

Of the 5.32 miles of stream in the watershed, 1.7 miles are Priority 1 and 2.5 miles are Priority 2.

There is a Superfund site located in the headwaters of the watershed (see Figure 4.1-1).

The most significant problem facing the Seaks Run Watershed is the impairment of the streams.

II. Recommendations

Springfield and Shrewsbury should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. All wetlands and floodplains should be permanently preserved through the adoption of a natural resource overlay zone.

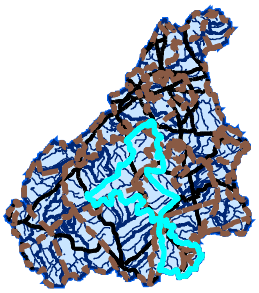
The municipalities should attempt to partner with local watershed groups, organizations, and agencies to develop a restoration plan for the Priority 1 streams.

The municipalities should require wetland identification and delineation on all new developments with the wetland boundary survey information submitted to the York County Planning Commission.

Springfield and Shrewsbury Townships should establish EACs.

Photo U-1: Facing northwest along restored/stabilizedsection of Seaks Run from Seaks Run Road

Photo U-2: Close-up view of cross-vein used on Seaks Run to restore and stablized the stream.



REPORT FOR THE SOUTH BRANCH CODORUS CREEK WATERSHED

Total Area of SubWatershed: 21651.45acres
Total Stream Length = 68.05 miles
Total Road Length = 162.35 miles
Total Wetland Area = 112.54 acres
Total Public Land Area = 110.31 acres
Total Miles of Heritage Rail Trail: 16.36miles
Total Floodplain Area = 1377.13 acres
Total Area of Hydric Soils = 57 acres
Total Area of Soils Suitable for Infiltration = 21051.96 acres

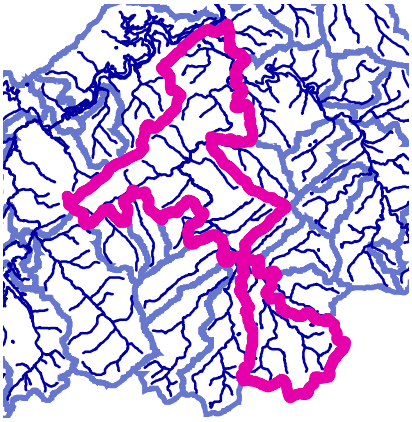
LANDUSE
Commercial, Industrial, Transportation: 37 acres
Deciduous Forest: 5472.86 acres
Emergent Herbaceous Wetland: 21.62 acres
Evergreen Forest: 336.41 acres
High Intensity Residential: 10.47 acres
Low Intensity Residential: 334.92 acres
Mixed Forest: 450.11 acres
Pasture, Hay: 12517.14 acres
Row Crops: 2449.63 acres
Water: 56.33 acres
Woody Wetland: 44.53 acres

ZONING
Agricultural: 15523.9 acres
Business: 42.25 acres
Commercial: 85.49 acres
Commercial/Industrial: 9.19 acres
Conservation/Open Space: 2762.89 acres
Industrial: 202.41 acres
Mixed Use: 150.45 acres
Residential: 1360.53 acres
Residential - rural/low density/open space: 1090.98 acres
Village Center: 505.5 acres

Total Preserved Agricultural Land: 8366.2 acres
Total Number of CREP Sites: 7
Total Number of Cultural/Historic Sites: 4
Total Area of Historic Districts: 215.05 acres
Total Miles of Priority 1 Stream: 7.198miles
Total Miles of Priority 2 Stream: 31.6066miles
Total Designated Growth Area: 3299.58acres
Total Area of Possible Restoration: 3643.57acres
Total Area of 'Natural Areas': 167.87 acres
Total Number of PNDI Sites: 1
Municipalities in this Watershed:

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration/Stabilization of Riparian Zone of Priority 2 Streams
5. Restoration of Priority 1 Streams



V. South Branch Codorus Creek Watershed

Municipalities: York New Salem Borough, North Codorus Township, Seven Valleys Borough, Codorus Township, Glen Rock Borough, Shrewsburry Township, Shrewsbury Borough, Railroad Borough, and New Freedom Borough

I. Issues and Concerns

The South Branch Codorus Creek Watershed is the largest of the sub-watersheds within the study area at 21,651 acres. It extends from Indian Rock Dam south through Seven Valleys Borough and Glen Rock Borough to it's headwaters near the boroughs of New Freedom, Railroad, and Shrewsbury. Approximately 51% of the watershed is either preserved agricultural land or conservation/open space.

There are approximately 112 acres of known wetlands and 68 miles of mapped streams. There are 7.2 miles of Priority 1 streams and 31.6 miles of Priority 2 streams. 97% of the soils within the watershed are potentially suitable for infiltration.

There is evidence of a threatened and endangered species within the watershed and there are 167 acres of "natural areas". The Interim Report indicates 3,643 acres of possible restoration areas. The designated growth areas consist of 3,300 acres.

The most significant problems facing the watershed are related to the growth and development within the headwaters in and around the boroughs of Shrewsbury and New Freedom. As a result, there is a significant amount of impaired streams.

II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. All wetlands, natural areas, unique features, and floodplains should be permanently preserved through the adoption of a natural resource overlay zone and the municipalities should require a wetland identification and delineation on all new developments. Due to the presence of a threatened and/or endangered species, all new development projects should get clearance from PA DEP or PNDI. Contact the York County Planning Commission for assistance or refer to the maps included in this report for general location information.

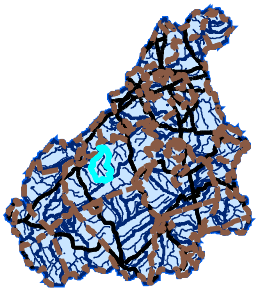
The municipalities should partner with local watershed groups, organizations, and agencies to develop a riparian stabilization/restoration plan for the Priority 2 impaired streams and a restoration plan for the Priority 1 streams.

The municipalities should also adopt infiltration BMPs into their stormwater management ordinances due to the presence of extensive soils suitable for infiltration.

Given the growth and development in the area, the municipalities should establish EACs within their respective areas to assist with local decision making.

Photo V-1: South Branch Codorus Creek watershed west of Seven Valleys, PA.

Photo V-2: South Branch Codo rus Creek east of Seven Valleys, PA. Far stream bank is severely eroding.



REPORT FOR THE STOVERSTOWN BRANCH WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

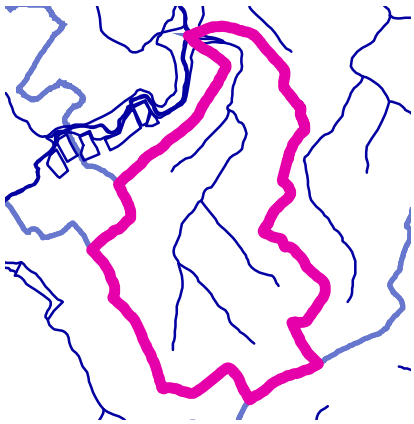
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration/Stabilization of Streams

Total Area of SubWatershed: 1959.69acres
Total Stream Length = 6.03 miles
Total Road Length = 10.54 miles
Total Wetland Area = 1.53 acres
Total Public Land Area = 9.36 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 51.8 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1959.69 acres

LANDUSE
Deciduous Forest: 378.64 acres
Evergreen Forest: 8.43 acres
Low Intensity Residential: 2.44 acres
Mixed Forest: 84.53 acres
Pasture, Hay: 1163.72 acres
Row Crops: 268.81 acres
Transitional from Barren: 53.06 acres
Water: 0.06 acres

ZONING
Agricultural: 1923.45 acres
Residential - rural/low density/open space: 30.58 acres
Village Center: 5.67 acres

Total Preserved Agricultural Land: 688.42 acres
Total Number of CREP Sites: 3
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0.9486miles
Total Miles of Priority 2 Stream: 2.3762miles
Total Designated Growth Area: 34.02acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
NORTH CODORUS TWP,



W. Stoverstown Branch Watershed

Municipality: North Codorus Township

I. Issues and Concerns

The Stoverstown Branch Watershed is located southeast of Spring Grove and is a tributary watershed to the West Branch Codorus Creek. It's 1959 acres are located entirely in North Codorus Township and consist of 688 (35%) acres of preserved agricultural land and 3 CREP (Conservation Reserve Enhancement Program) sites.

There are only 1.53 acres of known wetlands and 6 miles of streams of which 0.95 are Priority 1 and 2.4 are Priority 2. All of the soils within the watershed are potentially suitable for infiltration.

The most significant problem facing the Stoverstown Branch Watershed is the amount of impaired streams which is related to poor riparian buffers.

II. Recommendations

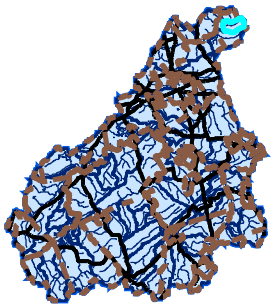
North Codorus Township should adopt a 70' Riparian Buffer Zone into their zoning ordinance. They should also partner with local watershed groups, organizations, and agencies to develop a riparian restoration plan for the Priority 2 streams.

North Codorus Township should permanently preserve all wetlands and floodplains through the adoption of a natural resource overlay zone and require a wetland identification and delineation on all new developments.

North Codorus Township should partner with watershed groups, organizations, and agencies to develop a plan for the restoration of the Priority 1 impaired streams.

North Codorus Township should establish an EAC.

Photo W: Facing southwest toward Stoverstown Branch flowing through Hickory Heights Golf Course.



REPORT FOR THE TROUT RUN NORTH WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

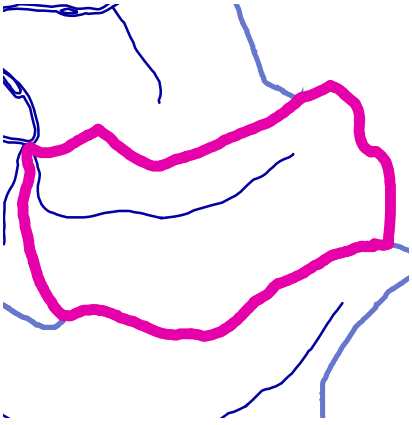
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 846.84acres
Total Stream Length = 1.59 miles
Total Road Length = 1.02 miles
Total Wetland Area = 0 acres
Total Public Land Area = 0 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 0 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 846.84 acres

LANDUSE
Deciduous Forest: 628.27 acres
Evergreen Forest: 100.39 acres
Mixed Forest: 65.16 acres
Pasture, Hay: 13.14 acres
Transitional from Barren: 39.87 acres

ZONING
Conservation/Open Space: 846.84 acres

Total Preserved Agricultural Land: 40.66 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 0miles
Total Designated Growth Area: 0acres
Total Area of Possible Restoration: 273.23acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
HELLAM TWP,



X. Trout Run "North" Watershed

Municipality: Hellam Township

I. Issues and Concerns

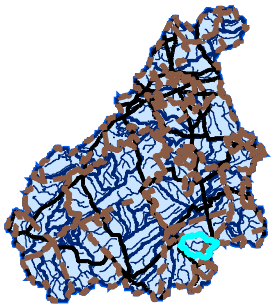
The Trout Run "North" Watershed is located entirely in Hellam Township in the northern section of the Codorus Creek Watershed. It is a small tributary watershed to the Mainstem of the Codorus Creek just before it joins the Susquehanna River in Saginaw. It has been recently re-designated from a warm water fishery (WWF) to a high quality cold water fishery (HQ CWF) from the source to river mile 0.3, and as a cold water fishery (CWF) from river mile 0.3 to it's mouth.

The watershed encompasses only 846 acres and all of it is preserved open space/conservation. The entire watershed is forested and stable.

II. Recommendations

Hellam Township should adopt a 70' Riparian Buffer Zone into their zoning ordinance to further protect the watershed.

Hellam Township should establish an EAC.



REPORT FOR THE TROUT RUN SOUTH WATERSHED

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

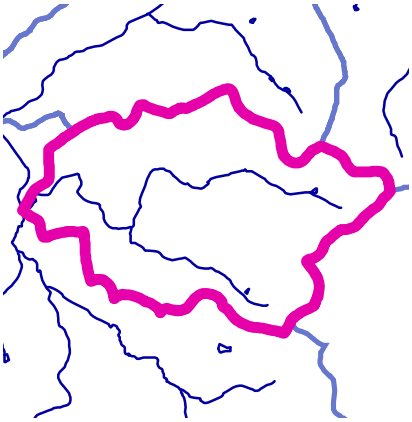
1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

Total Area of SubWatershed: 2194.3acres
Total Stream Length = 5.32 miles
Total Road Length = 18.44 miles
Total Wetland Area = 15.58 acres
Total Public Land Area = 1.81 acres
Total Miles of Heritage Rail Trail: 0.19miles
Total Floodplain Area = 28.86 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 2167.3 acres

LANDUSE
Deciduous Forest: 413 acres
Evergreen Forest: 41.98 acres
Mixed Forest: 96.78 acres
Pasture, Hay: 1237.88 acres
Row Crops: 404.67 acres

ZONING
Agricultural: 1710.22 acres
Commercial: 24.02 acres
Conservation/Open Space: 361.84 acres
Industrial: 14.29 acres
Residential: 49.43 acres
Village Center: 34.49 acres

Total Preserved Agricultural Land: 460.46 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 30.19 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 1.5959miles
Total Designated Growth Area: 518.87acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 24.01 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SHREWSBURY TWP,
HOPEWELL TWP,
NORTH HOPEWELL TWP,
SHREWSBURY BORO,



Y. Trout Run "South" Watershed

Municipalities: Shrewsbury Township and Shrewsbury Borough

I. Issues and Concerns

The Trout Run "South" Watershed is a small tributary watershed to the South Branch Codorus Creek. It's headwaters are near the Borough of Shrewsbury and the mouth is near the borough of Glen Rock. Of it's 2194 acres only 821 (37%) are preserved agricultural land or open space/conservation.

The watershed contains approximately 15.58 acres of known wetlands and 5.32 miles of stream of which 1.59 are Priority 2. There are approximately 24 acres of "natural areas" within the watershed. The Seitzland Marsh is located in this watershed which is described in more detail in Section 2 (page 2-16) of this document.

Approximately 99% of the soils within the watershed are potentially suitable for infiltration.

The most significant problem facing the watershed is the growth and development close to it's headwaters near Shrewsbury Borough. As a result, there is moderate impairment of the streams in the watershed.

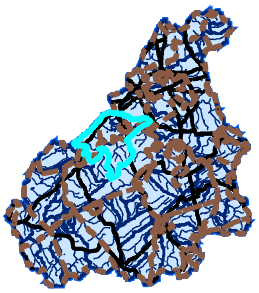
II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into the zoning ordinances and efforts should be made to infiltrate stormwater since most of the soils are suitable for infiltration. Additionally, the municipalities should permanently preserve wetland, floodplains, natural areas, and unique features through the adoption of a conservation overlay zone.

The municipalities should require a wetland identification and delineation by a qualified person on all new earth disturbance projects. The survey information should be submitted to the York County Planning Commission.

Shrewsbury Township and Shrewsbury Borough should establish EACs.

Photo Y: Trout Run "South" Watershed facing southwest from Glen Valley Road.



REPORT FOR THE
WBCC INDIAN ROCK DAM WATERSHED

Total Area of SubWatershed: 10320.64acres
Total Stream Length = 64 miles
Total Road Length = 71.33 miles
Total Wetland Area = 279.57 acres
Total Public Land Area = 1117.74 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 1451.35 acres
Total Area of Hydric Soils = 7 acres
Total Area of Soils Suitable for Infiltration = 9579.63 acres

LANDUSE
Commercial, Industrial, Transportation: 98.51 acres
Deciduous Forest: 1245.88 acres
Emergent Herbaceous Wetland: 13.17 acres
Evergreen Forest: 46.05 acres
High Intensity Residential: 13.17 acres
Low Intensity Residential: 322.57 acres
Mixed Forest: 164.75 acres
Pasture, Hay: 6329.4 acres
Row Crops: 1774.92 acres
Transitional from Barren: 70.13 acres
Urban, Recreation Grasses: 38.14 acres
Water: 28.51 acres
Woody Wetland: 175.44 acres

ZONING
Agricultural: 5272.25 acres
Apartment/Office: 31 acres
Commercial: 266.09 acres
Conservation/Open Space: 14.43 acres
Industrial: 411.62 acres
Mixed Use: 15.73 acres
Quarry: 0.03 acres
Residential: 2396.4 acres
Residential - rural/low density/open space: 1814.52 acres
Village Center: 98.68 acres

Total Preserved Agricultural Land: 3319.11 acres
Total Number of CREP Sites: 1
Total Number of Cultural/Historic Sites: 11
Total Area of Historic Districts: 0 acres
Total Miles of Priority 1 Stream: 2.826miles
Total Miles of Priority 2 Stream: 5.4667miles
Total Designated Growth Area: 2866.44acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 195.35 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
SPRING GROVE BORO,
NORTH CODORUS TWP,
NEW SALEM BORO,
JACKSON TWP,
WEST MANCHESTER TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Restoration/Stabilization of Riparian Zone Along Priority 2 Streams
5. Restoration of Priority 1 Streams
6. Access Points at Hershey Road, Martin Road, and Route 616

Z. West Branch Codorus Creek "Indian Rock Dam" Watershed

Municipalities: West Manchester Township, North Codorus Township, New Salem Borough, Spring Grove Borough, and Jackson Township

I. Issues and Concerns

The WBCC Indian Rock Dam Watershed is located along the western border of the watershed from Indian Rock Dam south toward Spring Grove Borough and drains portions of West Manchester Township, North Codorus Township, New Salem Borough, Spring Grove Borough and Jackson Township. It encompasses 10,320 acres of which 3333 acres (32%) are set aside as preserved agricultural land or open space/conservation.

There are approximately 279 acres of wetlands within the watershed and 64 miles of stream of which 2.8 miles are Priority 1 and 5.5 miles are Priority 2.

There is a total of 195 acres of "natural areas" within the watershed and 9600 acres of soils potentially suitable for infiltration.

The most significant problem facing this watershed is the number of impaired streams.

II. Recommendations

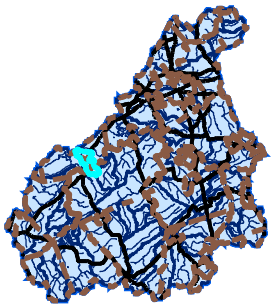
The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. All wetlands should be preserved and infiltration BMPs should be adopted into the stormwater management ordinances. The municipalities should also permanently preserve wetlands, floodplains, and natural areas through the adoption of a natural resource overlay zone. The municipalities should require a wetland identification and delineation by a qualified person on all new earth disturbance projects. The survey information should be submitted to the York County Planning Commission.

The municipalities should partner with local organizations to develop a riparian restoration/stabilization strategy for the Priority 2 streams. The municipalities should partner with watershed groups, organizations, and agencies to develop a plan for the restoration of the Priority 1 impaired streams.

Access points are needed at Hershey Road, Martin Road, and Route 616. Efforts should be made to develop parking/access facilities at these locations.

West Manchester Township, North Codorus Township, New Salem Borough, Spring Grove Borough, and Jackson Township should establish EACs.

Photo Z: Facing upstream toward West Branch Codorus Creek from Indian Rock Dam.



REPORT FOR THE
WBCC SPRING GROVE WATERSHED

Total Area of SubWatershed: 1110.08acres
Total Stream Length = 4.77 miles
Total Road Length = 12.11 miles
Total Wetland Area = 58.44 acres
Total Public Land Area = 114.52 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 95.52 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 933.06 acres

LANDUSE
Commercial, Industrial, Transportation: 7.29 acres
Deciduous Forest: 173.45 acres
Emergent Herbaceous Wetland: 6.56 acres
Evergreen Forest: 24.56 acres
Low Intensity Residential: 163.01 acres
Mixed Forest: 16.07 acres
Pasture, Hay: 479.99 acres
Row Crops: 106.34 acres
Transitional from Barren: 56.46 acres
Woody Wetland: 76.36 acres

ZONING
Agricultural: 312.18 acres
Commercial: 101.6 acres
Industrial: 227.94 acres
Residential: 468.8 acres

Total Preserved Agricultural Land: 401.33 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 0
Total Area of Historic Districts: 89.4 acres
Total Miles of Priority 1 Stream: 0miles
Total Miles of Priority 2 Stream: 1.3068miles
Total Designated Growth Area: 342.31acres
Total Area of Possible Restoration: 0acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
NORTH CODORUS TWP,
JACKSON TWP,
SPRING GROVE BORO,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC

AA. West Branch of Codorus Creek "Spring Grove" Watershed

Municipalities: Spring Grove Borough, Jackson Township, and North Codorus Township

I. Issues and Concerns

The WBCC Spring Grove Watershed is a small watershed centered around the Borough of Spring Grove. Of the 1110 acres in the watershed 401 are preserved agricultural land. There are approximately 58.4 acres of wetlands in the watershed which includes lakes and ponds. The P.H. Glatfelter Paper Company is located within this watershed.

Approximately 933 acres of soils are potentially suitable for infiltration within the watershed.

Of the 4.77 miles of stream, 1.3 miles are listed as Priority 2.

The most significant problem facing the WBCC "Spring Grove" Watershed is related to the temperature and color of the effluent from the paper company and the impaired stream reaches.

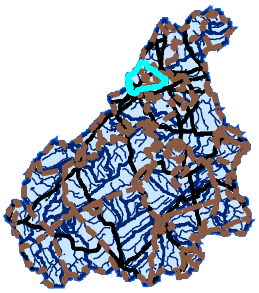
II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances. This will help to minimize the effects of the effluents temperature on the stream. Efforts should be taken to infiltrate stormwater where possible and all wetlands should be preserved.

All wetlands and floodplains should be permanently preserved through the adoption of a natural resource overlay zone.

The municipalities should require a wetland identification and delineation by a qualified person on all new earth disturbance projects. The survey information should be submitted to the York County Planning Commission.

Spring Grove Borough, Jackson Township, and North Codorus Township should establish EACs.



REPORT FOR THE WILLIS RUN WATERSHED

Total Area of SubWatershed: 3054.37acres
Total Stream Length = 5.52 miles
Total Road Length = 57.41 miles
Total Wetland Area = 13.83 acres
Total Public Land Area = 115.24 acres
Total Miles of Heritage Rail Trail: 0miles
Total Floodplain Area = 137.1 acres
Total Area of Hydric Soils = 0 acres
Total Area of Soils Suitable for Infiltration = 1093.52 acres

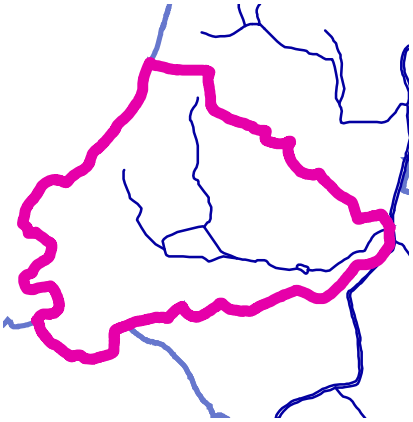
LANDUSE
Commercial, Industrial, Transportation: 404.35 acres
Deciduous Forest: 234.04 acres
Evergreen Forest: 15.99 acres
High Intensity Residential: 22.84 acres
Low Intensity Residential: 1160.77 acres
Mixed Forest: 26.3 acres
Pasture, Hay: 712.46 acres
Quarries, Strip Mines, gravel Pits: 228.06 acres
Row Crops: 144.34 acres
Urban, Recreation Grasses: 105.2 acres

ZONING
Apartment/Office: 61.57 acres
Commercial: 574.73 acres
Conservation/Open Space: 214.59 acres
Industrial: 462.3 acres
Institutional: 10.41 acres
Quarry: 222.25 acres
Residential: 981.22 acres
Residential - rural/low density/open space: 525.57 acres

Total Preserved Agricultural Land: 0 acres
Total Number of CREP Sites: 0
Total Number of Cultural/Historic Sites: 7
Total Area of Historic Districts: 52.55 acres
Total Miles of Priority 1 Stream: 3.8482miles
Total Miles of Priority 2 Stream: 1.0097miles
Total Designated Growth Area: 3054.37acres
Total Area of Possible Restoration: 1077.63acres
Total Area of 'Natural Areas': 0 acres
Total Number of PNDI Sites: 0
Municipalities in this Watershed:
YORK CITY,
NORTH YORK BORO,
MANCHESTER TWP,
WEST MANCHESTER TWP,

GENERAL RECOMMENDATIONS FOR THIS WATERSHED:

1. 70 Ft. Buffer Around Streams
2. Incorporation of a Natural Resource Overlay Zone into Zoning Ordinances
3. Formation of local EAC
4. Preservation of Open Space
5. Restoration of Priority 1 Streams
6. Restoration/Stabilization of Riparian Zone Aong All Streams



BB. Willis Run Watershed

Municipalities: West Manchester Township, Manchester Township, and the City of York

I. Issues and Concerns

The Willis Run Watershed is located almost entirely in an urban setting. Only 214 of it's 3054 total acres are preserved as open space or conservation. Approximately 30% of the soils are potentially suitable for infiltration however, most of those areas are impervious surfaces.

According to the York County Natural Areas Inventory, Kiwanis Lake is identified as a natural area due to the occurrence of Threatened, Endangered, otherwise rare species.

There are approximately 14 acres of wetlands that are most likely associated with open water lakes and ponds. The entire watershed is a designated growth area and most of the streams, 90%, are severely impaired or moderately impaired.

The most significant problem facing the Willis Run Watershed is the lack of riparian vegetation and the amount of impaired streams.

II. Recommendations

The municipalities should adopt a 70' Riparian Buffer Zone into their respective zoning ordinances and efforts should be made to restore all of the impaired streams. The municipalities should permanently preserve wetlands, floodplains, natural areas, and unique features within the watershed through the adoption of a natural resource overlay zone.

Efforts should be taken to preserve what little open space remains through conservation easements or other programs.

Open space should be aggressively preserved throughout the watershed and a restoration/stabilization strategy of the riparian zone should be implemented on **all** streams. Additionally, the Priority 1 streams should be restored.

West Manchester Township, Manchester Township, and the City of York should establish EACs.

Photo BB-1: Facing upstream toward Willis Run, upstream of Kiwanis Lake.

Photo BB-2: Facing downstream along Willis Run where it enters Kiwanis Lake.

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APPENDIX A

GROWNING SMARTER TOOLKIT

Governor's Center for Local Government Services

Growing Smarter Toolkit

Catalog of Financial and Technical Resources

Commonwealth of Pennsylvania
Edward G. Rendell, Governor
www.state.pa.us

Department of Community and Economic Development
Dennis Yablonsky, Secretary
www.inventpa.com

DCED

Growing Smarter Toolkit

Catalog of Financial and Technical Resources

First Edition
April 2002

Comments or inquiries on the subject matter of this publication should be addressed to:

Governor's Center for Local Government Services
Department of Community and Economic Development
400 North Street, 4th Floor
Commonwealth Keystone Building
Harrisburg, Pennsylvania 17120-0225
(717) 787-8158
1-888-223-6837
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Additional copies of this publication may be obtained from:

Governor's Center for Local Government Services
Department of Community and Economic Development
400 North Street, 4th Floor
Commonwealth Keystone Building
Harrisburg, Pennsylvania 17120-0225
(717) 783-0176

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Access **www.inventpa.com**
Select "Communities in PA,"
select "Local Government Services,"
then select "Publications."

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Introduction

Grant money or technical assistance can stretch your tax dollars and help small budgets go the distance. But, you must be patient and realistic about the funding and assistance that is available, just as you must be patient and realistic about achieving your community visions and goals.

Each year, the Commonwealth of Pennsylvania makes available millions of dollars in financial assistance. This does not even account for the millions of dollars in human resources devoted to the technical assistance programs that support grant funding, education and training. This catalog should help you find and access those resources so your community can benefit from them.

How to Use This Catalog

This catalog lists the current technical and financial assistance programs available in Pennsylvania. Each listing should provide you basic information on the program and a point of contact for more information. The programs are listed under general categories in the table of contents. For convenience, each program is also cross-referenced in the index at the back of the catalog.

At the beginning of each section, different state agencies or commissions are highlighted. These agencies and commissions work to support the technical or financial assistance programs either directly or indirectly. At times, these are the agencies that make the programs you need possible. You should become familiar with them and how they can help you.

Many of Pennsylvania's programs are designed to meet the diverse needs of our Commonwealth. Some programs combine agency interests and resources. And so, to ensure that you find the resource you need, some programs are listed under several, appropriate categories. This doesn't mean that a multi-listed program offers multiple sources of funding to one applicant. Rather, it ensures that the information is accessible to you regardless of where you look for it.

It is that simple. Identify programs that may be relevant to your project, then pick up the telephone, and call the contact listed. Most resources listed in this catalog direct you to a website for even more information and applications. But, if you can't find the information you are looking for or need, the Governor's Center for Local Government Services is available to help. You can call them at 1-888-2CENTER.

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Farmland Preservation

Agriculture is the largest economic sector in Pennsylvania. Agricultural enterprises provide employment, personal income and taxes to local and regional economies. These enterprises use and conserve renewable natural resources and sustain and perpetuate our agricultural heritage. Farms and forests serve as important cultural resources, and their continued presence maintains Pennsylvania's rural culture, lifestyles and traditional economy.

Farmland Preservation Programs

Financial Assistance

- Agricultural Security Areas
- Pennsylvania Agricultural Conservation Easement Purchase Program
- Clean and Green Program
- Installment Purchase Agreement Pilot Program
- Land Trust Reimbursement Grant Program
- Next Generation Farmer Loan

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Department of Agriculture

The Pennsylvania Department of Agriculture (PDA) has worked to preserve farmland and agricultural production long before the principles of Executive Order 1999-1 on Land Use directed state agencies to incorporate farmland preservation into their land use policies. With more than 50,000 farms and 7.7 million acres of crop and pasture land, Pennsylvania farms produce food, create jobs and provide scenic open space, wildlife habitat, clean water and other environmental benefits. PDA's programs support the Governor's Growing Smarter Initiatives. PDA's participation on the Interagency Land Use Team helps local government officials and state agencies continue their efforts to keep Pennsylvania's farmland in agricultural production.

Pennsylvania Rural Development Council

Pennsylvania is distinguished to have the largest rural population of any state in the nation. The Pennsylvania Rural Development Council helps to support these rural communities maintain this distinction and position themselves as full partners in the changing world economy. The Pennsylvania Rural Development Council provides information to rural counties or those who have rural resources in their communities, and facilitates the efficient and effective use of existing and new resources between the federal, state, local, public and private sectors. A partner with the Interagency Sound Land Use Team, the Pennsylvania Rural Development Council supports the Growing Smarter Initiatives and the agencies providing the resources in this catalog.

For more information, contact:

Pennsylvania Rural Development Council
Phone: (717) 787-1954
Website: www.ruralpa.state.pa.us

Agricultural Security Areas

Program Sponsor:

Pennsylvania Department of Agriculture, Bureau of Farmland Preservation

Description of Program:

Designating land as an Agricultural Security Area (ASA) is a tool for protecting farms and quality farmland from the encroachment of non-agricultural uses. Once designated as an ASA, a farmer's land is protected from nuisance ordinances enacted by local municipalities. When farmland is designated in an ASA, additional levels of review are required for projects that involve condemnation.

Program Requirements:

This is a voluntary program for farmers who meet the eligibility requirements. A combined minimum of 250 acres is required for the establishment of an ASA. An ASA may include non-adjacent farmland parcels of at least 10 acres or be able to produce $2,000 annually from the sale of agricultural products.

An ASA is a prerequisite for consideration under the Easement Purchase Program.

Program Availability:

ASAs are designated only once every 7 years. However, new parcels of farmland may be added to an established ASA at any time.

Contact Information:

For more information, visit PDA's website at: http://sites.state.pa.us/PA_Exec/Agriculture/bureaus/farmland_protection/index.htm

Contact:
Mary Bender, Director
Pennsylvania Department of Agriculture
Bureau of Farmland Preservation
Phone: (717) 783-3167
E-mail: mabender@state.pa.us

Pennsylvania Agricultural Conservation Easement Purchase Program

Program Sponsor:

Pennsylvania Department of Agriculture, Bureau of Farmland Preservation

Description of Program:

The Pennsylvania Agricultural Conservation Easement Purchase Program was developed to enable state and county governments to purchase agricultural conservation easements (sometimes called development rights) from owners of quality farmland.

Program Requirements:

In order to be chosen for easement purchase, an eligible farm must first be part of an Agricultural Security Area (ASA). The farm is rated against other eligible parcels according to specific criteria related to the quality of the farmland, stewardship practices related to conservation, nutrient management and control of soil erosion and sedimentation and the likelihood of conversion from farmland to other uses. State minimum requirements for the program can be found at: http://sites.state.pa.us/PA_Exec/Agriculture/G2/apply.html.

Program Availability:

Counties participating in the program have appointed agricultural land preservation boards with a state board created to oversee the program. The state board is responsible for distribution of state funds, approval and monitoring of county programs and specific easement purchases.

Participating counties and county agricultural land preservation board information is available online at http://sites.state.pa.us/PA_Exec/Agriculture/G2/list_of_contacts.html.

Contact Information:

Farmland Preservation applications are available from County Agricultural Land Preservation Boards.

A contact list is available online at: http://sites.state.pa.us/PA_Exec/Agriculture/G2/list_of_contacts.html. The appropriate county administrator can provide assistance including information on application deadlines and requirements.

Contact:
Mary Bender, Director
Pennsylvania Department of Agriculture
Bureau of Farmland Preservation
Phone: (717) 783-3167
E-mail: mabender@state.pa.us

Clean and Green Program

Program Sponsor:

Pennsylvania Department of Agriculture, Bureau of Farmland Preservation

Description of Program:

The "Clean and Green" program protects farmland, forestland and open space by taxing land according to its use rather than the prevailing market value. This is a voluntary program for landowners.

Program Requirements:

This voluntary program generally requires that the landowner keep a 10-acre minimum in designated use (agricultural use, agricultural reserve and forest reserve).

Parcels less than 10 acres and capable of producing $2,000 annually from the sale of agricultural products are eligible for the agriculture use designation.

Program Availability:

The program is administered at the local level by county tax assessment offices. Land taken out of the permitted use becomes subject to a rollback tax, imposed for up to 7 years, and an interest penalty.

Contact Information:

To apply, landowners must contact their county tax assessment office for an application. The deadline for application is June 1 of each year for consideration for the following tax year.

For more information, visit PDA's website at: http://sites.state.pa.us/PA_Exec/Agriculture/bureaus/farmland_protection/index.htm.

Contact:
Doug Wolfgang
Pennsylvania Department of Agriculture
Bureau of Farmland Preservation
Phone: (717) 783-3167, or by
E-mail: dowolfgang@state.pa.us

Installment Purchase Agreement Pilot Program

Program Sponsor:

Pennsylvania Department of Agriculture, Bureau of Farmland Preservation

Description of Program:

The Installment Purchase Agreement Pilot Program is a program whereby landowners may defer payment of capital gains taxes on an agriculture conservation easement purchase. The interest paid over the life of the IPA is not subject to Federal or Pennsylvania State income taxation.

Program Requirements:

At the time a farmer applies to the county to sell an easement, the former will be asked to indicate a preference for direct (all-cash) or installment purchase or some combination of the two. For any installment purchase, the county and the farmer then negotiate the terms of the transaction. An agreement of sale is submitted to the PA Department of Agriculture for approval.

Program Availability:

The long-term installment purchase program is available to farmers as an option when selling agricultural conservation easements. All program requirements for purchase of the easements must be met.

Each person considering selling a development rights easement under this program must rely on

advice from their own tax or financial advisor to evaluate the possible financial benefits of this transaction in light of individual circumstances, and to advise on IRS treatment of IPAs.

Assistance with obtaining an advisor can be obtained by contacting:

Michael W. Evanish, Manager
Pennsylvania Farm Bureau
MSC Business Services
Phone: (717) 761-2740
E-mail: mwevanish@pfb.com

Contact Information:

For more information visit PDA's website at: http://sites.state.pa.us/PA_Exec/Agriculture/bureaus/farmland_protection/IPA.html.

Applications may be obtained from a County Agricultural Land Preservation Board. For a listing visit PDA's website at: http://sites.state.pa.us/PA_Exec/Agriculture/G2/list_of_contacts.html.

Contact:
County Farmland Preservation Board or
Mary Bender, Director
Bureau of Farmland Preservation
Pennsylvania Department of Agriculture at
Phone: (717) 783-3167
E-mail: mabender@state.pa.us

Land Trust Reimbursement Grant Program

Program Sponsor:

Pennsylvania Department of Agriculture

Description of Program:

This program awards reimbursement grants to qualified land trusts. The program will reimburse qualified land trusts up to $5,000 for expenses incurred in the acquisition of agricultural conservation easements. These expenses include appraisal costs, legal services, title searches, document preparation, title insurance, closing costs and survey costs.

Program Requirements:

The program is limited to qualified land trusts only. Land trusts must register with the State Board and shall be tax-exempt institutions and include the acquisition of agricultural conservation easements in their stated purpose.

The subject property must meet minimum criteria published in the Pennsylvania Bulletin.

Program Availability:

The Pennsylvania Agricultural Land Preservation Board is authorized to allocate up to $500,000 from the Supplemental Agricultural Conservation Easement Purchase Account for reimbursement grants to be awarded to qualified land trusts.

Funds available for grants under the Land Trust Reimbursement Grant Program are available on a first-come, first-served basis until the funding is depleted.

Contact Information:

For more information, visit PDA's website at:

http://sites.state.pa.us/PA_Exec/Agriculture/bureaus/farmland_protection/landtrust.html.

Contact:
Sandra Robison
Pennsylvania Department of Agriculture
Bureau of Farmland Preservation
Phone: 717-783-3167
E-mail: srobison@state.pa.us.

To register as a qualified land trust with the State Board to be eligible for reimbursement through this program, contact:

The Bureau of Farmland Preservation
Phone: (717) 783-3167

Next Generation Farmer Loan

Program Sponsor:

Pennsylvania Department of Agriculture

Description of Program:

This program provides public assistance to new or beginning farmers to purchase land, farm equipment, farm buildings and breeding livestock.

The program uses federal tax-exempt mortgage financing to reduce a farmer's interest rate for capital purchases. The program is used between a borrower and a lender for a loan to make a direct purchase of farm and agricultural machinery and equipment. The tax-exempt interest income to the lender enables them to charge the borrower a lower interest rate. The interest income is exempt from federal, state and county taxes.

Program Requirements:

Eligible applicants are new or beginning farmers who meet the lender credit standards. Applicants must also be a permanent resident of Pennsylvania and at least 18 years of age. Each applicant will be required to document access to adequate working capital, farm equipment and livestock, if appropriate.

Eligible applicants cannot have prior direct or indirect ownership interest in a substantial amount of land. Under this program, a substantial amount of land means a parcel that exceeds 30% of the median farm size in the county in which the land is located, or which had at any time during ownership a fair market value in excess of $125,000.

When the transaction is complete, the qualified applicant must be the sole owner and principle user.

Program Availability:

The maximum loan amount is $250,000 per person. However, the total loan proceeds allocated to the purchase price of used equipment may not exceed $62,500. The lender or the contract seller establishes all loan terms and makes all credit decisions.

Fees associated with the program vary between lenders and Industrial Development Authorities (IDAs). Fees are negotiated independent of the Pennsylvania Department of Agriculture.

Contact Information:

For more information, visit PDA's website at: http://sites.state.pa.us/PA_Exec/Agriculture/next_generation_loan/index.html.

Contact:
Russell C. Redding
Deputy Secretary
Pennsylvania Department of Agriculture
Phone: (717)-787-3418
E-mail: rredding@state.pa.us

Open Space Preservation

Pennsylvania's natural resources are significant factors in our economic vitality, environmental health and quality of life. Greenways, waterways, wetlands and other kinds of natural areas function as valuable resources for open space, wildlife habitat, water protection, recreation and tourism.

Open Space Preservation Programs

Technical Assistance

- Community Conservation Partnerships Program

Financial Assistance

- Community Conservation Partnerships Program

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Department of Conservation and Natural Resources

The Department of Conservation and Natural Resources (DCNR) manages the 116 state parks and 2.1 million acres of state forest land; provides information on the state's ecological and geologic resources; and establishes community conservation partnerships with financial and technical assistance to benefit rivers conservation, trails, greenways, community parks and recreation, regional heritage parks and open space and natural areas protection. The Community Conservation Partnerships Program grants have been used by local municipalities and nonprofit groups to shape the landscape and communities in which we live, work and play.

Community Conservation Partnerships Programs

Program Sponsor:

Pennsylvania Department of Conservation and Natural Resources – Bureau of Recreation and Conservation

Description of Program:

The Community Conservation Partnerships Program is one of Pennsylvania's primary funding sources dedicated to helping communities, counties, nonprofits and regional coalitions undertake a variety of park, recreation, conservation, heritage and greenways projects.

The sources of funding for the program are the state's Keystone Recreation, Park and Conservation Fund (Key 93), Environmental Stewardship and Watershed Protection Act (Growing Greener), Act 68 Snowmobile/ATV Fund and general fund appropriations for the Pennsylvania Heritage Parks Program. The program is supplemented with federal funds from the Land and Water Conservation Fund (LWCF) and the Transportation Equity Act for the Twenty-first Century (TEA-21).

The Community Conservation Partnerships Program contains the following grant components: Community Recreation Grants, Land Trust Grants, Rails-to-Trails Grants, Rivers Conservation Grants, Heritage Parks Grants, Snowmobile/ATV Grants, Land and Water Conservation Fund Grants and Pennsylvania Recreational Trails Grants.

Program Requirements:

Grants are provided for planning, acquisition, development and rehabilitation of park, recreation, conservation, greenways and heritage areas and facilities and, in some components, maintenance of trails. Some components of the program offer funding for technical assistance, education and training projects. Heritage Parks grants can also fund promotion and marketing, special purpose studies and other heritage conservation, tourism and development projects.

Generally, all grant components require a match, usually 50%, of cash or in-kind contributions. In addition, ownership or control of the project site is generally required.

Specific requirements for each grant component (except for the Heritage Parks Grants) are detailed on DCNR's website at www.dcnr.state.pa.us/grants. Program requirements for the Heritage Parks Grant can be found at www.dcnr.state.pa.us/brc/heritageparks/index.htm.

Program Availability:

Eligible applicants are county and local governments; municipal authorities; and nonprofit recreation, conservation, greenway and watershed groups. For some components, private for profit enterprises, school districts and other educational institutions can receive funding.

For the Heritage Parks Program, only designated Heritage Park management entities are eligible. In turn, these entities pass the funding onto eligible communities and nonprofit groups in their heritage corridors, areas or regions.

Technical Assistance on the grant components is available through the appropriate Regional Office or the Central Office in Harrisburg.

Contact Information:

DCNR's Community Conservation Partnerships Program website www.dcnr.state.pa.us/grants provides a detailed explanation of the program and each of the grant components. The website contains the Grant Application Manual and forms, pre-application workshop information and other application instructions and requirements. Information about the Pennsylvania Heritage Program and the Heritage Parks Grants can be found at www.dcnr.state.pa.us/brc/heritageparks/index.html.

Or, for more information and copies of the manuals, forms, and other program materials, including technical assistance and pre-application workshop information, contact the appropriate Regional Office listed.

Regional Field Offices:

Southeast Field Office
Assisting Bucks, Chester, Delaware, and Montgomery counties and Philadelphia

908 State Office Building
1400 Spring Garden Street
Philadelphia, PA 19130-4088
Phone: (215) 644-0609
Fax: (215) 560-6722

Northeast Field Office
Assisting Berks, Bradford, Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Sullivan, Susquehanna, Tioga, Wayne and Wyoming counties

201 Samters Building
101 Penn Avenue
Scranton, PA 18503-2025
Phone: (570) 963-4157
Fax: (570) 963-3439

Southcentral Field Office
Assisting Adams, Bedford, Blair, Cambria, Cumberland, Franklin, Fulton, Huntingdon, Juniata, Mifflin, Perry, Somerset and York counties

P.O. Box 1554
Harrisburg, PA 17105-1554
Phone: (717) 772-3839
Fax: (717) 705-2943

Northcentral Field Office
Assisting Centre, Clinton, Columbia, Dauphin, Lancaster, Lebanon, Lycoming, Montour, Northumberland, Snyder and Union Counties

P.O. Box 1554
Harrisburg, PA 17105-1554
Phone: (717) 772-3839
Fax: (717) 705-2943

Southwest Field Office
Assisting Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Washington and Westmoreland counties

1405 State Office Building
300 Liberty Avenue
Pittsburgh, PA 15222-1210
Phone: (412) 880-0486
Fax: (412) 565-2635

Northwest Field Office
Assisting Cameron, Clarion, Clearfield, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, Potter, Mercer, McKean, Venango and Warren counties

1301 French Street
1200 Lovell Place
Erie, PA 16503-2646
Phone: (814) 871-4190
Fax: (814) 454-7494

Pennsylvania Heritage Parks Program Coordination Offices:

Eastern PA District
201 Samters Building
101 Penn Avenue
Scranton, PA 18503-2025
Phone: (570) 963-4973
Fax: (570) 963-3439

Western PA District
P.O. Box 1554
Harrisburg, PA 17105-1554
Phone: (717) 772-4361
Fax: (717) 705-2943

Environmental Protection and Conservation

Pennsylvania has a long history of protecting its environment. From improving air quality, the restoration of wetlands, improving abandoned minelands and brownfields, improving water resource management and protecting our watersheds to waste management and recycling, Pennsylvanians have taken seriously the responsibility to leave Penn's Woods as a living, sustainable legacy for generations to come.

Technical Assistance

- The Pennsylvania Small Towns Environmental Program (PENN STEP)

Financial Assistance

- Growing Greener Grant Program
- Water
  - Coastal Zone Management Program
  - Source Water Protection Grants
  - Storm Water Management Program
  - Section 319 – Nonpoint Source Management Grant
- Solid Waste Management
  - Act 101 County Planning Grants
- Mitigation/Resistance Planning
  - Competitive Hazard Mitigation Grants
  - Flood Mitigation Assistance Program
  - Project Impact
  - Floodplain Land Use Assistance Program

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Department of Environmental Protection

The Pennsylvania Department of Environmental Protection (DEP) is the state agency largely responsible for administering Pennsylvania's environmental laws and regulations. DEP's responsibilities include: reducing air pollution; making sure the drinking water is safe; protecting water quality in Pennsylvania's rivers and streams; making sure waste is handled properly; managing the Commonwealth's recycling programs and helping citizens prevent pollution and comply with the Commonwealth's environmental regulations. DEP is committed to general environmental education and encouraging effective public involvement in setting environmental policy. To meet its responsibilities, DEP works as a partner with individuals, organizations, governments and businesses to prevent pollution and restore Pennsylvania's natural resources.

The Pennsylvania Small Towns Environmental Program (PENN STEP)

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Water Supply Management

Program Requirements:

PENN STEP is designed for smaller communities interested in solving their drinking water or wastewater problems through self-help techniques. This program provides guidance, assistance and support directly to members of the community that are responsible for project organization, implementation and completion. This program includes assistance for choosing engineering services, project planning, organizing local resources, working with volunteer labor and working with contractors. PENN STEP can assist in a community's search for equipment, materials and funding. PENN STEP can also help coordinate various forms of assistance from state, federal, and private sources.

Program Availability:

A public meeting is held with a PENN STEP representative who explains the program to an interested community, answers any questions and discuses the potential readiness criteria.

To be eligible for PENN STEP, a program is evaluated according to the potential of the community to successfully undertake the project and the readiness of the community to do the project work.

Contact Information:

For more information go to http://www.dep.state.pa.us/dep/deputate/waterops/redesign/subpages/subpages/pennstepmain.html

To start the process, interested communities should contact:

Kevin Karmosky
Pennsylvania Department
of Environmental Protection
PENN STEP Coordinator
Phone: (717) 787-0122
E-mail: kkarmosky@state.pa.us.

Growing Greener Grant Program

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Growing Greener Grant Center

Description of Program:

Authorized by the Environmental Stewardship and Watershed Protection Act for 1999, the purpose of this grant is to address water quality impaired watersheds in Pennsylvania that are polluted by nonpoint sources of pollution such as abandoned mine drainage, urban and agricultural runoff, atmospheric deposition, on-lot sewage systems and earthmoving. The grant addresses these and similar concerns through local, watershed-based planning, restoration and protection efforts.

Program Requirements

Eligible proposals address nonpoint source pollution in the short-term or long-term through local, water-shed based planning, restoration or protection efforts. Proposals fall into one or more of the following categories:

1. organization of a watershed group;
2. watershed assessments and development of watershed restoration or protection plans;
3. implementation of watershed restoration or protection projects;
4. demonstration projects, and
5. education/outreach projects.

Projects must be discussed with the appropriate DEP watershed manager before preparing the grant application.

Program Availability:

Grant rounds are held annually. Grant applications are posted on DEP's website prior to deadline. Electronic submissions are accepted. If filing is done electronically, five copies of the required topographic maps and letters of support must be provided in hard copy format.

Contact Information:

Program background and guidelines are available on DEP's website at:

http://www.dep.state.pa.us/growgreen/defaultdep.html

DEP Regional Watershed Managers or County Watershed Specialists are listed at:

http://www.pawatersheds.org/KWN/service_providers/wsmanagers.html

http://www.pawatersheds.org/KWN/service_providers/wsspecialists.html

Ronald Stanley
Pennsylvania Department
of Environmental Protection (DEP)
Phone: 1-877-PAGREEN or (717) 705-5400
E-mail: growinggreener@state.pa.us

Coastal Zone Management Program

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Office of River Basin Cooperation

Description of Program:

The Coastal Zone Management (CZM) Program provides grants and technical assistance to municipalities, certain nonprofit organizations and state agencies with direct impacts on Pennsylvania's two designated Coastal Zones, the Lake Erie shore line and the Delaware Estuary. These are federal funds which are administered by the U.S. National Oceanic and Atmospheric Administration (NOAA), a branch of the U.S. Department of Commerce.

Program Requirements

Potential applicants located within the designated Coastal Zone areas and with direct impacts on Lake Erie and the Delaware Estuary may apply for funding for projects which advance the CZM policies. Project proposals should address one or more of the following ten policy areas: Coastal Hazard Areas, Dredging and Spoil Disposal, Fisheries Management, Wetlands, Public Access for Recreation, Historic Sites and Structures, Port Activities, Energy Facility Siting, Intergovernmental Coordination and Public Involvement.

Program Availability:

Any single project is generally limited to a maximum of $50,000. Most grants require a 50% (dollar-for-dollar) match either in cash or with in-kind materials and/or services. Cash-match funds may include monies provided by a state private grant program but **may not** include funds from another federal grant source. Grant funding is based on the federal fiscal year and project term lengths begin October 1st each year. All CZM funded projects must be completed within eighteen months of their start date.

Contact Information:

Program fact sheets and guidance information are available on the PA DEP website at http://www.dep.state.pa.us/river/czmp.html

For a grant application contact:

Jim Nagy
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 783-2402
E-mail: jnagy@state.pa.us

Everald McDonald
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 772-5619
E-mail: emcdonald@state.pa.us

Source Water Protection Grants

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Watershed Management

Description of Program:

Source Water Protection Grants are made available as a component of the Growing Greener Grant Program application. Grants are available to develop, complete or implement local source water

protection programs once a source water assessment is completed. Such programs protect drinking water sources used by community water systems based on the results of the state-provided source water assessment.

Program Requirements:

Recipients of grants must establish Source Water Protection (SWP) programs that meet DEP's minimum requirements. The SWP program should include public education, program promotion, support for pollution prevention methods, integration with land use planning and restoration and/or conservation of the source water protection area.

Program Availability:

Applicants apply for these grants as part of the Growing Greener Grant Application. Timeframes and due dates are consistent with the Growing Greener Grant program.

Funding for wellhead protection projects are capped at $50,000. Funding for watershed protection projects are capped at $200,000. Applicants must provide a 10% match.

Contact Information:

For more information, contact:

Jennifer Bandura
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 772-4044

Program background and information can be found at www.dep.state.pa.us (directLINK "source water").

Stormwater Management Program

Program Sponsor:

Department of Environmental Protection (DEP), Bureau of Watershed Management

Description of Program:

This program provides grants to counties to develop storm water management plans for designated watersheds and to municipalities to implement the plans. The Pennsylvania Stormwater Management Act (Act 167) requires that county develop and adopt storm water management plans for the watersheds within their boundaries and also to update those plans every five (5) years. The municipalities, located in the county adopted watershed plan areas, are required to enact, implement and administer storm water control ordinances. The grant assistance to counties and municipalities is limited to 75% of the costs for the eligible expenses.

Program Requirements:

The county must submit to DEP a letter of interest and a proposal for a watershed plan. A formal application by the counties is not necessary for this grant. Municipalities need to submit a reimbursement form annually to DEP.

Program Availability:

DEP makes $1.2 million available for this program each fiscal year. Counties and municipalities are eligible for funding.

Contact Information:

More information can be found at www.dep.state.pa.us (directLINK "stormwater").

Contact:
Durla Lathia,
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 772-5661
Email: dlathia@state.pa.us

Letters of interest with proposals, or Municipal Reimbursement Form, should be submitted to:

Durla Lathia
Pennsylvania Department
of Environmental Protection (DEP)
P.O. Box 8555
Harrisburg, PA 17105

Section 319 – Nonpoint Source Management Grant

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Watershed Management

Description of Program:

Section 319 of the federal Clean Water Act provides states with grant funds to address specific nonpoint source water pollution problems. This funding essentially covers the same types of projects eligible under the Growing Greener Program.

Program Requirements:

All grant funds are made on a reimbursement basis. Water quality impaired watersheds that are polluted by nonpoint sources are eligible for Growing Greener funds and Section 319 funds.

Program Availability:

Proposals may be submitted by municipalities (counties, boroughs, townships, cities), incorporated nonprofit organizations and county conservation districts. Section 319 funds for FY 2003 will not be available before October 1, 2002.

Applicants apply for these grants as part of the Growing Greener Grant Application. Timeframes and application deadlines are consistent with that program.

Contact Information:

Russell Wagner
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 772-5642
E-mail: ruwagner@state.pa.us

Or visit
http://www.dep.state.pa.us/dep/deputate/watermgt/WC/Subjects/NonPoint.html

Act 101 – County Planning Grants

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Land Recycling and Waste Management

Description of Program:

This is a reimbursement grant for preparation of county solid waste management plans required by Act 101.

Program Requirements:

Counties are eligible to receive 80% funding for preparation of a county solid waste management plan. This covers feasibility studies for management of waste in the county, including costs associated with educational programs for household hazardous waste and pollution prevention. It does not cover construction costs.

Applicants must set up a pre-application conference with DEP Regional Recycling Coordinators prior to application.

Program Availability:

A maximum of $200,000 is available per county. A total of $2 million is allocated for the program each year. The application period is open-ended. Grant applications are only available from regional DEP staff after the pre-application conference.

Contact Information:

For contact information for DEP Regional Recycling Coordinator access the DEP website at:

http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/document/DEPCOORD.html

Contact:
Larry Holley
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 787-7382
E-mail: lholley@state.pa.us

Competitive Hazard Mitigation Grants

Program Sponsor:

Pennsylvania Emergency Management Agency (PEMA), Hazard Mitigation Office

Description of Program:

The Hazard Mitigation Grants Program provides funding to local governments for the acquisition and relocation or removal of structures from flood-prone areas. Funding is also provided for elevating existing structures or to "flood proof" them, and for the construction of structural hazard controls such as debris basins or floodwalls. Funding is also awarded for other measures that provide protection or reduces the likely damage from future disasters.

The Hazard Mitigation Grants Program may also fund measures that affect properties not damaged in a recent disaster, but which remain vulnerable to future disasters. The identification of projects in the Hazard Mitigation Plan will be used by PEMA to speed disaster recovery assistance to the affected communities immediately following an unusual catastrophic event.

Program Requirements:

Grants under the program are made ONLY to local governments, special districts, private nonprofit agencies with a governmental function or Indian tribes. A local government may serve as an applicant agent for individuals.

For acquisitions, project applications that are submitted to FEMA for approval are reviewed for eligibility, cost-effectiveness and environmental impact.

Program Availability:

Funding is generally given to acquisition and elevation projects. Because funds are limited, PEMA selects and prioritizes eligible projects on a competitive basis and submits the projects to FEMA for approval. The Hazard Mitigation Grants Program can provide up to 75% funding for hazard mitigation measures.

Contact Information:

Ron Killins, Sr., State Hazard Mitigation Officer
Pennsylvania Emergency Management Agency
Bureau of Recovery and Mitigation
Phone: (717) 651-2145
E-mail at: rkillins@state.pa.us

For useful information and links, go to http://www.pema.state.pa.us/. Select Programs/Services, then Disaster Prevention & Recovery, then select Hazard Mitigation.

Flood Mitigation Assistance Program

Program Sponsor:

Pennsylvania Emergency Management Agency, Hazard Mitigation Office

Description of Program:

The Flood Mitigation Assistance Program (FMAP) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the National Flood Insurance Program (NFIP). FMAP is a pre-disaster grant program.

Program Requirements:

Communities that have flood mitigation plans can request approval of their plans from the FMAP state point of contact and FEMA. Approved plans make a community eligible to apply for FMAP project grants.

Program Availability:

Any state agency, participating NFIP community or qualified local organization is eligible to participate in the FMAP.

FMAP funds are distributed from FEMA to the state. PEMA serves as the grantee and program administrator for the FMAP. FEMA may contribute up to 75% of the total eligible costs. At least 25% of the total eligible costs must be provided by a non-federal source. Of this 25%, no more than half can be provided as in-kind contributions from third parties.

Contact Information:

For more information about the Flood Mitigation Assistance Program, contact:

PEMA's State Hazard Mitigation Office
Phone: (717) 651-2145, or 1-800-635-9692

Or visit PEMA's website at
http://www.pema.state.pa.us

Project Impact

Program Sponsor:

Pennsylvania Emergency Management Agency, Hazard Mitigation Office

Description of Program:

Project Impact is an initiative sponsored by the Federal Emergency Management Agency (FEMA) to create disaster resistant communities. Project Impact challenges communities to use long-term grassroots solutions and resources to prevent natural and technological disasters. Designated Project Impact communities receive funding to develop workgroups and projects that address every aspect of creating a healthy, disaster resistant community.

Program Requirements:

Any community that can show a significant threat from any natural or technological hazard is eligible to become a Project Impact community.

A municipality, multi-municipal group or county can seek designation. Applicants must demonstrate, among other things, the presence of multiple potential hazards, a history of problems or declared disasters and the leadership to build and continue partnerships.

Program Availability:

A municipality applies for designation to PEMA. PEMA's Hazard Mitigation Team reviews the application and forwards its recommendation to the Office of the Lieutenant Governor for review. From there, the application is sent to FEMA's regional office for final consideration.

Contact Information:

For more information about Project Impact, contact:

PEMA's State Hazard Mitigation Office
Phone: (717) 651-2145, or 1-800-635-9692

Or visit PEMA's website at
http://www.pema.state.pa.us

Floodplain Land Use Assistance Program

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED), Governor's Center for Local Government Services

Description of Program:

The Floodplain Management Program of the Governor's Center for Local Government Services focuses on providing technical and financial assistance to local governments to help them adopt and administer land use regulations and controls, to reduce and avoid future flood damages.

Program Requirements:

Municipalities seeking assistance must be participating in the National Flood Insurance Program (NFIP), complying with Act 166 and submitting an Annual Report. Funds are available to assist in the preparation, administration and enforcement of floodplain management regulations.

Program Availability:

A letter of intent must be submitted to the Governor's Center for Local Government Services. The letter of intent is available online at: www.landuseinpa.com.

Funding is awarded for up to 50% of eligible costs.

Contact Information:

Kerry Wilson
Pennsylvania Department
of Community and Economic Development
Governor's Center
for Local Government Services
Phone: 1-888-2CENTER (1-888-223-6837)
E-mail: kerwilson@state.pa.us.

Visit the Governor's Center for Local Government Services website for additional information at: http://www.landuseinpa.com.

Infrastructure

Pennsylvania's water is a strategically important resource. The social and economic viability of the Commonwealth is greatly dependent upon the quantity and quality of this resource and its efficient distribution and use.

Water Facilities

Technical Assistance

- Water and Waste Water Outreach Program

Financial Assistance

- Small Water Systems Regionalization Grant Program
- Small Water Systems Consolidation and Construction Grant Program
- Act 537 – Sewage Facilities Planning Assistance
- Public Utilities
- PENNVEST Funding

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Public Utility Commission

The Pennsylvania Public Utility Commission (PUC) is an independent, administrative, quasi-judicial agency vested with the responsibility to supervise and regulate all of the public utilities conducting business in the Commonwealth. The PUC regulates all investor-owned utility systems and municipalities that serve outside their municipal limits. Over the past two years, the PUC has supported the work of Pennsylvania's Interagency Team on Land Use and adopted a Policy Statement in accordance with the Commonwealth's goal to make state agency actions consistent with sound land use planning. To achieve this goal, the PUC routinely provides staff expertise and assistance to public utilities in the areas of water/wastewater, energy and telecommunications.

Expert and technical assistance is provided for applications (including new companies, mergers and acquisitions, additional territory, and abandonments), rate increase requests, utility visits to assist in compliance with regulations, line extensions and installations and waiver of various regulations.

For further information, contact:

Judith A. Koch-Carlson, (717) 783-5392 – Water/Wastewater
Robert J. Bennett, (717) 787-5553 – Energy
Gary Wagner, (717) 783-6175 – Telecommunications

For additional information about the PUC, please visit the website at www.puc.paonline.

Water and Waste Water Systems Outreach Program

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Division of Technical Assistance and Outreach

Description of Program:

This program provides technical assistance to municipal plant operators and staff and to small water systems. On-site assistance is provided through the Environmental Training Partnership (ETP). Technical assistance providers work for the program on a part-time basis and are otherwise employed full time as professionals in the water or wastewater field. Depending on the complexity of the site or the problems encountered, technical assistance can last anywhere from four weeks to one year or longer.

Program Requirements:

Any publicly or privately owned water or wastewater system that has a desire to achieve, maintain or improve compliance is eligible for the program. There is NO COST for the on-site assistance. However, costs to implement necessary changes are the responsibility of the treatment system.

Program Availability:

This program is voluntary and services are provided upon request.

The program offers hands-on on-site assistance in services such as: Process Control, Laboratory Procedures, Utility Management, Facility Management, Energy Efficiency, Auditing, Chlorine Minimization, Pre-Treatment, Solids Management, Grant Preparation, Self-Help Construction Practices, Safety, Collection System Operations, Distribution Systems Operations and Record Keeping and Reporting.

Contact Information:

A request for assistance can be made with DEP by contacting the program directly.

Ned Sterling
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 787-0122
E-mail: nsterling@state.pa.us

More information can be obtained on the Drinking Water and Wastewater Operator web page at www.dep.state.pa.us (directLINK "operators").

Small Water Systems Regionalization Grant Program

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Water Supply Management

Description of Program:

This program offers reimbursement for feasibility studies by local small water systems to study regionalization options.

Program Requirements:

The proposed regionalized water system must involve at least one small water system (a community water system, that serves 3,300 or fewer people).

A local sponsor is needed for project.

Program Availability:

Grant awards are limited to no more than 75% of the total cost of conducting a water systems regionalization study or $75,000, whichever is less. The grantee must provide the local share in the form of matching funds or in-kind services at a minimum of 25% of the total cost of the study. The grantee must pay 100% of any costs in excess of $100,000.

DEP has allocated $500,000 for this grant for each Fiscal Year.

Contact Information:

Grant application/technical guidance is available on the DEP website at http://www.dep.state.pa.us/TechnicalGuidance/Draft_technical_guidance.asp.

Click on Document 383-5500-213.

Contact:
Dennis Lee
Pennsylvania Department
of Environmental Protection
Phone: (717) 772-4058
E-mail: denlee@state.pa.us

Small Water Systems Consolidation and Construction Grant Program

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Water Supply Management

Description of Program:

This new Initiative, established in 2001, is a follow-up program to the Small Water Systems Regionalization Grant Program. The program offers reimbursement for physical construction of interconnections between water supplies.

Program Requirements:

Eligible projects include construction of waterlines to interconnect water systems and repair of existing small water systems to meet standards or conditions of the acquiring system. Eligible costs associated with these types of projects include design, construction management, project administration, permits, layout, materials and labor.

Program Availability:

Grant awards are limited to 75% of all DEP-approved project costs or $75,000, whichever is less. Grantee must provide the remaining 25% of the total study costs up to a total study cost of $150,000. Local share can be in the form of matching funds or in-kind services. In addition to the 25% local share, grantee must pay 100% of any costs in excess of $150,000.

DEP has allocated $500,000 for this grant for each Fiscal Year. The application period is open-ended.

Contact Information:

Grant application/technical guidance is available on the DEP website http://www.dep.state.pa.us/TechnicalGuidance/Draft_technical_guidance.asp.

Click on Document 383-5500-613

Contact:
Dennis Lee
Pennsylvania Department
of Environmental Protection
Phone: (717) 772-4058
E-mail: denlee@state.pa.us

Act 537 – Sewage Facilities Planning Assistance

Project Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Water Quality Protection

Description of Program:

The Sewage Facilities Planning Assistance Program provides funding for municipalities to prepare new or updated official sewage plans as required by Act 537.

Program Requirements:

Eligible applicants include municipalities, counties and authorities.

Program Availability:

This program is open-ended and eligible applicants can submit applications at any time. The program reimburses applicants 50% of the reasonable and documented costs associated with developing a new or updating an existing sewage plan.

Contact Information:

John McHale
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 787-8184
E-mail: jomchale@state.pa.us

For background and guidance on the program, access the DEP website at www.dep.state.pa.us (directLINK "Act 537").

The grant application can be accessed on the DEP website at http://www.dep.state.pa.us/dep/subject/All_Final_Technical_guidance/bwsch/bwsch.html

Click on Document 362-5512-002.

PENNVEST Funding

Program Sponsor:

The Pennsylvania Infrastructure Investment Authority (PENNVEST)

Description of Program:

The Pennsylvania Infrastructure Investment Authority (PENNVEST) offers low-interest loans for design, engineering and construction of both publicly and privately owned drinking water distribution and treatment facilities, wastewater treatment and collection systems, and municipal storm water conveyance and control systems. PENNVEST ranking criteria considers public health and environmental benefits, as well as economic development impacts of a project, in order to bring together the goals of environmental improvements and job creation.

Program Requirements:

Funding is provided for eligible components of projects that include design, engineering, and construction of publicly and privately owned drinking water and wastewater facilities as well as municipal owned storm water systems.

PENNVEST sets its funding based upon several socio-economic factors including the maximum interest rates determined in each individual county. These rates vary depending upon the county unemployment rate and the latest state bond issue, and are different for each county. Generally, rates range 1 from percent to just under 5 percent interest for a typical 20 year term. The funding package is also dependent upon the resulting residential user fee (if any). The interest rate may be reduced to as low as 1 percent for the entire term of the loan, and some supplemental grant funding may be available in order to keep the user fees in line with similar communities.

For individual homeowners, PENNVEST has a program offering low interest funding to pay for repair or replacement of their malfunctioning on-lot system that serves their principle residence. This program is administered in conjunction with the Pennsylvania Housing Finance Agency (PHFA). PENNVEST is able to provide up to $25,000 to individual homeowners through innovative programs with an interest rate of close to 1.5 percent.

Program Availability:

PENNVEST can fund any owner and/or operator of a water, sewer or municipal storm-water system with a project to construct a new system or improvements necessary to correct public health, environmental, compliance or safety deficiencies with existing systems. Funding is available for up to 100% of eligible project costs.

Contact Information:

For a detailed explanation of how to apply for PENNVEST funding and important links, please go to http://www.pennvest.state.pa.us/pennvest/cwp/view.asp?A=4&Q=72530.

Contact your regional PENNVEST Project Specialist for additional information and initial review of your eligibility requirements.

Transportation

Growing Smarter requires striking a balance between preservation, maintenance and growth; between new and old. Pennsylvania's infrastructure, especially its roads, highways and bridges, has helped to shape the landscape and communities in which we live, work and play. Coordination is essential in planning the infrastructure that will continue to shape the kind of Pennsylvania we want to leave as our legacy. Since infrastructure usually extends beyond municipal boundaries, planning for it should be both multimunicipal and local.

Technical Assistance

- Local Training Assistance Program (LTAP)
- Pennsylvania's Traffic Calming Handbook
- Intermodal Coordinator Training
- Rail Freight Properties Directory
- Context Sensitive Solutions
- Highway Occupancy Permit
- PennPlan
- Model Ordinances
- Bicycling Directory of Pennsylvania

Financial Assistance

- Unified Planning Work Program
- Transportation Project/Land Use Planning Coordination Initiative
- Pennsylvania Infrastructure Bank
- Transportation Management Association (TMA) Funding
- Transit Research & Demonstration Program
- Transportation Enhancements Program
- MPO Planning and Programming
- Intelligent Transportation Systems

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

The Pennsylvania Department of Transportation

The Pennsylvania Department of Transportation (PENNDOT), one of the nation's leading public works organizations is the sole state entity that provides highways, bridges and other transportation systems and services to the Commonwealth of Pennsylvania. It owns and operates the nation's fourth largest state-owned highway system and administers one of the nation's largest grant programs for mass transit, rail freight and aviation. PENNDOT provides these transportation systems and services through the active involvement of customers, partners and employees. Many of PENNDOT's programs support the smart growth initiative and provide funding for studies that coordinate transportation and land use.

More information about PENNDOT and its programs can be accessed by visiting http://www.dot.state.pa.us.

Local Training Assistance Program (LTAP)

Project Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Planning and Research

Description of Program:

The Local Training Assistance Program (LTAP) is designed to help Pennsylvania municipalities, which maintain 68,500 miles of local roadways, make the best use of their roadway maintenance dollars.

LTAP provides a wide array of services, including technical assistance, training sessions and updates on the latest technologies and innovations, usually at no cost to the municipalities. LTAP is sponsored by PENNDOT, Federal Highways Administration (FHWA) and Penn State University, in cooperation with the Governor's Center for Local Government Services.

Program Requirements:

Technical assistance is available upon request.

The Roads Scholar Program provides up-to-date road and street maintenance information. There is also an extensive list of publications and videos that can be loaned to municipalities at no cost.

Program Availability:

The Roads Scholar Program offers two courses.

1. Provides training to municipalities to keep roads safer and properly maintained at lower costs.
2. Provides training for foremen, crew leaders, and elected municipal officials in topics such as planning, supervising, policymaking, and managing.

Both courses are offered at no charge.

Contact Information:

Bob Garrett
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Planning and Research
Phone: (717) 787-0800
E-mail: rgarrett@dot.state.pa.us.

A Technical Assistance Request Form can be found online. This can be submitted electronically or via telephone at 1-800-FOR-LTAP. Upon request, an engineer will answer your questions or come to your municipality to look at particular problems.

Access information via website at:
http://www.ltap.psu.edu.

Pennsylvania's Traffic Calming Handbook

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Highway Safety and Traffic Engineering

Description of Program:

Pennsylvania's Traffic Calming Handbook (Pub. 383) provides guidance for PENNDOT when considering the use of traffic calming measures on state roadways in Pennsylvania. The handbook also provides municipalities with information that can help them establish a traffic calming program for roadways within their jurisdiction.

Program Requirements:

Pennsylvania's Traffic Calming Handbook should be used in conjunction with the Institute of Transportation Engineer's (ITE) "Traffic Calming – State of Practice" publication. Modifications to the study and approval process presented in the publication may be needed to better reflect the conditions of the community.

Program Availability:

When conditions warrant, traffic calming measures may be appropriate on the following roadway types (local or tate-owned):

- Local residential streets
- Collector streets with predominantly residential land uses
- Arterial roads within downtown districts or commercial areas (with posted speeds of 40 mph or less)

Contact Information:

Doug Tomlinson
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Highway Safety
and Traffic Engineering
Phone: (717) 787-3657,
E-mail: dtomlin@dot.state.pa.us.

Pennsylvania's Traffic Calming Handbook (Pub. 383) is available on PENNDOT's website at www.dot.state.pa.us, keyword: traffic calming.

Intermodal Coordinator Training

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Rail Freight, Ports and Waterways

Description of Program:

The initial pilot of an intermodal coordinator training course was held in 2001 to improve communication within the transportation community. The training developed a more formal approach to deal with cross-cutting transportation issues, such as dealing with the eminent domain for railroad right-of-way for a highway project, water port or airport access needs, etc.

Program Requirements:

The next course is currently being developed and may be held in late 2002 to early 2003. Training will be offered at four sessions in different regions of Pennsylvania. A primary focus will be the linkage between economic development and transportation, and techniques in addressing multi-modal/intermodal transportation planning issues.

Program Availability:

The initial four sessions of the course will be available to a group of hand-selected PENNDOT and public planning agency representatives.

Contact Information:

The program is not yet available. However, information may be available by calling:

Ran Marshall
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Rail Freight, Ports and Waterways
Phone: (717) 787-2627
E-mail: emarsha@dot.state.pa.us

Rail Freight Properties Directory

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Rail Freight, Ports and Waterways, Rail Operations/Intermodal Programs

Description of Program:

The purpose of this directory is to identify properties located along the regional and shortline railroads in Pennsylvania that have the potential to be rail served. The directory serves as a valuable resource to promote economic development and increase the traffic base of the regional and shortline railroads. It also serves to foster ongoing collaborative efforts and communication between the railroads, economic development contacts, chambers of commerce, planning agencies, industrial real estate agents, developers, property owners and others.

The Directory identifies 205 properties in three geographic regions; Western, Central, and Eastern Pennsylvania. It has been used as a resource for companies wanting to move and/or expand business in Pennsylvania and want the benefits of rail service. Additionally, the directory identifies sites located in Keystone Opportunity Zones, providing businesses with added tax reduction benefits.

Program Requirements:

Properties that are rail served by a Pennsylvania shortline or regional railroad that are available for lease or purchase by a business requiring rail transportation can be included in the web-based version of the directory.

Program Availability:

The directory is available to economic development contacts, chambers of commerce, planning agencies, industrial real estate agents, developers, property owners and others.

Contact Information:

The directory can be accessed on the website at www.dot.state.pa.us, click on Special Interest Areas, then Rail Freight then Properties Directory.

Contact:
Ran Marshall
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Rail Freight, Ports and Waterways,
Rail Operations/Intermodal Programs
Phone: (717) 787-2627
E-mail: emarsha@dot.state.pa.us.

Context Sensitive Solutions

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Design, Highway Quality Assurance Division

Description of Program:

Context Sensitive Solutions is a collaborative, interdisciplinary approach to designing, constructing and maintaining transportation facilities, in which stakeholders (citizens, agencies, public officials, etc.) are part of the project team. Its goal is to balance safety, mobility and transportation needs while preserving scenic, aesthetic, historic, cultural, environmental and community values.

Program Requirements:

Context Sensitive Solutions builds on the existing project development process to encourage more proactive involvement with the stakeholders throughout the process.

Program Availability:

Training on Context Sensitive Solutions is currently being developed for the Planning, Design, Construction, and Maintenance communities.

Contact Information:

A Context Sensitive Solutions handbook is currently being developed with an anticipated completion date of early 2003. Access to the handbook will be available on the www.dot.state.pa.us website.

Contact:
Dan Stewart
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Design, Highway Quality
Assurance Division
Phone: (717) 787-0456
E-mail: dstewar@dot.state.pa.us

Highway Occupancy Permit

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Maintenance and Operations

Description of Program:

Consideration of local land use planning promotes coordination between PENNDOT and municipalities in the issuance of driveway permits. PENNDOT now requires applicants to complete a land use questionnaire when applying for certain driveway permits. PENNDOT uses this form to determine if the proposed project meets local land use requirements. In addition to the land use questionnaire form, early coordination meetings between PENNDOT, the applicant, municipalities and other stake holders provides an opportunity for increased coordination with local land use efforts.

Program Requirements:

The land use questionnaire is included in all low, medium and high volume driveway applications.

Program Availability:

PENNDOT notifies municipalities of projects that do not meet zoning use requirements. In addition, municipalities and counties are encouraged to contact PENNDOT district offices to request notification of future application submissions for review and comments.

Contact Information:

Walter Knerr
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Maintenance and Operations
Phone: (717) 783-6473
E-mail at: wknerr@dot.state.pa.us.

You may also contact your local PENNDOT district office or visit PENNDOT's website at www.dot.state.pa.us, Keyword: Land Use.

PennPlan

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

PennPlan is the blueprint for all modes of transportation – highways, transit, passenger rail, freight rail, air and water facilities, and bicycle and pedestrian paths – and how these modes will interact and interconnect to form a system in the next quarter century in Pennsylvania. PennPlan identifies transportation directions, the mechanisms to measure progress toward objectives, and the means to achieve success.

Program Requirements:

Project consistency with PennPlan may receive a higher priority in programming.

Program Availability:

PennPlan is available to Municipal Planning Organizations (MPO), Local Development Districts (LDD), county planning commissions and the general public.

Contact Information:

Jim Smedley
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning, Center
for Program Development and Management
Phone: (717) 772-1772
E-mail: smedley@dot.state.pa.us

PennPlan is also available on PENNDOT's website at www.dot.state.pa.us, select General Information, then Programs & Initiatives, then PennPlan.

Model Ordinances

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

This program is still in its development stage. Model ordinances such as access management, noise and interchange will be developed by PENNDOT and made available for municipalities to adopt. Model ordinances are expected to be available in 2003.

Program Requirements:

Municipalities are encouraged to adopt these various model ordinances to enable them to control access, noise and interchange developments.

Program Availability:

Training on the use and benefits of these ordinances may be made available to help implementation.

Contact Information:

For more information on this developing program, contact:

Angela Watson
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning, Center
for Program Development and Management
Phone: (717) 787-5798
E-mail: awatson@dot.state.pa.us

When completed, model ordinances will be made available via PENNDOT's website.

Bicycling Directory of Pennsylvania

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Highway Safety and Traffic Engineering, Safety Management Division

Description of Program:

The Bicycling Directory is designed to provide a comprehensive listing of bicycling services and resources for both visitors and residents in Pennsylvania. The Bicycling Directory also encourages people to consider the bicycle as a viable mode of transportation. In addition, Touring Corridors provide six Bicycle PA routes for recreation on your bicycle.

Program Requirements:

There are no requirements to receive benefits under this program.

Program Availability:

Listed individuals and organizations have agreed to provide guidance, assistance and information regarding where to go, how to get there, and what to expect on a Pennsylvania cycling adventure.

Contact Information:

Dave Bachman
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Highway Safety and Traffic Engineering, Safety Management Division
Phone: (717) 783-8444
E-mail at: dbachma@dot.state.pa.us

The Directory is also available on PENNDOT's website at www.dot.state.pa.us.

Unified Planning Work Program

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

A Unified Planning Work Program (UPWP) is developed by the Department of Planning, Center for Program Development and Management annually. The UPWP outlines the work to be undertaken each state fiscal year, the end products of that work, and the cost associated with each task. Funding is determined by formulas based on population, transportation system complexity, air quality and other specific needs, and distributed to county and regional planning agencies.

Program Requirements:

Funds are provided to collect and analyze data, conduct long range transportation planning, perform needs studies, do congestion management system planning and to prioritize and program projects.

Work Programs must be submitted to PENNDOT by the end of February each year. A notice to proceed is usually given by July 1st.

Program Availability:

County and Regional Planning Agencies may apply for funding. Funds are provided only on a reimbursement basis.

Contact Information:

Tom Kotay
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning, Center
for Program Development and Management
Phone: (717) 787-7335
E-mail: kotay@dot.state.pa.us.

Transportation Project/Land Use Planning Coordination Initiative

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

Federal Planning funds are available for transportation impact studies, corridor studies, comprehensive plan updates, major project/land use coordination and other studies which involve the consideration of land use.

Program Requirements:

Study proposals must be submitted through an Municipal Planning Organization (MPO) /Local Development District (LDD) or Independent county. Funding is available for up to 80% of project/study costs; a 20% local or other funding match is required.

Program Availability:

Municipalities, counties, MPO/LDD/independent counties and other planning organizations are eligible for funding. Funds are available on a statewide competitive basis. Funding priorities are established by PENNDOT on an annual basis.

Funding decisions are made by PENNDOT in March of each year. Funds are distributed on July 1st.

Contact Information:

Angela Watson
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning, Center
for Program Development and Management
Phone: (717) 787-5798
E-mail: awatson@dot.state.pa.us.

Information is also available on PENNDOT's website at www.dot.state.pa.us, select General Information, then Programs & Initiatives, then Land Use.

Pennsylvania Infrastructure Bank

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT) Center for Program Development and Management

Description of Program:

The Pennsylvania Infrastructure Bank is a PENNDOT operated program of low interest loans to assist in the funding of transportation improvements around the Commonwealth.

Program Requirements:

Most capital projects are eligible. They include new construction of, and improvements to, highways and bridges, transit and rail-passenger facilities and other transportation infrastructure. Construction projects receive the highest priority for funding.

- Projects should meet all federal, state and local planning, environmental and programming requirements.
- Applicants should be able to substantiate the project thoroughly demonstrates congestion reduction, mobility and access, environmental, safety and /or economic benefits. Projects with more than one benefit may be given a higher priority.

The Department can only loan state funds for projects that are part of the state-owned highway system or for projects that are normally eligible for state funds.

Program Availability:

Municipalities, counties, state government entities, public authorities, regional councils and private groups making public improvements to transportation facilities may apply. The amount of assistance will be established on a project by project basis.

Repayment terms are established on a project-specific basis, but should not exceed a maximum of ten years. PENNDOT encourages a repayment term of five years or less.

Contact Information:

More information, including the Pennsylvania Infrastructure Bank Loan Application and Pennsylvania Infrastructure Bank Operating Manual, is available on PENNDOT's website at www.dot.state.pa.us, Keyword: Infrastructure Bank.

Contact:
Jim Smedley
Pennsylvania Department
of Transportation (PENNDOT)
Center for Program Development
and Management
Phone: (717) 772-1772
E-mail: smedley@dot.state.pa.us.

Transportation Management Association (TMA) Funding

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT) Department of Planning, Center for Program Development and Management

Description of Program:

A Transportation Management Association (TMA) is a non-profit organization whose mission is to develop and implement programs and projects aimed at reducing congestion and/or improving air quality. TMAs work with PENNDOT and local employers to implement these projects. They are funded with Congestion Metigation Air Quality (CMAQ) funds through the regional Municipal Planning Organizations.

Program Requirements:

Only ozone non-attainment or maintenance areas are eligible for CMAQ funds. TMAs must be incorporated as a section 501(c) (3) or (4) organization at the time of application. An emissions analysis is required for CMAQ funds.

Program Availability:

CMAQ funds are allocated to MPOs.

Contact Information:

For more information contact your area MPO.
Or you may contact:

Mike Baker
Pennsylvania Department
of Transportation (PENNDOT)
Center for Program Development
and Management
Phone: (717) 772-0796
E-mail: mbaker@dot.state.pa.us.

Transit Research & Demonstration Program

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Bureau of Public Transportation

Description of Program:

This program provides financial assistance for innovative projects that enhance the attractiveness of public transportation.

Program Requirements:

Research projects are those that propose to study a situation or operational function to improve the transit agency's ability to be more efficient and to increase ridership. They are limited to the maximum amount of $50,000.

Demonstration projects are those that will actually be implemented with R&D program funding. These could involve innovative service delivery or advanced technology to improve transit operations, with the goal of increasing ridership and improving customer service and productivity.

Program Availability:

Eligible applicants include local transportation organizations within the Commonwealth of Pennsylvania and educational institutions, Regional Planning Commissions and private firms providing goods and services to the transit industry (provided that they obtain a local transit agency as a sponsor).

Approved projects are generally eligible for up to 80% of funding. The applicant is responsible for the remaining 20%.

Contact Information:

Chris Johnston
Pennsylvania Department
of Transportation (PENNDOT)
Bureau of Public Transportation
Phone: (717) 705-1493
E-mail: cjohnst@dot.state.pa.us.

Additional information is available on PENNDOT's website at www.dot.state.pa.us.

Select: Bureau of Public Transportation in the organization search, then select Transit Research, then Transit Research & Demonstration Program.

Transportation Enhancements Program

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

The Transportation Enhancements Program is designed to fund transportation related projects that are over and above what is considered routine construction and maintenance.

Program Requirements:

Projects must fall into one or more of the twelve eligible categories established in the Transportation Equity Act for the 21st Century. Within these categories, projects must have a relationship to the surface transportation system. An example would be the rehabilitation of an historic train station. Also, a project may function as a component of a transportation system, such as a bike/pedestrian path. Proposals must be for a complete, identifiable and usable facility or activity. Funds are not available for partial projects that cannot function as a complete and useful activity. Funding is available, however, for a particular phase of a multi-phase project. Funds are available for design, acquisition, utility relocation or construction of projects.

Project sponsors may be municipalities or not-for-profit organizations. It is recommended that non-municipal project sponsors strongly consider working through a local or county government entity.

Program Availability:

A project must address a transportation need, use or benefit. For example, creating a pedestrian or bike path adjacent to, or separate but parallel to, an existing roadway addresses a transportation need. While the restoration of an historic building may create a tourist attraction, it is only eligible for funding if it is an historic transportation facility or transportation museum, or if there is a transportation use, need or benefit.

Contact Information:

Dan Accurti
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning
Center for Program Development
and Management
Phone: (717) 783-2258
E-mail at: daccurt@dot.state.pa.us.

Information is also available on PENNDOT's website at www.dot.state.pa.us, select General Information, then Programs & Initiatives, then Transportation Enhancement Program.

Municipal Planning Organization Planning and Programming

Program Sponsor:

Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

PENNDOT provides financial guidance to Municipal Planning Organization, Local Development Districts and independent counties for the update of a region's transportation program. Programs are developed or updated every two years to represent the next four years of transportation projects.

Program Requirements:

Potential transportation projects need to be submitted to a region's MPO, LDD or independent county for consideration. Selected projects are included in the region's Transportation Improvement Program.

Projects must be included on a region's Transportation Improvement Program in order to be included in the State Transportation Improvement Program. All transportation projects must be "programmed" to receive transportation funds.

Program Availability:

Municipalities, counties, MPOs, LDDs and independent counties may recommend transportation projects.

Contact Information:

For more information, contact your region's MPO, LDD or independent county planning agency. You may also contact:

Dennis Lebo
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning
Center for Program Development
and Management
Phone: (717) 787-5246
E-mail: dlebo@dot.state.pa.us

Intelligent Transportation Systems

Program Sponsor:

Pennsylvania Department of Transportation (PENNDOT), Department of Planning, Center for Program Development and Management

Description of Program:

Intelligent Transportation Systems (ITS) are designed to improve the movement of people and goods by deploying technology. Examples of ITS technology include traffic monitoring, incident detection and smart vehicles. The deployment of ITS improves safety, reduces congestion, and reduces the need to implement expensive capacity increasing projects.

Program Requirements:

To be eligible for federal and/or state funding, ITS projects must be included on an Municipal Planning Organization, Local Development District or independent iounty Transportation Improvement Program.

Program Availability:

ITS can be deployed statewide. ITS studies are eligible for federal and state transportation funds.

Contact Information:

For more information, contact your region's MPO, LDD or independent county planning agency. Or you may contact:

Dennis Lebo
Pennsylvania Department
of Transportation (PENNDOT)
Department of Planning
Center for Program Development
and Management
Phone: (717) 787-5246
E-mail: dlebo@dot.state.pa.us

Historic Preservation

Cultural resources can be archeological and historic sites or an historic landscape. However defined, these resources shape our communities and give them character. They serve as an important educational and economic or tourism asset.

Technical Assistance

- Technical Assistance Grant

Financial Assistance

- Certified Local Government Grant Program
- Keystone Historic Preservation Grant Program
- Pennsylvania History and Museum Grant Program
- Historic Preservation Grants
- Statewide Conference Grants

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Historical and Museum Commission

The Pennsylvania Historical and Museum Commission (PHMC) is the Commonwealth's official "history agency." The Bureau for Historic Preservation is part of PHMC and serves as the State Historic Preservation Office (SHPO). The role of the Bureau is to identify and protect the architectural and archaeological resources of Pennsylvania. The Bureau has the responsibility to work with individuals, communities, local governments and state and federal agencies to educate Pennsylvanians about the state's heritage and its value, to build better communities through preservation, to provide strong leadership, both individually and through partnerships, and to insure the preservation of Pennsylvania's heritage.

Technical Assistance Grant

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC), Bureau of Historic Preservation

Description of Program:

This grant program is designed to help a wide range of applicants acquire skills to undertake projects for organizations, including preservation planning, long range planning and developing a project scope in preparation for applying for a PHMC grant. The grants bring experts in the field to the organization's sites or provide staff training.

Program Requirements:

Eligible organizations must meet the following requirements:

1. Must be located in Pennsylvania.
2. Must be a local government or have a tax-exempt status.
3. Must be incorporated and in existence for two years prior to submission of a grant application.
4. If applicable, must be registered with the Pennsylvania Commission on Charitable Organizations.

Program Availability:

Organizations with general operating budgets of less than $250,000 may apply for technical assistance. Organizations with general operating budgets over $250,000 may apply if they are acting as a mentor for a smaller group. Organizations such as colleges and universities, conservancies, historical societies, local governments, museums, preservation organizations and schools and school districts are eligible to apply.

Grant awards will not exceed $1,500. Applicants may apply for and receive more than one Technical Assistance Grant in any one year.

Contact Information:

Applicants for this grant are required to use the web-based electronic grant application process. Exceptions are generally only made for those applicants who do not have the necessary equipment. The electronic grant application can be completed by accessing www.artsnet.org/phmc and then selecting "egrants."

Additional information can be obtained by calling:

Michel R. Lefevre
Phone: 1-800-201-3231, or (717) 787-0771
E-mail: mlefevre@state.pa.us

Certified Local Government Grant Program

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC), Bureau for Historic Preservation

Description of Program:

This program provides technical and funding assistance to local governments in order to enhance their ability to implement a historic preservation approach to sound land use planning and regulation. This program is funded by the National Historic Preservation Fund.

Program Requirements:

Funding under this program is limited to federally designated Certified Local Governments (CLG). There is only one type of grant. The competitive process awards funding in the categories of cultural resource surveys, National Register nominations, technical and planning assistance, educational and interpretive programs, staffing and training, and pooling CLG grants and third party administration.

Program Availability:

Certified Local Government Grants require a 60/40 match. The historic preservation grant can reimburse up to 60% of the total project. In-kind contributions may be used to satisfy the 40% local match. However, cash matches are strongly encouraged and will be considered in the evaluation process.

The maximum award under this program is $25,000.
Contact Information:

Applicants for this grant are required to use the web-based electronic grant application process. Exceptions are generally only made for those applicants who do not have the necessary equipment. The electronic grant application can be completed by accessing www.artsnet.org/phmc and then selecting "egrants."

Additional information can be obtained by calling:

Certified Local Government
Grant Administrator
Michel R. Lefevre
Phone: 1-800-201-3231, or (717) 787-0771
E-mail: mlefevre@state.pa.us.

Certified Local Government Grant Manager
Janice E. Stramara
Phone: (717) 783-2838
E-mail: jstramara@state.pa.us

Keystone Historic Preservation Grant Program

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC)

Description of Program:

This program provides funding for preservation, restoration and rehabilitation projects of historic resources listed in or eligible for listing in the National Register for Historic Places.

Program Requirements:

Funding under this program is available to nonprofit organizations and local governments for capital improvements on historic resources listed in or eligible for listing in the National Register of Historic Places. (Private property owners are not eligible for funding under this program.)

Preservation covenants are required on all properties receiving funding from the PHMC.

Program Availability:

Grants will be funded at 50%. Projects under $5,000 and over $100,000 may be considered at the Commission's discretion. Grant funding is supported annually with realty transfer tax revenue.

Application deadlines may be obtained by visiting the PHMC Grants Website at www.artsnet.org/phmc or by calling 1-800-201-3231.

Contact Information:

Applicants for this grant are required to use the web-based electronic grant application process. Exceptions are generally only made for those applicants who do not have the necessary equipment. The electronic grant application can be completed by accessing www.artsnet.org/phmc and then selecting "egrants."

Additional information can be obtained by calling:

Keystone Historic Preservation
Grant Administrator
Bryan Van Sweden
Phone: (717) 772-5071
E-mail: bvansweden@state.pa.us

Pennsylvania History and Museum Grant Program

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC)

Description of Program:

Funding under this program is designated to support a wide variety of museum, history, archives and historic preservation projects, as well as nonprofit organizations and local governments. There are 10 types of grants, among which the following support the Growing Smarter Initiatives. For a complete listing, go to the PHMC Grant website at www.artsnet.org/phmc.

1. Historic Preservation Grants – Grants are available in differing amounts to support cultural resource surveys, National Register

nominations, planning and development assistance, educational and interpretive programs and archaeology.

2. PHMC Technical Assistance Grants – These grants assist organizations in solving problems, increasing professionalism and building capacity.
3. PHMC Statewide Conference Grants – This grant provides monies to organizations that plan and hold conferences relating to issues concerning the history, museum, historic preservation and cultural communities of Pennsylvania.

For additional information, please refer to the program entry under each grant program title.

Historic Preservation Grants

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC)

Description of Program:

These grants are available in two different amounts to support projects in the categories of cultural resource surveys, National Register nominations, planning and development assistance, educational and interpretive programs and archaeology.

Program Requirements:

Eligible organizations must meet the following requirements:

1. Must be located in Pennsylvania.
2. Must be a local government or have a tax-exempt status.
3. Must be incorporated and in existence for two years prior to submission of a grant application.
4. If applicable, must be registered with the Pennsylvania Commission on Charitable Organizations.

Program Availability:

Organizations such as colleges and universities, conservancies, historical societies, local governments, museums, other historical organizations, museums and historic sites owned by the PHMC and operated by independent nonprofit organizations and multi-purpose organizations may apply for funding.

There are two levels of funding for Historic Preservation Grants:

1. Grants in amounts up to and including $5,000 require no matching funds.
2. Grants in amounts of $5,001 up to and including $15,000 require 50/50 matching funds. In-kind contributions may be used to satisfy the local match requirement. However, cash matches are strongly encouraged and will be considered in the evaluation process.
3. Grant awards will not exceed $15,000.

Contact Information:

Applicants are encouraged to discuss their project ideas with the appropriate grant manager or administrator.

Additional information can be obtained by calling:

Historic Preservation Grant Manager
Carol Lee
Phone: 1-800-201-3231 or (717) 783-9918
E-mail: calee@state.pa.us

Applicants for this grant are required to use the web-based electronic grant application process. Exceptions are generally only made for those applicants who do not have the necessary equipment. The electronic grant application can be completed by accessing www.artsnet.org/phmc and then selecting "egrants."

Statewide Conference Grants

Program Sponsor:

Pennsylvania Historic Museum Commission (PHMC)

Description of Program:

Statewide Conference Grants require no match and are awarded as "seed" money to organizations that plan and hold conferences relating to issues concerning the history, museum, historic preservation and cultural communities of Pennsylvania.

Program Requirements:

Organizations such as colleges and universities, educational institutions, historical organizations and societies, historical preservation organizations, libraries (public and private), local governments, museums and other related organizations may apply for funding.

To apply for a Statewide Conference Grant, an organization must have tax-exempt status or be an entity of local government. Additionally, the organization must be incorporated and in existence for at least two years prior to the submission of the grant application and must be registered with the Pennsylvania Commission on Charitable Organizations, as required.

Conferences must be held in Pennsylvania and must appeal to a statewide, regional or national audience.

Program Availability:

Grant awards are subject to the annual availability of funds from the Commonwealth of Pennsylvania.

Contact Information:

Applicants for this grant are required to use the web-based electronic grant application process. Exceptions are generally only made for those applicants who do not have the necessary equipment. The electronic grant application can be completed by accessing www.artsnet.org/phmc and then selecting "egrants."

Additional information can be obtained by calling:

Ira F. Smith III
Pennsylvania Historic Museum
Commission (PHMC)
Phone: 1-800-201-3231 or (717) 787-9927
E-mail: irsmith@state.pa.us

Urban Revitalization

Despite a movement of growth outside of Pennsylvania's urban cores, the states downtowns remain cultural, historical, educational, architectural and entertainment centers. Revitalizing the downtown communities support the foundation of the Commonwealth and its social and economic viability.

Financial Assistance

- Main Street Program
- New Communities Program
- Keystone Opportunity Zones/Keystone Opportunity Expansion Zones
- Enterprise Zone Program

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

The Department of Community and Economic Development (DCED)

The Department of Community and Economic Development works to foster opportunities for businesses and communities to succeed and thrive in a global economy, thereby enabling Pennsylvanians to achieve a superior quality of life. To ensure growth and development in our businesses and communities across Pennsylvania, DCED is the cornerstone to a large number of programs focused specifically on building Pennsylvania's economy, empowering its communities and supporting its local governments.

For access to information about DCED and its programs visit www.inventpa.com. This web site has been developed to help businesses, local governments and individuals harness the power of the web to quickly and easily find the programs, initiatives and assistance that are available.

Pennsylvania Department of Revenue

The Department of Revenue works to revive economically distressed urban and rural communities with one of the most powerful market-based incentives – eliminating taxes. Programs such as the Keystone Opportunity Zones (KOZ) and the Keystone Opportunity Expansion Zones (KOEZ) provide priority status to businesses for various state and local community-building assistance programs. The KOZ/KOEZ initiatives are jointly administered by the Department of Revenue and the Department of Community and Economic Development (DCED). It is through these partnerships that the Department of Revenue and DCED can work together to ensure growth and development for businesses and communities in the Commonwealth of Pennsylvania.

Main Street Program

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED)

Description of Program:

This five-year program is designed to help a community's downtown economic development effort through the establishment of a local organization dedicated to downtown revitalization, and the management of downtown revitalization efforts by hiring a full-time professional downtown coordinator. The Downtown Reinvestment Component uses business district strategies to support eligible commercial-related projects located within a central or neighborhood business district. This program has been merged into the New Communities Program.

Program Requirements:

For the Main Street Program, administrative costs associated with the hiring of a coordinator and operating the office and design/facade are granted to private property owners within the target area; for the Downtown Reinvestment Component, physical improvements that are supported by a plan with clearly documented public benefit.

Program Availability:

Generally, a municipality is the applicant for the Main Street Manager Component. Municipalities and redevelopment authorities are the eligible applicants for the Downtown Reinvestment Component. In limited cases, a Main Street nonprofit or Business District Authority with two years of audited records may apply for the funds.

A match is required for funding on the Main Street Component. For the Downtown Reinvestment and Anchor Building components, at least two thirds of total development costs must be committed.

Contact Information:

Diana Kerr
Office of Community Development
Phone: 717-720-7411
E-mail: dikerr@state.pa.us.

Or, visit DCED's home page at www.inventpa.com. Select Communities in PA, then the Community Resource Directory.

New Communities Program

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED)

Description of Program:

This program provides grants to support the Enterprise Zone and Main Street Programs and downtown businesses providing technical and financial assistance to communities.

Program Requirements:

There are no terms or conditions to this program.

Program Availability:

Funding under this program is available to general purpose local governments, redevelopment authorities, economic development agencies, and qualified nonprofit community development agencies.

Eligible uses for funding include administrative support of business development in downtown and business park areas, downtown façade renovations, loan capital for property acquisition and improvements, equipment purchases and modernization.

Contact Information:

Aldona Kartorie
Office of Community Development
Phone: (717) 787-7409
E-mail: akartorie@state.pa.us

Applications are available at: www.inventpa.com. Select Communities in PA, then Building Better Communities, then Community Resources. This program utilizes the single application process.

Keystone Opportunity Zones (KOZ) and Keystone Opportunity Expansion Zones (KOEZ)

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED)

Description of Program:

Keystone Opportunity Zones (KOZ) and Keystone Opportunity Expansion Zones (KOEZ) are geographic areas that are virtually free of state and local taxes. A KOZ/KOEZ is given priority for various state and local community-building assistance programs. The goal of the KOZ/KOEZ is to revive economically distressed urban and rural communities with one of the most powerful market-based incentives – eliminating taxes.

Pennsylvania is comprised of 12 KOZ regions. Within each region, there are KOZ subzones and specific properties identified. To view Pennsylvania's KOZ regions, go to: http://koz.inventpa.com//find.html

The KOZ/KOEZ initiatives are jointly administered by the Department of Revenue and the Department of Community and Economic Development (DCED).

Program Requirements:

In order to receive benefits, under this program, you must become qualified and receive state certification. Businesses, property owners and residents must be fully compliant with all local and state taxes as well as building and zoning codes in order to be eligible.

Program Availability:

To receive KOZ/KOEZ tax benefits a KOZ/KOEZ application must be completed and submitted by December 31 of each calendar year for which benefits are sought. The Zone Coordinator for each region will instruct applicants where to file the application.

Contact Information:

For additional information, visit the Pennsylvania Department of Revenue's KOZ website at http://www.revenue.state.pa.us or DCED's website at http://koz.inventpa.com//index.html.

Contact:
Ryan Kociolek
Department of Community
and Economic Development (DCED)
Office of Community Development
Phone:(717) 720-7344

Enterprise Zone Program

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED)

Description of Program:

The Enterprise Zone Program provides grants to financially disadvantaged communities for preparing and implementing business development strategies within municipal Enterprise Zones (EZ). The objectives of EZs are to improve a zone's business climate and to enable local governments to facilitate growth and employment opportunities. Additionally, the program is designed to help local governments and business communities form public-private partnerships to develop and sustain private investments and job creation. There are currently 29 Enterprise Zones within the state.

This program has been merged into the New Communities Program.

Program Requirements:

Financially disadvantaged communities are eligible to receive assistance under this program.

Program Availability:

Municipalities and redevelopment authorities are eligible for funding to assist in business development surveys, business development strategy/preparation and revolving fund business loans.

Contact Information:

For more information, visit DCED's website at www.inventpa.com.

Affordable Housing

In order to make the Commonwealth a better place to live and foster community and economic development, decent, safe and affordable homes are needed. This includes housing for older adults, persons of modest means and those persons with special housing needs. When communities and government work together to encourage market-sensitive and innovative land use planning concepts in urban areas, opportunities for homeownership and the transformation of distressed urban neighborhoods into attractive places to live are realized. These efforts offer Pennsylvanians a viable alternative to suburbia and sprawl development.

Financial Assistance

- Homeownership Choice Demonstration Program
- Single Family Homeownership (Single Family) Program
- Multifamily Rental Housing Program

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives:

The Pennsylvania Housing Finance Agency

The Pennsylvania Housing Finance Agency (PHFA) is Pennsylvania's leading provider of capital for affordable homes and apartments. In order to make the Commonwealth a better place to live while fostering community and economic development, PHFA provides capital for decent, safe and affordable homes and apartments for older adults, persons of modest means and those persons with special housing needs. PHFA provides a variety of programs that support community and economic development in Pennsylvania's communities.

Homeownership Choice Demonstration Program

Program Sponsor:

Pennsylvania Housing Finance Agency (PHFA)

Description of Program:

The Homeownership Choice Demonstration Program (HCP) is designed to provide funds for the development of single family homes for purchase in urban communities. The HCP is intended to be a part of a municipality's comprehensive approach to increase the net investment in housing in urban areas while building mixed-income communities and encouraging diversity of homeownership.

Program Requirements:

In order to achieve measurable impact, developments need to be conceived within the context of the overall strategic plans designed to produce significant scale. Therefore, PHFA has established 10 guiding principles for the HCP that coordinate program funding with efforts to address other factors that contribute to negative urban environments (i.e., unemployment, crime, lack of green or open space, etc.). The design of the proposed housing development must address the 10 Guiding Principles of the Program, which are found on PHFA's website at: http://www.phfa.org/rfp/HCP_RFP_02152002.htm.

To apply for funding, a proposal must be submitted to PHFA. Guidelines for proposal content and submission requirements are also available on PHFA's website at: http://www.phfa.org/rfp/HCP_RFP_02152002.htm.

Program Availability:

Funding is available for joint effort between a for-profit builder / developer; local, non-governmental nonprofit builder / developer or Community Development Corporation (CDC) which has been previously engaged in housing development in the community; and the local government. Proposals coming from first class cities must be generated through and submitted by the municipal government.

For-profit homebuilders / developers should work in partnership with local nonprofit builder / developers or Community Development Corporations (CDCs).

This program is available to municipalities.

Contact Information:

For proposal guidelines and submission requirements, visit PHFA's website at: http://www.phfa.org/news/hcp.htm.

Robert Bobincheck
Pennsylvania Housing Finance Agency (PHFA)
Phone: (717) 780-1801 or by
E-mail: bbobincheck@phfa.org

Single Family Homeownership (Single Family) Program

Program Sponsor:

Pennsylvania Housing Finance Agency (PHFA)

Description of Program:

The Single Family Homeownership (Single Family) Program enables low- and moderate-income households to purchase new or existing homes by providing below-market interest rate financing through private lending institutions. The Single Family Program also provides consumer education and credit counseling for low and moderate-income households who might otherwise not achieve their goals of homeownership.

Under this program there are 10 separate programs. They are:

1. PHFA/Fannie Mae Disability Access Modification Loan Program
2. Statewide Homeownership Program
3. Lower Income Homeownership Program
4. Closing Cost Assistance Program
5. Homestead Second Mortgage Program
6. Access Home Modification Program
7. Access Down Payment and Closing Cost Assistance Loan Program

8. Joint Financing Program
9. FHA 203(k) Program
10. Purchase-Improvement Program

Each program is described on PHFA's website at: www.phfa.org/programs/singlefamily/index.html.

Program Requirements:

Each program has its own prerequisites, qualifications and specifications. Program requirements can be viewed by clicking on the appropriate link at www.phfa.org/programs/singlefamily/index.html.

Program Availability:

Funding is provided to homebuyers who meet the program eligibility requirements.

Contact Information:

Donald J. Plunkett
Pennsylvania Housing Finance Agency (PHFA)
Phone: (717) 780-3800 or 1-800-822-1174

Visit PHFA's website at http://www.phfa.org

Multifamily Rental Housing Program

Program Sponsor:

Pennsylvania Housing Finance Agency (PHFA)

Description of Program:

Assistance under this program takes the form of loans and tax credits to developers for rental housing construction and rehabilitation and technical assistance to sponsors and applicants who plan to submit funding requests for proposed development.

The Multifamily Rental Housing Program consists of several programs. These include:

- Construction Loan Program
- PennHOMES Program
- Taxable and Tax-exempt Bond Financing
- Low Income Housing Tax Credit Program

Information on each of these programs is available on PHFA's website at: www.phfa.org/programs/multifamily/index.htm

Program Requirements:

Each program has its own prerequisites, qualifications and specifications. Program requirements can be viewed by clicking on the appropriate link at www.phfa.org/programs/multifamily/index.htm.

Program Availability:

Programs under the Multifamily Rental Housing Program are available to assist private developers, nonprofit organizations and local governments that provide and expand affordable housing opportunities for Pennsylvania's citizens.

Contact Information:

For program applications and information on application deadlines, visit PHFA's website at www.phfa.org/programs/multifamily/index.htm and click on the appropriate link for each program.

David Evans
Pennsylvania Housing Finance Agency (PHFA)
Phone: (717) 780-3800

Brownfields and Land Recycling

The Pennsylvania Brownfield Program encourages the cleanup and redevelopment of industrial and commercial sites and putting these sites back into production in a way that is safe for both workers and the community. Additionally, this preserves farmland and open space.

Financial Assistance

- Brownfield Inventory Grants Under the Hazardous Sites Cleanup Act
- Brownfield Tax Incentive Program
- Keys Sites Initiative

Agencies Working to Support Pennsylvania's Growing Smarter Initiatives

Pennsylvania Department of Environmental Protection

The Pennsylvania Department of Environmental Protection (DEP) is the state agency largely responsible for administering Pennsylvania's environmental laws and regulations. DEP's responsibilities include: reducing air pollution; making sure the drinking water is safe; protecting water quality in Pennsylvania's rivers and streams; making sure waste is handled properly; managing the Commonwealth's recycling programs and helping citizens prevent pollution and comply with the Commonwealth's environmental regulations. DEP is committed to general environmental education and encouraging effective public involvement in setting environmental policy. To meet its responsibilities, DEP works as a partner with individuals, organizations, governments and businesses to prevent pollution and restore Pennsylvania's natural resources.

Brownfield Inventory Grants Under the Hazardous Sites Cleanup Act

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP) Bureau of Land Recycling and Waste Management

Description of Program:

This grant provides municipalities and economic development agencies funding to inventory brownfield properties in their area. Grantees gather information about the properties available for redevelopment including information about existing infrastructure, suspected or confirmed environmental contamination, and other related site information and post it to the PA Site Finder Directory at http://www.pasitefinder.state.pa.us.

Program Requirements:

Each brownfield site identified and inventoried by approved grantees is eligible for one reimbursement of $1,000 per site with a maximum amount of $50,000 allowable per grantee.

Program Availability:

The grant is available to counties, municipalities and economic development agencies. Applications are accepted annually and deadlines are announced in the Pennsylvania Bulletin, DEP UPDATE newsletter and on the DEP website http://www.dep.state.pa.us

Contact Information:

Grant applications can be downloaded from the DEP website at:
http://www.dep.state.pa.us/dep/deputate/airwaste/wm/landrecy/Inventory/BIG.htm.

Contact:
Craig Olewiler
Department of Environmental Protection
Phone: (717) 783-7816
E-mail: colewiler@state.pa.us

Brownfield Tax Incentive

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Land Recycling and Waste Management

Description of Program:

The Brownfield Tax Incentive is a federal initiative designed to spur cleanup and redevelopment of brownfields. Environmental cleanup costs for eligible properties may be treated as fully deductible business expenses for the year in which costs are incurred or paid.

Program Requirements:

Eligible properties must meet two requirements:

1. The property must be held by the taxpayer incurring the eligible expenses for use in a trade or business, or for the production of income, or the property must be properly included in the taxpayer's inventory.
2. A release or threat of release or disposal of any hazardous substance at or on the property.

Note: sites on EPA's National Priorities List (Superfund List) are excluded.

Program Availability:

Eligible costs must be incurred or paid between August 5, 1997 and December 31, 2003.

Contact Information:

J. Thomas Leaver, Outreach Specialist
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 783-7816
E-mail: jleaver@state.pa.us

Key Sites Initiative

Program Sponsor:

Pennsylvania Department of Environmental Protection (DEP), Bureau of Land Recycling and Waste Management

Description of Program:

Key Sites Initiative is an element of DEP's award winning land recycling program. It assists municipalities and non-profit economic development agencies by providing consulting services to carry out environmental site assessments and prepare cost estimates for cleanup plans in order to make a redevelopment project feasible. This helps to facilitate the voluntary cleanup and reuse of abandoned industrial properties, especially in smaller municipalities that have limited resources.

Program Requirements:

Municipalities and nonprofit economic development agencies that own abandoned properties are eligible to receive these services. Special emphasis is placed on smaller municipalities and agencies that do not have the resources to complete site assessments or cost estimates.

Municipalities or nonprofit entities must demonstrate that the proposed project complies with local land use, zoning and subdivision ordinances.

Program Availability:

Applicants must submit a Letter of Intent (LOI) to the Environmental Cleanup Program Manager in the appropriate DEP regional office. The LOI outlines a general description of the project and its anticipated public benefits.

Contact Information:

Tom Fidler
Pennsylvania Department
of Environmental Protection (DEP)
Phone: (717) 783-7816
E-mail: tfidler@state.pa.us

Regional Environmental Cleanup Managers can be located at:

http://www.dep.state.pa.us/dep/deputate/airwaste/wm/landrecy/FACTS/REGION.HTM#anchor950544.

Intergovernmental Cooperation

The Commonwealth of Pennsylvania is home to 2,567 municipalities – each responsible for providing its residents with services. Intergovernmental cooperation and multimunicipal planning offer users considerable benefits including improved services, enhanced environments and significant savings. Together, communities can effectively address issues that cross municipal boundaries including transportation, schools, emergency services, recreation and resource protection.

Financial Assistance

- Land Use Planning and Technical Assistance Program (LUPTAP)
- Shared Municipal Services Grant Program
- Community Development Block Grants

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The Governor's Center for Local Government Services

The Governor's Center for Local Government Services (Center) is considered to be the principal advocate for all Pennsylvania local governments and provides a range of technical and financial assistance. Through these programs, local officials can receive assistance in matters ranging from police complement to fiscal management to assistance on the Municipal Planning Code (MPC), and on the existing tools available to them to help manage growth within their communities and revitalize previously developed areas. The Center works in conjunction with local, state and national associations/organizations providing assistance, training and the necessary tools to make Pennsylvania's communities the best places to live and work.

Land Use Planning and Technical Assistance Program (LUPTAP)

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED), Governor's Center for Local Government Services

Description of Program:

This program provides financial assistance for municipalities and counties of the Commonwealth for developing and strengthening community planning and management. The program encourages intergovernmental cooperation in planning, including cooperation with contiguous municipalities, counties and school districts.

Program Requirements:

The LUPTAP program provides financial assistance to fund activities such as:

1. Developing new or updated comprehensive community development plans and policies.
2. Preparing environmental protection or physical development strategies or special studies that will support comprehensive planning.
3. Developing or updating ordinances and other tools for the implementation of comprehensive community development plans and policies or environmental protection or physical development strategies.
4. Training and education when proposed as a participatory planning component of a planning program.
5. Other worthwhile planning activities that address further land use objectives that do not have a negative impact on land use. (DCED determines what activities are considered "worthwhile planning activities.")

Program Availability:

DCED generally funds 50% of the total cost of an approved application. The grantee is required to provide the remaining 50%, normally as a cash match. Some or all of the required local match may be substituted with professional services of a grantee's staff, but this should be discussed with the Governor's Center for Local Government Services before submission of the application. A proposal for the substitution is required with the grant submission.

DCED's Single Application for assistance may be submitted at any time.

Contact Information:

John Mizerak
Governor's Center
for Local Government Services
Phone: 1-888-2CENTER (1-888-223-6837)
E-mail: jmizerak@state.pa.us

Applicants must use the DCED Single Application when applying for LUPTAP funding. Copies of the Single Application kit are available through DCED Customer Service at 1-800-379-7448 or 717-787-3405 or on DCED's website at: www.inventpa.com.

Shared Municipal Services Grant Program

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED), Governor's Center for Local Government Services

Description of Program:

This program provides funding to promote cooperation between shared municipal services to increase the efficiency and effectiveness in the delivery of these services at the local level.

Program Requirements:

There are two general project categories that a proposed project may fall under. They are:

1. Intermunicipal Organization Start-Up - Grants may be awarded to newly-formed Councils of Governments or similar organizations formed for the purpose of undertaking programs of

intermunicipal cooperation in order to defray the cost of initial administrative expenses.

2. Shared Services - Grants may be awarded to groups of two or more municipalities acting in concert to defray the cost of performance of any local government function.

Program Availability:

Funding is awarded for such projects as combined police records administration, shared technology initiatives, municipal insurance pooling and shared public works operations. Also funded are programs for regional recreation activities, shared code enforcement operations, shared motorized equipment (not exceeding a maximum grant of $25,000) or any authorized municipal function accomplished jointly (with the exception of the purchase, renovation or construction of buildings).

Grant funds are usually used to finance up to 50% of the total project cost. The rest of the project cost must be funded by local share. Local share may be provided in cash or by municipal labor or other in-kind services. However, the matching share for shared personnel projects must be in cash.

Contact Information:

Fred Reddig
Governor's Center
for Local Government Services
Phone: 1-888-2CENTER (1-888-223-6837)
E-mail: freddig@state.pa.us.

Copies of the Single Application for assistance forms, application instructions and other information are available on line at www.inventpa.com, or by request from any DCED regional office, or by calling the DCED Customer Service Center at 1-800-379-7448.

Community Development Block Grants (DCED)

Program Sponsor:

Pennsylvania Department of Community and Economic Development (DCED), Governor's Center for Local Government Services

Description of Program:

This program provides grant assistance and technical assistance to aid communities in their community and economic development efforts.

Program Requirements:

Community Development Block Grant (CDBG) monies can be used for housing rehabilitation, public services, community facilities, infrastructure improvement development and planning. There are two components to the program:

1. Entitlement Program which provides annual funding to 27 third class cities, 128 boroughs and townships and 54 counties; and

2. Competitive Program which is available to all non-federal entitlement municipalities in Pennsylvania.

Seventy percent (70%) of each CDBG grant must be used for activities that benefit low- and moderate-income persons.

Program Availability:

Local governments that are not designated by HUD as urban counties or entitlement municipalities are eligible for funding.

Contact Information:

For more information, visit DCED's website at www.inventpa.com.

To request information or apply for the Entitlement Program contact:

Scott Dunwoody
Department of Community
and Economic Development (DCED)
Phone: (717) 720-7402
E-mail at: sdunwoody@state.pa.us

To request information or apply for the Competitive Program contact:

Tom Brennan
Department of Community
and Economic Development (DCED)
Phone: (717) 720-7403
E-mail: tbrennan@state.pa.us

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APPENDIX B

EXAMPLE WETLAND ORDINANCE

406.C

5. All developments receiving a waiver of preparation of a traffic evaluation study in accordance with this section shall provide, as a minimum, the information required in Section 406.B.4.

SECTION 407. Wetlands Study.

A. The applicant shall submit a wetland study in duplicate with the submittal of all subdivision and land development plans. The purpose of the study shall be to determine the presence and extent of wetlands on the site.

B. The study shall be performed by a qualified wetland scientist. Qualified individuals should possess a minimum of a bachelor's degree in biology, botany, zoology, ecology, or environmental sciences. In general, other professionals, such as engineers, landscape architects, surveyors, planners, and geologist are not considered fully qualified to perform wetland delineations, unless they possess special ecological training and experience beyond their discipline. The Township reserves the right, in as much as no recognized certification program exists for wetland scientists, to determine the qualification of those preparing wetland delineations. Should a state or federal wetland scientist certification program be established, the Township will consider only those certified individuals qualified to perform delineations.

C. Requirements for Wetland Studies:

1. Delineations should follow the procedures outlined in the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands, and any subsequent amendments.

2. Delineations shall be supported by reports. The report shall contain the following sections:

   a. Introduction. Description of the physical features of the site, its location and the proposed plans for the site.

   b. Methods. Description of the methods used for the survey, with particular emphasis on any deviation from the outlined federal method. Relevant information includes the date of the field studies, the number of transacts and plots used, the size of vegetation quadrants employed, the size of soil pits used, taxonomic references used, and the disposition of any voucher specimens.

407.C.2

c. Results and Discussion. Description of the findings of the study. Soils, vegetation and hydrology for wetland and upland areas of the site should be discussed. Any problem areas should be thoroughly treated.

d. Conclusions. The extent of wetlands on the site should be discussed. The impact of the proposed project on these wetlands should also be considered.

3. Included in the report as appendices or tables should be:

a. Site location map (USGS 7.5' quadrangle will suffice).

b. NWI map.

c. Soil survey map with soil descriptions.

d. Data sheets for each plot.

e. Wetland boundary map. Wetland boundaries shall be surveyed by a registered professional surveyor and shown on a plan of appropriate scale. The limits of the wetland study shall be clearly shown. The plan shall also show the location of all plots and/or transacts used in the study, the date of the delineation, a statement of the method used for the study, the name of the consulting firm which performed the delineation, the name of the surveyor, and a disclaimer statement indicating no wetland boundary is considered jurisdictional until approved by DER and COE.

f. Color photos of wetlands areas on the site, with locations and directions of view keyed to the wetland boundary map.

g. Resumes of the wetland scientist(s) who performed the delineation.

D. For sites on which no wetlands occur, an abbreviated report may be submitted. The abbreviated report should contain the introductory material, the methods section and a discussion of the result of the study. Site location, NWI and soil maps should also be provided.

E. All subdivision plans shall contain notes for future lot owners. The wetland boundary on each lot will be clearly marked. Each lot which contains wetlands, or to which access may be restricted by wetlands, shall have a note which states state and federal laws require permits for all activities which result in a deposition of fill into delineated wetlands. The note shall also state that refusal of such a permit may restrict some uses of all or portions of the lot.

F. Compensatory mitigation projects required as part of state or federal permits shall be shown on the subdivision plans. Future lot owners whose property encompasses all or part of a mitigation area shall be notified that the portion of their property which includes the mitigation area may not be altered, and is considered a jurisdictional wetland by the state and federal governments. Lot owners may be responsible for maintenance of mitigation areas. In order to help ensure the long-term viability of wetland mitigation efforts, the Township discourages multiple ownership of mitigation areas. Ownership by one individual or a homeowners association is encouraged. Owners of the wetland mitigation areas must be clearly identified to the Township.

G. The Township reserves the right to reject any submitted wetland delineations. Should the Township feel the actual wetland area differs from that shown on the subdivision plan, the Township has the right to secure, at the developer's expense, qualified personnel to check the delineation and redraw the boundary as necessary. Should the developer subsequently disagree with the Township's delineation, a jurisdictional delineation by DER and COE will be requested. Any charges for the jurisdictional delineation will be the responsibility of the developer.

H. Where the study shows the existence of wetland areas, the delineated boundary shall be properly fenced off to prevent encroachment. Snow fence or other acceptable material shall be used (the use of silt fence is not acceptable). The fence shall be properly installed, at a minimum distance of five (5) feet outside the delineated boundary, prior to any construction or issuance of building permits. The fence must be properly maintained until all occupancy permits have been issued and/or for the extent of all construction.

SECTION 408. Phase I Environmental Site Assessment (PESA)

When required, the applicant shall submit a PESA in duplicate with the submittal of the subdivision and land development applications. The purpose of the PESA shall be to identify current and historical items associated with the property which may constitute a threat to the environment. The assessment must include, but need not be limited to: