RIVER CONSERVATION PLAN
THE MIDDLE YOUGHIOGHENY RIVER CORRIDOR

EXECUTIVE SUMMARY

This River Conservation Plan has been prepared by Paul C. Rizzo Associates under contract to the Chestnut Ridge Chapter of Trout Unlimited (CRTU). Preparation of the Plan has been funded by a River Conservation Planning Grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR). The formulation of the Plan has been directed by the CRTU Plan Steering Committee taking into account the data, thoughts, and ideas offered by the local municipalities and governmental agencies and citizens residing in the Corridor. The overall response to this planning effort has been excellent as all of the concerned and affected parties have a dedicated, sincere interest in protecting, promoting and improving the resources of the Corridor.

The Somerset County Conservancy was responsible for securing the funding through the DCNR River Conservation Program. A portion of the funds granted to the Somerset County Conservancy was provided to the CRTU to facilitate preparing the Middle Youghiogheny River Corridor River Conservation Plan. The Somerset County Conservancy is dedicated to the preservation and conservation of the natural resources in Somerset County and the surrounding region. The Southern Alleghenies Conservancy is acting as the Grant Administrator for this project.

The Middle Youghiogheny River, often referred to as the “Yough”, is a valuable environmental and economic national resource. The Yough is a high gradient river that flows from the Appalachian Mountains into southwestern Pennsylvania, eventually feeding into the Monongahela River at McKeesport, PA. The Yough lacks significant natural buffering capacity against the influence of acid mine drainage and other more common sources of pollution. It is a fragile national resource deserving exceptional monitoring, remediation and conservation planning.

The Pennsylvania Rivers Conservation Program has been developed to conserve and enhance river resources through preparation and accomplishment of locally initiated plans. The Program provides technical and financial assistance to municipalities and river support groups to carry out planning, implementation, and acquisition and development activities. The focus for Paul C. Rizzo Associates and the CRTU is to provide a River Conservation Plan for the Middle Youghiogheny River Corridor that:

- Identifies significant natural, recreational and cultural resources;
- Identifies issues, concerns, constraints and opportunities; and
- Presents a Plan of activities that should be undertaken to improve and conserve the Corridor's resources.

A River Registry by the Commonwealth of Pennsylvania has been established to recognize efforts of local river conservation groups. The River Registry serves to promote river conservation and recognize rivers or river segments in communities who have completed river conservation plans. The Registry is also an avenue to endorse local initiatives by binding them together in a statewide recognition program. Registry status must be achieved to qualify for implementation, development or acquisition grants.

CORRIDOR CHARACTERISTICS

The study area is defined as a river corridor along the Yough's main stem from the Pennsylvania/Maryland state line, downstream to a dam at South Connellsville, PA, including several major tributaries. The Corridor extends outward approximately one mile perpendicular to the river channel, unless the community and steering committee indicated that areas of interest beyond the above Corridor should be included.

The Corridor is noted for its many scenic vantage points and its sharp river valley. The aesthetic value of the Corridor is matched only by the usefulness of the land and water resources contained within. The majority of the land within the Corridor is undisturbed and undeveloped with steep valleys vegetated with deciduous forests. The steep slopes of deciduous forests are interspersed with hemlock, white pine, fern, and dense patches of rhododendron.

The Middle Youghiogheny River flows in a northwestward fashion, winding for 39 miles through Somerset and Fayette Counties. The riverbed is made up of gravel, sand, and slab rock with boulders protruding above the surface. Granite and sandstone boulders afford numerous hard-based usage points along the River as well as a protective base and enclosures for small sandy beaches. The flow of the Yough is regulated initially by the Deep Creek Reservoir in western Maryland and by the Youghiogheny River Lake Dam located approximately one mile upstream from Confluence, PA.

Upon entering Confluence, the Yough begins a rapid descent from the Laurel Mountains of southwestern Pennsylvania, allowing for exceptional whitewater rafting and a micro tourist economy. Ohiopyle State Park, with its miles of high quality rapids, is one of the most visited State Parks in Pennsylvania. The river loses its "wildness" near South Connellsville, PA and takes on more relaxed meandering characteristics.

LAND RESOURCES

Land use along the River is one of the major considerations of this Plan. Land use impacts the quality and quantity of water in the River, the economic opportunities that exist within the Study Corridor, and the quality of life for study Corridor's residents.

The extensive forestland in the Corridor (75 percent to 80 percent of the surface) is the setting for many different wildlife habitats and serves as a natural barrier/filter against pollution associated with excess run-off. The vegetation roots tend to anchor the loose valley soils, but the steep sided valleys that are not stabilized, such as dirt paths and roads, parking lots, river access points, etc. are susceptible to erosion and resultant pollution.

WATER RESOURCES

Acid Mine Drainage (AMD) associated with historical coal mining in the Corridor has resulted in the Yough becoming one of the most polluted waterways in the country. In recent times, however, remediation efforts on the part of federal, state, and local governments as well as public and private watershed groups and other organizations like CRTU have improved the water

quality throughout the basin to the point that in some areas, the water quality can be considered adequate. Concerted efforts need to address the remaining AMD sources plus other source such as timbering operation and new construction.

Although the largest impact on the water quality of the Corridor remains AMD, the River also continues to receive pollution from various other sources, including untreated sewage discharges, sediment runoff and uncontrolled storm water runoff. The cumulative effect of these sources to the River is unclear because there is a lack of a sustained, scientific, and comprehensive water quality monitoring program within the Corridor. This lack of data severely inhibits the complete understanding of the water quality problems and their solution.

The most prominent man-made feature in the Corridor is the Youghiogheny River Lake, a federal flood control project authorized under the Flood Control Act of June 28, 1938 (P.L. 75-761). It was constructed for the authorized purposes of flood stage reduction in the Yough and the lower Monongahela River plus low flow augmentation to improve water quality. Recreation was authorized in accordance with the 1988 Water Resources Development Act, and includes both Lake and River activities. Hydroelectric power facilities were completed in 1989 under a license granted by the Federal Energy Regulatory Commission.

BIOLOGICAL RESOURCES

The biological resources of the Corridor are viewed as a national asset in need of conservation and protection. The Yough and the Lake are home to numerous game and non-game species, including excellent wilderness trout fishing. Fingerling trout are stocked throughout the entire section of the River in cooperation with the Pennsylvania Fish and Boat Commission. Other species, such as smallmouth bass, river chubb, mottled sculpin, walleye, and muskee are found in these two bodies of water.

The Youghiogheny River Lake is populated by a large quantity of game and panfish and is especially known as a hotspot for walleye and smallmouth bass. The tailwaters at the Dam and Powerhouse are popular with trout fisherman in the region. The outfall at the Powerhouse is one of the few areas in Pennsylvania open for trout fishing year round and it is stocked by the Fish Commission on a regular basis throughout the spring and summer.

Chestnut and Laurel Ridges together with the Youghiogheny River Corridor are important bird migratory and breeding areas. They are a critical link between Pennsylvania's Allegheny Plateau and similar landforms stretching from upstate New York to Alabama. If this Corridor is degraded, populations of at least 15 bird species will be at risk.

RECREATIONAL RESOURCES

Natural areas and recreational opportunities surround the Middle Youghiogheny River Corridor. A few of the recreational opportunities in the Corridor include fishing, canoeing, rafting, kayaking, camping, hunting, swimming, picnicking, bird watching and sightseeing. In addition, the adjacent Youghiogheny River Trail offers opportunities for hiking, biking, and cross-country skiing.

An 18 mile reach of the Yough is located within Ohiopyle State Park, a major natural and recreation area in Fayette and Somerset Counties. Because the Park has protected the natural setting of much of this portion of the River, this area is generally undeveloped. Included in the recreational activities at Ohiopyle State Park are white-water rafting, fishing, hiking, camping, and environmental education.

The Youghiogheny River Lake is also a popular location for recreation, including boating, camping, swimming, fishing, hiking, and other leisure pursuits. Recreation at the Youghiogheny River Lake is a driving economic force in the Corridor, adding to local tourism and local economies.

The Youghiogheny River Hike/Bike Trail runs from McKeesport to Confluence. The Trial is designed as a non-motorized, shared-use, recreational trail for bicycling, walking, fishing, canoe access, hiking, nature study, historic appreciation, cross country skiing, picnicking, and horseback riding.

HISTORICAL RESOURCES

The ancient human heritage of the Corridor includes the Delaware, Shawnee, and Iroquois Indian Nations. Little is known of earlier inhabitants, but there is a strong indication of a Paleo-Indian occupation dating around 10,000 BC. Significant development began after the Revolutionary War and was accelerated after the completion of the old National Turnpike from Cumberland to Wheeling and the development of navigation on the Monongahela River.

Archaic, Early Woodland, and Middle Woodland campsites occur throughout the area reflecting a semi-sedentary existence from about 8,000 BC to AD 900. Generally these sites are associated with rock shelters or flat areas adjacent to headwater springs. Between AD 900 and 1,000, the Monongahela people began constructing stockaded (protected) villages on flood plains and hilltops of the area.

ISSUES, CONCERNS, CONSTRAINTS, AND OPPORTUNITIES

From responses received from sources such as the Ohiopyle State Park, Army Corps of Engineers, and concerned groups and citizens of the Corridor, certain consistent findings have been identified and are summarized in the following paragraphs.

It is that the Corridor lacks a comprehensive scientific water quality monitoring program. A water quality monitoring plan needs to include investigations into both the water quality and biologic components of the major tributaries feeding the Yough and the Youghiogheny River Lake.

A comprehensive assessment of the Acid Mine Drainage discharges and related problem areas throughout the Corridor needs to be undertaken. Acid Mine Drainage is polluting the River and Lake, but the extent, sources and remediation alternatives is not fully known or documented.

Storm water management and adequate sewage systems are lacking in the Corridor. A few municipalities have offered detailed information on the status of their respective storm water and/or sewage systems, but not all the municipalities have provided this information. An assessment of this problem is needed.

The respondents report a need to construct new recreational structures and facilities in the Corridor. For example, there is a demand for comfort stations, equipped with flushing restrooms and water fountains, along the Youghiogheny River Trail. Also there is a major demand to improve the recreational facilities at the Youghiogheny River Lake.

Access to the River was voice as a major constraint to the utilization of the River for recreation. A need for A.D.A. approved fishing piers and access areas on the River and Lake was identified. It was also pointed out that at access points to the River, such as boat launches and take-outs and their adjoining paths, deterioration and erosion are increasingly causing sediment pollution and degradation of the water resources of the Corridor.

MANAGEMENT OPTIONS

Many forces and considerations have to be coordinated and coalesced to develop a management plan for the Corridor. The watershed area is immense, and consequently, events and conditions many miles away from the River can effect its water quality, flora and fauna. Understanding the watershed is important before major restoration efforts can be undertaken. Based on input from CRTU and the Steering Committee and upon a review and analysis of the resources of the Corridor, the following major management points are reviewed and recommended for consideration.

WATER RESOURCES

Water Quality Monitoring

A standardized scientific water-quality monitoring program is lacking for the Corridor. Monitoring of the tributaries will give CRTU and other entities strong indicators as to what methods and projects should be undertaken on the Yough and its tributaries. Long term water quality monitoring will provide necessary data for remediation analysis. Scientific monitoring provides information as to the pollution sources in tributaries. Specific remediation techniques need to be designed based on the scientific data collected over the long term.

Acid Mine Drainage Remediation

Acid mine drainage (AMD) is the leading cause of degradation to the Yough's water quality. To properly and completely define the AMD problem in the Corridor, first the location and type of

discharges must be identified. In addition to identifying the sources, a current and complete inventory of the known permitted mines in the area must be made, along with the identification of the un-reclaimed mines in the area. As these surveys will require significant resource, it is recommended that CRTU initially focus on one or two priority tributaries.

Low Alkalinity

Low alkalinity is a major issue for the Yough as there is no buffer against the AMD and low pH. No obvious natural sources have been identified. Consequently, the CRTU is encouraged to find and/or develop alternate sources. Methods and technologies are being developed to effectively supply waterways with alkalinity. For example, one such method would be to dump large amounts of limestone into tributaries or into side channel ponds.

Storm Water Runoff and Sewage Treatment

Storm water and sewage overflows from municipalities along the Yough have been identified as major pollutant sources. Many of the Municipalities do not have proper storm water systems in place to handle the flow during heavy rain events. The development and management of these systems generally falls under the control of each individual Municipality.

A major constraint to improving water quality is lack of modern sewage treatment plants in the Corridor. Regardless of the cost of constructing and upgrading treatment plants, they should be given a higher priority than at present.

Individual Watershed Assessments

Due to the extent of the Corridor (39 miles), it is recommended that for assessment and water quality improvements, a small number of high priority watersheds be assessed initially (Meadow Run, Jonathan Run, etc.). Based on the data and information obtained from the watershed assessments, watershed restoration and protection plans can be developed. The main goal of such a plan will be to delineate the type and costs of best management practices needed to remediate the non-point source pollution sources in the watershed.

LAND RESOURCES

Erosion and Sedimentation

Due to the steep sided valleys that make up the Corridor, erosion is a major concern. Management of high-risk areas such as logging and construction/development sites must be done

properly to ensure minimal sediment runoff from erosion. Other areas of concern include un-paved parking lots, access trials to the River that are not properly covered and stabilized, and various dirt roads and paths. Steps need to be taken to eliminate these problem areas.

Launch Areas

Rafter put-in and take-out locations are a potential source of erosion and increased sediment discharge into the Yough. Launch areas, connecting paths and the overall Youghiogheny River Trail need to be improved and stabilized via standard and proven methods. Further investigation of these areas should be performed to facilitate design and construction of remediation measures.

Agriculture and Livestock Runoff Systems

Runoff from farming operations and livestock areas can cause significant impacts to the water resources in the Corridor. Management practices applied to combating pollution from these sources can range from simply fencing off areas surrounding streams flowing through fields to developing a crop/pasture land rotation schedule.

BIOLOGICAL RESOURCES

Fish Habitat

The Yough and the Youghiogheny River Lake and tributaries provide quality habitat for several aquatic species. The construction of in-river/stream fish habitat structures to create fish habitats is a necessary method for keeping healthy fish populations. Fish habitat structures can be one of the best ways to reestablish fish populations in stream systems. Regardless of the habitat, other conditions are extremely important.

For example, water chemistry and food sources are the driving factors for reestablishment of fish populations. If acidity limits the growth of aquatic vegetation (many species of submerged aquatic vegetation prefer calcareous, slightly alkaline conditions), herbivorous insects will be limited as well as the carnivorous fish that eat these insects. Establishment of the lower food chain organisms will be the key to successful fisheries.

Undercut banks, overhangs and submerged or emergent vegetation also provide excellent habitat. Gravel spawning beds may be another option, but often these are only temporary. Creation of riffle areas, if needed, is an excellent way to oxygenate the water and create benthic macro-invertebrate habitat.

Biological Monitoring Program

Complete long-term macroinvertebrate studies have not been undertaken on the River and its tributaries. Complete biological monitoring programs need to be established in the Corridor. This type of study will provide CRTU valuable information about the long-term health of the streams in the Corridor. The relative stability of aquatic communities can indicate short or long-term pollution events that otherwise cannot be directly observed by water chemistry sampling. It has been noted that several, previously unidentified, species of mayfly may exist in the water resources of the Corridor.

RECREATION AND EDUCATION

Upgrade Facilities

Increased popularity and draw of the recreational opportunities in the Corridor, such as whitewater rafting, fishing, hiking, and camping results in increased concerns and constraints on conservation. The Ohiopyle State Park, which is one the most visited state parks in Pennsylvania, and the Youghiogheny River Hike/Bike Trail draw thousands of visitor each year to use the recreational facilities provided. But the Trail lacks proper restroom facilities and rest areas. CRTU has expressed interest in converting the existing restroom facilities at locations along the Trail to fully functional modern pump facilities. It is recommended that these stations be constructed every five miles-eight miles along the Trail. In addition, an ambitious and aggressive plan to install sewage, water, and electric lines along the Trail is being discussed by CRTU and the Steering Committee.

Upgrade Education Opportunities

The natural resources of the Corridor provide an excellent opportunity to educate the public on the need for conservation and protection of natural resources. Nature trails and more nature study centers such as that at base of Youghiogheny Dam should be constructed and operated throughout the Corridor, perhaps in cooperation with local school districts and community colleges.

CONCLUDING REMARKS

The Middle Youghiogheny River is a valuable environmental and economic national resource in need of protection and a certain level of remediation. Of primary concern is the lack of significant natural buffering capacity to counteract the influence of acid mine drainage and other more common sources of pollution. The Yough Corridor is a fragile national resource deserving exceptional monitoring, remediation and conservation planning. This Plan is directed protecting this asset and conserving it for future generations.

1.0 INTRODUCTION

The Youghiogheny River is an exceptionally valuable natural environmental and economic resource. It is a high gradient river that flows from the Appalachian Mountains into Southwestern Pennsylvania. Because it lacks significant natural buffering capacity, the presence of and influence from acid mine drainage and acid precipitation makes the Youghiogheny River an extremely fragile resource.

The Pennsylvania Conservation Program has been developed to conserve and enchance river resources through preparation and accomplishment of locally initiated plans. The Program provides technical and financial assistance to municipalities and river support groups to carry out planning, implementation, acquisition and development activities.

The focus for the Chestnut Ridge Chapter of Trout Unlimited (CRTU) is to provide a River Conservation Plan identifying significant natural, recreational and cultural resources. Issues, concerns and threats to River resources and values are identified through public meetings and public comments.

The River Registry serves to promote river conservation and recognize rivers or river segments in communities who have completed river conservation plans. The Registry is also an avenue to endorse local initiatives by binding them together in a Statewide recognition program. Registry status must be achieved to qualify for implementation, development or acquisition grants.

1.1 PROJECT PARTICIPANTS

The CRTU, the Project Sponsor, is a local chapter of Trout Unlimited dedicated to the improvement, preservation, and conservation of waterways and water resources throughout southwestern Pennsylvania.

Paul C. Rizzo Associates, as contractor to CRTU, is responsible for the information gathering and development of this River Conservation Plan.

1.2 PROJECT AREA

The Project Area is defined as a River Corridor, extending along the Youghiogheny's main stem from the Pennsylvania/Maryland State line, downstream to South Connellsville, Pennsylvania. Several of the major tributaries to the Youghiogheny River are also included within the study Corridor. The study Corridor extends outward approximately one mile perpendicular to the river channel, unless community and steering committee input indicated that areas of interest beyond the above Corridor were to be included.

1.3 ACID MINE DRAINAGE POLLUTION

Historic uses throughout the basin were concentrated almost exclusively on resource extraction. In fact, the Youghiogheny basin was recognized for its coal resources as early as 1770, and during the period between 1860 and 1919 this region grew to become among the world leaders in the mining of bituminous coal and coking. As a result of intense resource extraction, the historically pollution-sensitive waters of the Youghiogheny became one of the most Abandoned Mine Drainage (AMD) polluted waterways in the country. Intense research and remediation efforts on the part of federal, state, and local governments as well as public and private watershed groups have resulted in significant improvements in water quality throughout the basin. Nevertheless, the largest impact on the water quality of the Youghiogheny River Study Corridor remains AMD, mostly from surrounding tributaries.

1.4 RECREATION CONSIDERATIONS

Rich in natural areas and recreational opportunities, the Middle Youghiogheny's ecosystem has recently been tested by increased recreational use. The Youghiogheny basin is host to a variety of recreational pursuits including fishing, canoeing, rafting, kayaking, camping, hunting, swimming, picnicking, bird watching, and sightseeing. In addition, the adjacent Youghiogheny River Trail offers opportunities for hiking, biking, and cross-country skiing. With the anticipated increase in recreational usage, Paul C. Rizzo Associates, under contract to CRTU, has prepared a River Conservation Plan that required the preservation of natural environmental resources, while balancing the necessary economic development in the region.

1.5 NATURAL HERITAGE INVENTORY

The Laurel and Chestnut Ridges and the inclusive Middle Youghiogheny River Corridor contain important natural areas that need protection. The Western Pennsylvania Conservancy is vigorously implementing conservation strategies that link water, land and life. The Conservancy does this through the protection of important ecological sites, in unity with urban conservation efforts.

The challenge in Western Pennsylvania, as in many urbanized areas of the United States, is how population – growing or not – has affected land use. In Pennsylvania during the last three decades, the state's metropolitan areas has grown by 14 percent, while the amount of land used for homes, businesses and factories increased by 80 percent. As communities decline, residents move out of town and into the countrysides, where sprawl threatens wildlife and consumes farmlands. It is essential to the preservation of the resources of the Corridor that ecologically important areas and resources are properly identified and resource descriptions are made available to facilitate proper maintenance and preservation.

The Western Pennsylvania Conservancy has produced a Fayette County Natural Heritage Inventory. This Inventory identifies and describes ecologically important areas in Fayette County. In addition, areas where endangered or threatened wildlife, vegetation and plants have been identified are further described. Excerpts describing areas located in the Middle Youghiogheny River Corridor can be found in ***Appendix A***.

2.0 PROJECT AREA CHARACTERISTICS

2.1 PROJECT LOCATION

For purposes of clarity, the reach of the Youghiogheny River investigated for this Plan, as assigned by the CRTU and the Steering Committee, will be referred to as the Middle Youghiogheny River.

The Middle Youghiogheny River Basin is located in the Allegheny Mountain Section of the Appalachian Plateaus Province in Southwestern Pennsylvania. The Appalachian Plateaus Province extends northeastward from Alabama into New York. In Pennsylvania, this province occupies more than 26,000 square miles. Figure 1 shows the geographic locations and the extent of the Physiographic Provinces in Pennsylvania and throughout the country.

Reference coordinates for the Corridor are listed below:

	Longitude	**Latitude**
South Connellsville Dam	79° 23’ 30”	39° 59’ 45”
Youghiogheny Lake at PA/MD Line	79° 36’ 45”	39° 43’ 20”

The study Corridor begins at South Connellsville, Pennsylvania, River Mile 46.20, and continues approximately 39 miles to the Pennsylvania/Maryland State Line, River Mile 85. The Middle Youghiogheny River forms a portion of the border between Fayette and Somerset Counties in southwestern Pennsylvania. The River runs in a northerly direction from the mountains in northeastern West Virginia and western Maryland to its merge point with the Monongahela River in McKeesport, Pennsylvania, a distance of some 112 miles. Figure 2 is a project vicinity map that shows the location of the Middle Youghiogheny River Corridor on a regional scale.

2.2 QUADRANGLE MAPS

The Middle Youghiogheny River Corridor can be found on the following USGS Quadrangle maps: Connellsville, Pennsylvania, South Connellsville, Pennsylvania, Mill Run, Pennsylvania, Ohiopyle, Pennsylvania, Confluence, Pennsylvania, Ft. Necessity, Pennsylvania, and Friendsville, Pennsylvania-Maryland-West Virginia. The key map on Figure 3 displays the location and coverages of each of the quadrangles for the Corridor.

2.3 MUNICIPALITIES

There are several municipalities contained within the Middle Youghiogheny River Corridor, including:

Fayette County	**Somerset County**
Connellsville Township	Addison Township
South Connellsville Borough	Confluence Borough
Dunbar Borough	Lower Turkeyfoot Township
Dunbar Township	Upper Turkeyfoot Township
Henry Clay Township	Ursina Borough
Markleysburg Borough	Addison Borough
Saltlick Township	
Stewart Township	
Ohiopyle Borough	
Wharton Township	
Springfield Township	

Figure 4 shows the relative location of the municipalities in the Corridor.

2.4 PROJECT AREA GEOGRAPHIC PARAMETERS

In its entirety, the study Corridor is approximately 39-miles long. It consists of both the Youghiogheny River's main stem (28 miles) and the portion of the Youghiogheny River Lake located in Pennsylvania (11 miles). The study Corridor runs from the

Pennsylvania/Maryland State Line, downstream to the dam at South Connellsville, Pennsylvania.

2.5 RIVER MILE BENCHMARKS

Figure 5 indicates the location of each of the river mile benchmarks and gives the mileage at each location, as summarized below.

Location River	Mile
Reservoir outflow	74.46
Mouth of Casselman River	73.40
Ohiopyle Falls	62.90
Mouth of Indian Creek	52.00
Dam at S. Connellsville	46.20

2.6 RIVER BANK ELEVATION BENCHMARKS

Figure 6 indicates the location of the river bank elevation benchmarks and displays the elevation at each location, as summarized below.

Location	Ft (msl)
South Connellsville Dam	911
Indian Creek Discharge	971
Bruner Run Discharge	1000
Meadow Run Discharge	1180
Ohiopyle Area	1220
Confluence, PA	1328
Youghiogheny Lake Outflow	1330
Youghiogheny Lake at PA/MD Line	1440

2.7 DRAINAGE BASIN PARAMETERS

The total drainage area of the entire Youghiogheny River is 1,763 square miles (1,128,301 acres) which breaks down as follows:

- 72.3 percent is in Pennsylvania (1,274.7 square miles / 815,794 acres);

- 23.6 percent is in Maryland (416.1 square miles / 266,299 acres); and
- 4.1 percent lies in West Virginia (72.2 square miles / 46,207 acres).

For the Middle Youghiogheny River, the drainage basin is approximately 839.5 square miles (537,018 acres). The Youghiogheny River Lake comprises 434 square miles (277,755 acres) of the 839.5 square mile drainage area.

The Corridor and the meandering patterns of the streams contained within are deeply entrenched into the Chestnut Ridge and Laurel Hill anticlines of the Laurel Mountains. The Youghiogheny River, in particularly the Middle Youghiogheny River, developed its winding course while flowing over a near-flat surface which was then uplifted. Throughout history, while the Youghiogheny River flowed over flatter terrain its energy was used in the building and reworking of its floodplain and course. Subsequent to a regional uplifting, which occurred during the Cenozoic period (2 ma – 144 ma), the Youghiogheny River's energy was utilized in downcutting.

As the land was uplifting and the Youghiogheny River was downcutting, water and wind gaps were formed throughout the area. The water gaps, such as the Youghiogheny Gorge, were created when downcutting kept pace with uplift. Continuing, the wind gaps in the Corridor were formed when newly forming streams received water from existing streams (water gaps). In this situation, the established stream eventually lost its water and a dried up streambed and valley were left.

Upon entering Confluence, Pennsylvania the Middle Youghiogheny River, as it winds its way towards McKeesport, Pennsylvania begins a descent from the Laurel Mountains of southwestern Pennsylvania. This rapid fall in elevation makes the Youghiogheny River attractive for Whitewater Rafting. The whitewater rapids in the Middle Youghiogheny River have contributed greatly to the tourism and recreational opportunities in the Corridor. The Youghiogheny Basin provides more recreational opportunities than any other location in the surrounding four-state area. As an example, Ohiopyle State Park, with its miles of high quality rapids, is one of the most visited State Parks in Pennsylvania.

The Middle Youghiogheny River, as it slices and meanders through the topography of the region has, through a substantial period of time, developed an impressive ravine. Near South Connellsville, Pennsylvania, this ravine flattens to only a few hundred feet in places. The Middle Youghiogheny River loses its wildness near South Connellsville and takes on a more relaxed meandering characteristic as it continues northward to McKeesport, Pennsylvania.

2.8 PROJECT AREA TOPOGRAPHY

The Allegheny Mountain Section of the Appalachian Plateau Province is the backdrop for the study Corridor. The topographical setting in the Corridor is typical of the topography found throughout the entirety of the Allegheny Mountain section. Characteristics of the Appalachian Province include parallel rounded ridges and stream dissected valleys. In the Corridor, one can expect to find series of parallel, highly elevated and rounded ridges oriented northeast along with several stream-dissected valleys.

All sections of the Appalachian Plateaus Province have undergone uplift and dissection. Gross relief of most sections ranges from 1,100 to 1,800 feet. Geologic structure is an important factor in defining most sections of the Province, particularly in the high and strongly folded Allegheny Mountain section of which the Corridor is located.

The Allegheny Mountain section of the Appalachian Plateau Province has a geologic history of sedimentation, deformation, and erosion. Approximately two million years ago, the entire region was uplifted and the rocks were deformed and subsequently formed the Appalachians. From that time on, erosion has worked on rounding and cutting their height. The effects of the erosional forces can be seen by the deeply dissected and entrenched stream systems found in the region. Figure 7 gives the location and name of all the Physiographic Provinces in Pennsylvania and their respective section boundaries.

The following is a summary of approximate areas, maximum and minimum elevations, and gross relief in the Allegheny Mountain Section of the Appalachian Plateaus Province in Pennsylvania:

Allegheny Mountain Section
Topographic Parameters

Parameters		Remarks
Area	2,800 sq. mi.	
Highest Point	3,213 ft.	Mt. Davis
Second Highest Point	3,116 ft.	Blue Knob
Lowest Point	910 ft.	South Connellsville
Gross Relief	2,303 ft.	

The majority of terrain along the Middle Youghiogheny River is steep and forested. Two major ridges traverse the Corridor: Chestnut Ridge and Laurel Ridge. These two ridges provide for an extremely mountainous terrain that is mirrored throughout the Corridor.

The rock types found in this area are primarily sandstone and shale and contain thin layers of limestone and coal. Rock ledges and shelves scour the edges of the Middle Youghiogheny River. A very rocky, gravely, and sandy floodplain and riverbank characterize the shoreline. In the Corridor, it is common to encounter large boulders along the edges of the River.

The elevation of the Middle Youghiogheny River is approximately 1,180 feet (msl) at Ohiopyle, Pennsylvania, near the discharge of Meadow Run, and falls northward nearly 180 feet over the next 6.5 miles to 1,000 feet (msl) at Stewarton, Pennsylvania, or over 27 feet per mile. Riverbank slopes in the Corridor range from less than 2 percent on some shore line areas to 50 percent or more.

Along the southern stretches of the Corridor are ridgetops that range from 1,700 to 2,000 feet (msl) in elevation on average. Some peaks in the Corridor are as high as 2,800 + feet (msl) in elevation (USACE Report, 1997).

The Youghiogheny River Lake is situated in a steep-sided valley with exposures of sedimentary bedrock strata. These strata are composed of sandstones, siltstones, shales, and limestone. Surrounding the Youghiogheny River Lake are high, rounded hills with steep slopes, deeply cut by narrow streams valleys that discharge in the Lake. Around the Lake, the hills rise to nearly 500 ft above the Lake and slopes typically are greater than 50 percent.

2.9 MAJOR TRIBUTARIES

Several small streams and creeks feed the Middle Youghiogheny River. On their paths to the River, these tributaries deeply dissect the Corridor. The drainage system of the tributaries in the Corridor is a dendritic pattern, meaning the main stem of the tributary is joined by several feeder streams in a branching or tree like fashion.

The release from the Youghiogheny River Lake has a stabilizing effect on the River, tending to evenly distribute flow seasonally throughout the year. However, several uncontrolled tributaries below the Lake, notably the Casselman River, Laurel Hill Creek, Meadow Run and Indian Creek can cause fluctuations in flow. Table 2-1 provides more detailed data for selected tributaries in the Corridor.

2.10 CORRIDOR RESOURCES

The Middle Youghiogheny River Corridor is noted for its many scenic vantage points and sharp valleys. The aesthetic value of the land is matched only by the usefulness of the land and water resources as an area for nature observation and recreation.

2.10.1 Forestry Resources

The majority of the land within the Corridor is undisturbed and undeveloped. Steep valleys vegetated with deciduous forests dominant the area. Tall deciduous trees that provide a continuous canopy in summer, but shed their leaves in winter, dominate the Corridor. Subcanopy layers of small trees and shrubs are often weakly developed and there is an abundance of forb species. The ground cover layer of forbs is distinctive in the spring before the tree foliage fully develops and shades the ground. Common trees

species in the Corridor include a variety of oaks, hickories, beech, birches, walnut, maples, basswoods and elms (PCRA Report, 1983.)

Located in the Corridor is the boundary between two major forest types, the mixed mesophytic forest and the Appalachian Oak Forest. Both of these types contain a relatively large number of tree species. Plant communities in the Oak Forest are often dominated by relatively few species. Common communities include various associations of oak species that develop in response to microclimatic conditions associated with elevation, slope aspect and degree, and soil type. In the Corridor, communities in the mixed mesophytic forest contain a much larger number of species, including a large proportion of species with preferences for moist conditions. It must be noted that many tree species are common to both types of forests (PCRA Report, 1983).

2.10.2 Aesthetic Conditions

The visual quality of the Corridor is a major asset in terms of tourism and recreational draw. Locations that provide scenic vantages are directly related to the resources such as the naturally forested hills, the Youghiogheny River Lake and River and the numerous streams that flow through naturally wooded and steep ravines found through the Corridor. Other aesthetically pleasing sights are the numerous rock outcroppings, seasonal color changes of the vegetation, the Ohiopyle Falls, and various historic areas along Rt. 40 (Youghiogheny River Lake Master Plan-Draft Report, 1999).

2.10.3 Water Quality

The quality of the water in the Youghiogheny River Lake and the Middle Youghiogheny River can be described as being relatively good. The water is characterized as having low dissolved nutrients, low hardness, low turbidity, relatively cool temperatures and a generally high oxygen content due to the low organic count (PCRA Report, 1983).

2.10.4 Wildlife Resources

The prevailing wildlife habitat in the Corridor is deciduous forest. There are a large number of mammals, birds, reptiles and amphibians that utilize this type of habitat.

Recreationally significant species found in the Corridor that rely heavily on forest types include whitetail deer, gray squirrel, ruffed grouse and turkey. Previously cleared and abandoned lands that have a vegetative cover representing a transitional stage in the development to forest are also found in the Corridor. These areas provide habitat for recreationally important species such as the eastern cottontail and woodchuck as well as a wide variety of birds and small mammals. The Youghiogheny River Lake, the Middle Youghiogheny River and the numerous tributaries in the Corridor represent a wildlife habitat that is fairly restricted in terms of region distribution. These water resources provide habitat for semi-aquatic mammals such as the muskrat and also serve to attract larger numbers of migrating waterfowl in the fall and spring than might be present in the area otherwise (PCRA Report, 1983.)

2.10.5 Sport Fishing Resources

The Middle Youghiogheny River below the Youghiogheny River Dam provides excellent fishing opportunities for trout. The tailwaters of the Youghiogheny River Lake, from the outlet downstream approximately three miles, have a year round suitability for trout due to the cool discharge from the dam during the summer. Trout are stocked annually in the tailwater area and the area is heavily used by anglers (PCRA Report, 1983).

2.10.6 Aquatic Species

The Middle Youghiogheny River is home to a number of rare aquatic species. The Pennsylvania Biological Survey has recognized the following as warranting special consideration:

- Tachopteryx (Thorey's Grayback Dragonfly);
- Chryptobranchus allegheniensis (Hellbender Giant Salamder);
- Marshallia grandiflora (Large-Flowered Marshallia) In Pennsylvania its only known occurrence is along the Youghiogheny River between Confluence and Connellsville;

- Vitis rupestris (Sand Grape) – The only recently documented occurrence in Pennsylvania is along the Youghiogheny River;
- Trautvetteria caroliniensis (Carolina Tassel-Rue);
- Orontium aquaticum (Golden Club);
- Cacalia suaveolens (Sweet-Scented Indian Plantain);
- Asplenium pinnatifidum (Lobed Spleenwort);
- Saxifraga micranthidifolia (Lettuce Saxifrange);
- Cimicifuga americana (Mountain Bugbane).

Because of its remote, undisturbed character, the Middle Youghiogheny River was one of only a few areas in the State chosen by the Pennsylvania Game Commission for the reintroduction of *Lutra Canadensis* (River Otter).

2.10.7 Recreation Resources

Recreational resources located in the Corridor are numerous. Recreational activities are available for public use and provisions for the handicapped are located at several facilities. The recreational opportunities in the Corridor include camping, picnicking, boating, fishing, canoeing, swimming, sightseeing, hiking, nature study and hunting (PCRA Report, 1983).

2.11 LAND USE

The land surrounding the Middle Youghiogheny River can be described as rural and mountainous. Compared to other surrounding areas in Westmoreland and Allegheny Counties, the Corridor is made up of sparsely populated areas and few large population centers. Land use on the ridges and uplands is primarily agricultural in nature. Numerous steep forested hillsides and ravines extensively divide these agricultural areas. Although the surrounding land uses are primarily agricultural, subdivisions have developed within the past few years.

The pace of residential development is expected to increase in the following years. As an example, development in the Deep Creek Lake area has increased in the past few years. Using this as an indicator, there is potential for an increased pace of development in the Corridor. A significant change in the overall land use could shift in the future if uncontrolled and poorly managed developments are initiated. Furthermore, timber harvesting does occur in the Corridor. An advantage in the Corridor is the steep valleys and difficult terrain. These qualities help to protect the Corridor from over exploitation. (Youghiogheny River Lake Master Plan-Draft Report, 1999).

The land use in the Middle Youghiogheny River Basin can be broken down as follows:

75%	Forested
10%	Agricultural and open
6%	Water
5%	Occupied with permanent settlements such as Connellsville, South Connellsville, Ohiopyle, and Confluence
4%	Disturbed

2.12 ZONING

The study Corridor is made up of some 17 municipalities of which six are in Somerset County and the remaining eleven being in Fayette County. In Fayette County, those municipalities who have not adopted official zoning ordinances have default zoning coverage by the County. Table 2-2 is a summary of the zoning coverages in the Corridor.

2.13 SOCIAL/ECONOMIC PROFILE

A heavy industrialized work base, directed by coal mining and coke manufacturing, once characterized the Middle Youghiogheny River Corridor. The resources extracted from the region were used to bolster the Pittsburgh region. The local and regional economy was devastated by the decline in the coal and coke manufacturing industries. As the industrial base left the region, so too did the population. The population of Fayette County has

declined by approximately 27 percent, from 201,000 to 146,000 persons between 1940 and 1990. According to census data, the 1990 population for Somerset County was 78,218. It was projected that in 2000, the population would fall to 76,371, a decline of some two percent. Furthermore, the population of Somerset County is projected to decline by approximately 10 percent to 70,323 by the year 2020.

The last two decades have seen a shift in the economy from basic industry toward service related sectors such as the wholesale/retail, health, and educational fields. A strong recreation industry based upon whitewater rafting, fishing and hiking has helped sustain the economy of the region (USACE Report, 1978).

2.13.1 Population Distribution

Using 1990 census data, the population for the Middle Youghiogheny River Corridor was calculated to be approximately 39,425 persons. A majority of the Corridor's population inhabit two main population centers: The City of Connellsville, and South Connellsville. In addition to these areas, other population centers are spread out through the Corridor, with the largest concentrations being located on the northern edge of the Corridor, probably due to the less severe topography found there.

2.13.2 Aging, Education and Income

The census data for 1990 also revealed that over 18 percent of the Corridor's population was over the age of 65. This was about three percent above the states average. Of particular note was the above average percentages found in Confluence Borough (23.5), Markleysburg Borough (27.5) and Ohiopyle Borough (24.7). The median age of the citizens of the Corridor was found to be near 36.92. This number reflects the older population found within the Corridor.

The 1990 census data also indicated that the per capita income in the Corridor was approximately $8,670.78. This low Figure may reflect the fact that only 64.31 percent of the inhabitants have a High School diploma and only 10.7 percent have a four-year college degree.

The following is a summary look at selected demographic and socio-graphic data from the Corridor:

Median Age	36.92
% 65 and above	18.32 %
Per Capita Income	$8,670.78
% High School Graduate	64.31 %
% College Graduate	10.7 %
Total Population (1990)	39,425

Table 2-3 is a summary of the Largest Employment Centers in the Corridor and the Major Municipal Employment Centers found within the Corridor.

2.14 TRANSPORTATION

When the severe topography and large amounts of forestlands in the Corridor are taken into consideration, the current highway system provides adequate access to the Middle Youghiogheny River Corridor. Five major roads traverse the Corridor, and several Township roads connect points in the Corridor.

2.14.1 Interstate Routes

Outside the Corridor, Interstate Routes 70 and 76, significant east-west transportation routes, are located to the north of the Corridor. Interstate Route 79 is an important regional transportation link from the Great Lake region to the southern Appalachian region. Interstate Route 68 is located just south of Friendsville, Md. and provides access to the Washington and Baltimore areas.

Regional access to the Corridor will be improved when the Mon-Fayette Expressway is complete. This major Expressway will make getting to and from the tourism and recreational assets of the Corridor more accessible to the surrounding region. This tolled expressway will connect the Monongahela Valley area from I-376 (the Parkway East in Pittsburgh), through Fayette County, to I-68 in West Virginia.

Although Interstate Routes 70, 76, and 79 provide adequate access to the area, travelers have to use other roads to reach the Corridor. The roads typically used include U.S. 40, Maryland Routes 42 and 53, and Pennsylvania Route 281. In particular, U.S. 40 and Pennsylvania Route 281 provide direct access to several recreational facilities. U.S. 40, better known as the National Road, accesses Somerfield North, Somerfield South, Jockey Hollow Recreation Area and Boat Launch Area. Pennsylvania Route 281 provides access to the Corridor just below the Youghiogheny River Dam and to Tub Run.

State Highways and Interstates Routes

US Rt. 40 - Crosses the Youghiogheny River Lake near the mouth of Hall Run.
State Highway 711 – Crosses through Connellsville and generally runs east/west.
State Highway 653 – Begins near Normalville, PA and crosses Indian creek near White Bridge, PA
State Highway 281 - Crosses the Youghiogheny River near the Youghiogheny River Dam and runs through Confluence, PA
State Highway 381 – Crosses the Youghiogheny River at Ohiopyle, PA.

2.14.2 County and Township Roads

To access all areas of the Corridor and the Youghiogheny River Lake, use of local public roads is required. As expected with the type of terrain found in the area, the roads are relatively narrow and winding and they vary in their condition. Some are paved while others are not. The unpaved roads can pose a problem when people travel during periods of bad weather (Youghiogheny River Lake Master Plan-Draft Report, 1999).

Selected County and Township Roads

Chalkhill Road – Connects Ohiopyle State Park with U.S. Rt. 40.
Sugarloaf Road – Connects Ohiopyle State Park with Confluence.
LR 26040 – Intersects with Chalkhill Road in the Tharp Knob area.
T 463 – Provides access to and through the Cucumber Run valley.
T 523 – Connects with Rt 381 near Ohiopyle Borough

It must be noted that it is fairly difficult to follow the River through the Corridor. In other words, no one single road parallels the River through the Corridor. The Youghiogheny River Trail provides the best avenue for following the River in the Corridor.

The locations of the major roads as they pass through the Corridor can be found on Figure 8.

2.14.3 Fishing Access

Information made available by the PA Fish and Boat Commission regarding river accessibility between River Mile 63.7 and 72.11 (Approximately Ohiopyle to Confluence) indicates that 20 percent of the Middle Youghiogheny River is accessible by road within 300 meters (984.24 ft) and 28 percent was accessible by road within 100 meters (328.08 ft). Furthermore, a survey of the accessibility of River Mile 55.61 (between Indian Creek and Ohiopyle Falls) was conducted. This survey showed that 5 percent of the Middle Youghiogheny River was accessible by road within 100 meters and 11 percent within 300 meters. Additionally, the accessibility of River Mile 52.00 (Mouth of Indian Creek) was examined and the results revealed that 11 percent of the River is accessible within 100 meters and 24 percent is accessible by road to within 300 meters.

2.14.4 Railroad Transportation

In addition, the use of trains has been, and continues to be, a major transportation route through the Corridor. The Corridor once had rail lines paralleling both sides of the River. Presently, the line located on the northeastern edge of the River is still in operation. It

follows the River's course through the Corridor. The line on the southwestern edge was removed and the rail bed and bridges that remain provide the base and course for the Youghiogheny River Trail. Overall, one of the best ways to travel along the River is by the Youghiogheny River Trail. This Trail runs the entire length of the Corridor.

2.15 CLIMATE

The Middle Youghiogheny River Corridor is located in the Temperate Continental Climatic Zone. Regions in this climatic zone are associated with seasonally varying temperatures, and moderate, year-round precipitation increasing slightly during the warmer months.

Precipitation in the Corridor does vary from location to location on average. At higher elevations on Chestnut Ridge and Laurel Ridges, about 42.24 inches can be expected to fall.

Climatic data from 1951 – 1975 show that the average daily maximum and minimum temperature varies from 82.5 F (28.1 C) and 57.0 F (13.9 C) in July to 36.5 F (2.5 C) and 17.7 F (-7.9 C) in January. For an average year, the temperature is expected to reach 90 F or above at least five days and freezing temperatures for about 125 days. It must be noted that due to topographic differences, temperature variations do occur through the Corridor. For instance, in the area west of Chestnut Ridge, the average annual temperature is about 54° F., but it decreases to approximately 50° at the higher eastern elevations (Youghiogheny River Lake Master Plan-Draft Report, 1999).

2.16 OUTSTANDING OR UNIQUE FEATURES

The Corridor has a number of outstanding features that add value to the River, and the Corridor as described in the following sub-sections:

2.16.1 Ohiopyle State Park

Approximately 18 miles of the Middle Youghiogheny River are located within Ohiopyle State Park, a major natural and recreation area along the River in Fayette and Somerset

Counties. Because the Park has protected the natural setting of much of this portion of the River, this area is generally undeveloped. Included in the activities available at the Park are white-water rafting, fishing, hiking, camping, biking, hunting, and environmental education. Furthermore, snowmobiling, cross-country skiing, and sledding is also available during the winter months (Ohiopyle Visitors Guide).

2.16.2 Youghiogheny River Lake

The Youghiogheny River Lake is situated in southwestern Pennsylvania and is located in both Somerset and Fayette counties. The southern portion of the Lake extends into the state of Maryland. On a regional outlook, the Lake is approximately 70 miles southeast of Pittsburgh, Pennsylvania.

Over the past half-century, the nation's federal man-made lakes have become a powerful recreation attraction. These lakes, a product of dams built primarily for other purposes, have acquired significant added value in water-related recreation. The Youghiogheny River Lake is a popular location for recreation, it attracts numerous visitors to the area each year. The Lake is a haven for those who enjoy boating, camping, swimming, fishing, hiking, and other leisure pursuits. Youghiogheny River Lake recreation is also an economic force, adding greatly to local tourism and local economies.

Healthy and clean landscapes, watersheds, and water resources are essential to recreation at the Youghiogheny River Lake. The Lake provides quality habitat for fish and wildlife. The resources at the Lake are used for swimming, boating, fishing, camping, hiking, wildlife watching, hunting sailing, picnicking, sightseeing and many other activities. Downstream of the Youghiogheny River Lake, recreation includes white water rafting, kayaking, canoeing, tubing and many of the same activities enjoyed at other federal lake areas. Environmental quality at the Lake is critical to the availability and quality of all these activities (Youghiogheny River Lake Information Guide, 1997).

2.16.2.1 Project Authorization

The Flood Control Act approved on June 28, 1938 (Public Law 75-761) authorized the Youghiogheny River Lake Project. Section 4 of the Flood Control Act approved on

December 22, 1944 (Public Law 78-534) authorized the development of recreation facilities on flood control reservoirs. The development of whitewater rafting downstream of flood control facilities was authorized by the Water Resources Development Act of 1988 (Public Law 100-676).

The Youghiogheny River Lake Project helps to control flooding not only on the Youghiogheny River, but also on the Monongahela and Ohio River Valleys. Furthermore, the Lake also provides low-flow augmentation for pollution control, fish and wildlife enhancement, water supplies and hydropower.

The Youghiogheny River Lake Dam is described as a rolled-earth fill type with an impervious core. The dam has been operated and maintained since October 1943 and was placed in full operation in January 1948. The dam has a total length of 1,610 ft and rises 184 feet above the riverbed.

2.16.2.2 Lake Characteristics

The Youghiogheny River Lake is oligotrophic (low in nutrient concentrations) and is subsequently characterized by low phytoplankton populations, lack of aquatic vegetation, and slow growth rates in fish. In addition, the geology of the Youghiogheny River Lake's drainage basin contains very little limestone, which leads directly to the very low carbonate levels and the low buffering capacity of the Lake and the Middle Youghiogheny River downstream (Youghiogheny River Lake Master Plan-Draft Plan, 1999). The Youghiogheny River Lake is a cool impoundment that exhibits thermal stratification in the summer. Stratification due to dissolved oxygen concentrations is also present with the Lake (PCRA Report, 1983).

2.16.2.3 Fish Population

The Youghiogheny River Lake has a diverse fish population including such game species as walleye, smallmouth bass, northern pike, tiger muskellunge, largemouth bass, brown trout, black crappie and channel catfish. The Lake also contains a diverse variety of forage fish such as golden shiner, white sucker and other species that serve as food sources. The Lake is not considered to be highly productive because there is a low forage

fish population and a slow growth rate for game fish. It must be noted that two game fish species, smallmouth bass and walleye, are reproducing well (PCRA Report, 1983).

2.16.3 Youghiogheny Hydroelectric Plant

The Youghiogheny Hydroelectric Authority was issued a license on August 25, 1985 by the Federal Energy Regulatory Commission to construct, operate, and maintain a hydroelectric generation facility at Youghiogheny River Lake. The project is located approximately 700-ft downstream of Youghiogheny Dam on the right bank.

The hydroelectric project utilizes a selective diversion control system. This system forces dam releases through one of two possible outlets or through both of the outlets. Actual releases are strictly dependent on the scheduled outflow for the dam. The U.S. Army Corps of Engineers (USACE) is responsible for determining and scheduling the release from the reservoir. If the desired release is less than 250 cfs, all of the flow is passed through the wheel gate at the end of the outlet tunnel. If the desired flow is between 250 and 1,500 cfs, all of the flow is passed through the turbines located in the powerhouse. If the desired flow is greater than 1,500 cfs, both of these outlets are used. The turbine intake penstock connects to the outlet tunnel approximately 70 feet upstream of the wheel gate. The outlet tunnel is 16-feet, 6-inch in diameter and is steel lined from below the control tower to the wheel gate.

The powerhouse contains two vertical axis turbine-generator units. Each of these units has a capacity of 6,000 kW (6MW), giving the facility a total capacity of 12,000 kW (12MW). Both of these units produce power at 4,300 V. This is then raised to 23,000 V for transmission, and also lowered to 480 V power for use by the facility.

As with all hydropower generation facilities, maintaining acceptable dissolved oxygen (D.O.) standards is a major concern. In order to control the D.O. level of the dam's outflow during hydropower generation, each turbine outlet is equipped with two 50-hp blowers. Each of these blowers is capable of injecting up to 1,000 cubic feet of air per minute. These blowers are also equipped with monitors that assure the D.O. levels are kept at or above 7.0 mg/L.

2.16.4 Youghiogheny River Hike/Bike Trail

In 1995 the Trail expanded its reach when a stretch opened from Dawson, PA, through Connellsville, PA. In addition a stretch is open from Connellsville through Ohiopyle State Park to Confluence, PA.

The segment of the Youghiogheny River Trail between Connellsville and Confluence is under the protection and management of the Pennsylvania Department of Conservation and Natural Resources in Ohiopyle State Park.

The Trail between the city of Connellsville and Confluence, Pennsylvania, provides scenic views of the Youghiogheny River Gorge, an array of forest vegetation, and large rock formations. An abundance of wildflowers, thick vegetation, and forest trees populate the edges of the trail from the city of Connellsville to the borough of Confluence, Pennsylvania. This stretch is in excess of 27 miles.

In the Corridor, the Trail segment has several interesting features located along it. In addition to the features of Ohiopyle State Park, south of Connellsville are the Wheeler Bottom Bridges. These two bridges extend for more than 200-feet and provide a view of South Connellsville. Furthermore, there is a small waterfall south of the Wheeler Bottom Bridges.

There are a limited number of roads, houses, or buildings surrounding the Youghiogheny River Trail in the Corridor. Within a mile of Ohiopyle borough and the Falls of Ohiopyle State Park, there exists a trail bridge that is nearly 150-feet above the Middle Youghiogheny River.

Horseback riding is not allowed on most of the Trail. Motorized vehicles are forbidden on the entire Trail. The Youghiogheny River Trail provides about one to two benches for every mile, many of which were built by volunteers. The trail is approximately 10 to 12

feet wide, and is made of crushed compacted limestone laid over abandoned railroad beds.

The Trail is designed as a non-motorized, shared-use, recreational trail for bicycling, walking, fishing and canoe access, hiking, nature study, historic appreciation, cross country skiing, picnicking, and horseback riding. It must be noted that no horses are permitted on the trail within Ohiopyle State Park.

The smooth surfaced Trail is accessible to people of all ages and all physical abilities. The Youghiogheny River Trail parallels the west side of the Youghiogheny River and connects many small towns and rural open spaces along the entire Youghiogheny River Valley.

Youghiogheny River Trail Distances

McKeesport to Connellsville	43 Miles
Connellsville to Confluence	27 Miles
Total distance	70 miles

2.16.5 Laurel Ridge State Park

Located northeast of Ohiopyle State Park, Laurel Ridge State Park stretches along the Laurel Mountains from the Youghiogheny River at Ohiopyle to the Conemaugh Gorge near Johnstown, Pennsylvania. This large Park spans Cambria, Fayette, Somerset, Westmoreland and Indiana counties. Laurel Ridge State Park contains over 13,000 acres of protected land.

Recreational Opportunities of the Laurel Ridge State Park include:

- Hunting*:* Hunting, trapping, and training of dogs is permitted in designated hunting areas from the fall archery season until March 31, of the following year. Common game species are deer, turkey, and grouse.

- Snowmobiling*:* A trail system of over 70 miles is open daily after the end of the antlerless deer season in late

December. The trail is located on state park and state forestlands. Snowmobiles are restricted to designated trails within designated forestlands and are not permitted on the Laurel Highlands Hiking Trails.

- Cross-Country Skiing: Approximately 35 miles of trail are available for cross-country skiing. Please check with the park office to see which sections are suitable for skiing (DCNR Internet Site).

2.16.6 Laurel Highlands Trail

Located in Laurel Ridge State Park, the trail stretches for approximately 70 miles from its origin in Ohiopyle State Park to Johnstown, Pennsylvania. The Trail is known for the great diversity of vegetation and wildlife that can be encountered. The Trail runs through State Parks, State Forests, State Game Lands and other public and private lands. The Laurel Highlands Hiking Trail is opened year-round.

2.16.7 Forbes State Forest

The Forbes State Forest was named in honor of General John Forbes who, in 1757, ordered the construction of a road from Bedford to Fort Pitt for the movement of an expeditionary Army. The Forbes State Forest contains over 20 separate tracts of State Forest Land in Fayette, Somerset, and Westmoreland Counties, totaling over 50,000 acres.

Most of the Forbes State Forest lies along Laurel Ridge. This area is a favorite of people from the greater Pittsburgh area and is heavily used for all types of outdoor recreation (DCNR Internet Site).

2.16.8 Trout Nursery Partnership

The Trout Nursery Partnership has been cited in the Federal “Reservoirs of Opportunities” report prepared by the National Recreational Lakes Study Commission. This report was released in 1999. The Youghiogheny Lake Partnership was noted as an excellent example of a partnership between a federal agency, a state agency, and two private sector

organizations. The US ACE, the Pennsylvania Fish and Boat Commission (PFBC), D/R Hydro Company, the operators of the non-federal hydropower plant at Youghiogheny Lake, and the Chestnut Ridge Chapter of Trout Unlimited (CRTU) have entered into a partnership establishing a cooperative trout nursery in the Youghiogheny Lake outflow area in southwestern Pennsylvania. This cooperative nursery was constructed and installed in a site that had an adequate flow of high quality water with appropriate year-round temperatures for trout. This three-year, trial program is an example of partnering to accomplish mutual natural resource management objectives. The USACE Recreational Fisheries Action Plan is designed to improve fish populations, habitat, and angling opportunities. The Trout Unlimited trout rearing pen program should do exactly that. As a result, the Chestnut Ridge Chapter of Trout Unlimited will release trout raised at the facility into various locations in the Youghiogheny River below the dam where they should enhance the public's angling opportunities (Reservoirs of Opportunities, 1999).

The USACE issued a license to Trout Unlimited in June 1998 to construct and operate the rearing pens and associated structures on USACE land and reviewed the technical engineering specifications of the proposal. The PFBC (Cooperative Nursery Unit) issued a permit for the facility and provided an initial shipment of nearly 7,000 fingerling trout. The PFBC has overall responsibility to ensure that the facility is operated effectively and without adverse impacts on the Youghiogheny River.

There are several advantages to this type of in-river facility over the traditional raceway hatchery, which frequently diverts water from a stream. The costs of raising trout on a per pound basis are generally lower. The fingerlings tend to grow faster and experience lower mortality. In-river conditions reduce the incidence of disease among the fish. The trout produced are better acclimated to the conditions of the stream and are therefore more likely to survive after release. Trout that were reared in 1998, were released in the spring of 1999 and were 12 to 14 inches long.

All costs associated with constructing, transporting, installing and operating the facility (including acquisition of trout fingerlings in the future, fish food, and labor) are borne by Trout Unlimited.

3.0 ISSUES CONCERNS CONSTRAINTS AND OPPORTUNITIES

The following is a summary of the information gathered during the Public Participation Process for the Plan. Representatives from the Ohiopyle State Park and the USACE – Youghiogheny River Lake were encouraged to submit a listing of known concerns and opportunities for their respective locations for the Plan. In addition to this involvement, Public meetings were held to gather specific information from the citizens of the Corridor and from local governmental agencies, such as the DEP, WPCAMR, municipalities, etc. At the public meetings, information was obtained via an open forum discussion. To supplement this discussion, Comment sheets were prepared and distributed to all that attended and were made available to individuals who were not in attendance. Information was also submitted from the Fayette County Planning Commission. This information was gathered from meetings sponsored by the Planning Commission regarding all aspects of the future of the County. These meeting were not initiated specifically for this Plan.

3.1 OHIOPYLE STATE PARK COMMENTS

The comments received by representatives from Ohiopyle State Park revolved around possible improvements and construction projects in the Park that would increase the positive experience of the visitors in the Park and would aid in eliminating areas of concern. Specific project opportunities to improve existing facilities in the Park were identified. Of these improvements, upgrading and adding informational signs on and around the Youghiogheny River Trail was listed as a priority. It was noted that providing informational signage throughout the Park for those who visit the various resources and facilities would be an easy and effective way of providing educational, environmental, and safety information to the visitors.

Specifically, it was identified that at the Train Station Visitor Center in Ohiopyle, Pennsylvania, improvements to the displays and accommodations, such as restrooms and comfort amenities, are necessary to improve the enjoyment of those who visit the Ohiopyle Falls area.

Furthermore, it was noted that the Park is in need of a restroom facility at the Ferncliff Bike/Hike Trail access location.

Of particular concern to the Park is the need for parking lots to be built in Ohiopyle Borough and to replace the parking that was lost due to the construction of the Youghiogheny River Trail near the Rt. 281 bridge in Confluence, Pennsylvania. The Park is host to numerous visitors each year and at most times the parking facilities provided are inadequate.

It was noted as a constraint that this condition was adversely affecting the attractiveness of the Park as a destination for tourists and local citizens who enjoy the resources at the Park. It was stressed that a major constraint to the Park was the lack of updated and modern facilities and amenities.

The Ohiopyle State Park draws numerous visitors each year for white water rafting. It was identified that the Ramcat Boat Launch area needs facility upgrading and improvements. It was noted that the restroom facilities at the Ramcat Boat Launch need to be converted to a permanent flush facility. This upgrade would improve the environmental conditions at the rafter takeout locations and would also bolster the positive atmosphere and the usefulness of the area.

It was also noted that at both the Ramcat Run and Bruner Run Boat rafter access point locations, improvements are needed to their access paths to and from the River. These areas both receive a tremendous amount of traffic from the rafting industry and other general travel. As these areas exist presently, there are significant erosion and sediment pollution problems. The shoreline area and access points are exposed and not stabilized, when the rafters utilize these areas or during storm events, these areas are susceptible to degradation.

It was noted that as conditions of the rafting access points continue to deteriorate and pollute the Middle Youghiogheny River, this might become a constraint to the rafting industries located in the Park. The low number of universal River access areas in the Park was identified as a constraint. Specific construction projects identified by Ohiopyle State Park to improve this situation include constructing an A.D.A approved fishing

platform off of the Youghiogheny River Trail. It was noted that access to the Middle Youghiogheny River in the Park was limited due in part to the steep sided topography through the Park.

Acid Mine Drainage discharges exist at locations in the Park, those identified include the Clay Strip Site on Laurel Run, and a discharge at the northern end of the Park, near Dunbar Creek. The discharge near Dunbar Creek is located directly adjacent to the Youghiogheny River Trail and is degrading not only the River but also the attractiveness of the Trail in that end of the Park. Providing remediation at these sites would greatly improve the quality of the Youghiogheny River and the Youghiogheny River Trail.

3.2 USACE COMMENTS - YOUGHIOGHENY RIVER LAKE

The comments received from the USACE were comprehensive and covered multiple areas. The USACE is currently updating their Master Management Plan for the Youghiogheny River Lake. As part of this process, several areas for improvements at the Lake were identified. Based on these improvement issues, several specific opportunities were identified that directly relate to issues and opportunities identified by the USACE for the Lake.

The USACE commented on the need for the installation of new facilities and structures as well as improving and upgrading current facilities at the Lake and surrounding areas. These would include installing shore stabilization structures, such as rip-rap and rock reefs along areas of heavy use, like boat launches and access points. It was also identified that a Deep Water Habitat study was necessary at the Lake As an increased amount of shoreline is exposed when the Lake pool levels are low, these stabilization structures would help in protecting the shoreline during these times. Installing these structures would also help to improve the fish habitats when the Lake pool level is high.

Courtesy docks, fishing piers, and access paths to the Lake were also identified as needs. The USACE noted that improvements to the restroom facilities are also needed at the Lake. The Youghiogheny River Lake is currently a large recreationally draw and is expected to increase by two percent a year, it is imperative that these recreationally oriented structures are provided at the Lake to keep up with the recreational demand.

These structures will directly improve the quality of the recreational opportunities currently available at the Lake and will provide a framework for properly handling the increased recreational needs in the future.

An opportunity exists at the Lake for environmental and safety education. The USACE noted that activities such as envirothons and nature tours at the Lake would benefit all parties. The Youghiogheny River Lake and its surrounding areas are host to a great variety of both terrestrial and aquatic wildlife and vegetation. These resources need to be tapped for the purpose of educating the public to the importance of safeguarding the natural environment at the Lake and throughout the entire Corridor. Furthermore, with the increase of boaters on the Lake, safety education was identified as a concern that needed addressing. The USACE also indicated that there was a need for safety education, either through information sessions or through strategically placed information signs.

The USACE furthermore added that there is a need to make provisions for adding additional lanes at boat launches, access points, and adding lights at all boat launches. These items also deal with improving the quality of the recreational resources at the Lake. Plans and discussions need to be initiated currently to ensure that the recreational opportunities at the Lake are more than adequate.

3.3 Public Meetings

Through the Chestnut Ridge Chapter of Trout Unlimited's public meetings and through the public comment period, citizens and governmental agencies were given the opportunity to initiate discussions and bring forth problems that may be universal through the Corridor or may be site specific and not known universally throughout the Corridor.

At the public meetings, public comment sheets were made available to those who attended. Additionally, those who attended were encouraged to take several comment sheets to distribute to interested parties in the Corridor. Comment sheets were also sent to each municipality throughout the Corridor and to selected governmental agencies. The responses provided at the meetings and from subsequent discussions with municipalities and governmental agencies, as well as from responses provided directly in written form

helped shed light on specific concerns, constraints, and opportunities in the Corridor. The responses received focused generally on water monitoring, assessments, and improvements needed in the Corridor. The governmental agencies, such as the DEP and the WPCAMPR, were concerned over the lack of water quality monitoring of the tributaries in the Corridor and especially the monitoring of aspects dealing with Acid Mine Drainage in the area.

With respect to Acid Mine Drainage, issues were raised over the lack of proper identification in all aspects of AMD in the region. It was suggested that identifications should be made on all aspects regarding acid mine drainage discharges. It was suggested that this should include identifying all mine permitted areas, discharge flow rates, and un-reclaimed mines in the area. Tributaries such as Cucumber Run, Meadow Run, Dunbar Creek, Jonathon Run, Morgan Run, and Ramcat Run, etc. have no current biological and water quality monitoring programs initiated to accurately document the conditions of the water.

There is concern over the lack of a current assessment of all pollution sources in the Corridor. It has been documented by numerous sources that AMD does have an impact on the water resources in the Corridor, but there are no accurate and current inventories targeted at pollution sources such as sewage, stormwater overflows, erosion and sediment runoff, impacts from foresting, etc. These types of assessments would help to shed light on the impacts from these pollution sources in the Corridor and aid in the future management and remediation strategies.

To this end, it was noted that it is important not to dismiss possible pollution impacts on the basis that they are not currently identified or documented. Pollution impacts can come from a variety of sources and from a variety of actions, whether they be in the Corridor currently or in the future, such as accelerated development or other significant changes to the land use that may not currently exist in the Corridor.

Both citizens and government agencies identified the need to educate the public about the Corridor's resources and about the negative impacts certain actions and conditions have on them, such as illegal dumping, improper sediment control, littering, and improper stormwater and sewage systems. Concern focusing on improving the safety of being in

and around the River was raised. It was noted that it is becoming increasing dangerous to be in and around the water throughout the Corridor. Structures such as sinkholes and large boulders were noted in particular.

The public meetings also brought out a need to construct comfort stations with restrooms and drinking fountains along the Youghiogheny River Trail. It was noted that no such structures exist currently. This would improve upon the enjoyment of the Youghiogheny River Trail. Through personal conversations with individuals on the Trail, a consistent comment was received, the lack of comfort stations, with flushing restrooms and drinking water, was a major constraint to using the Trail.

In regards to the increased demand placed on the Corridor by tourism, it was first discussed that increasing tourism would benefit the Corridor from increase revenue. It was also noted that the problems arrived from increased tourism may not totally be the result of an increase in visitors, but with the lack of facilities to accommodate the extra visitors and a lack of proper management and planning. It was brought to light that the strain placed on the Corridor could be diminished and even eliminated if the proper facilities were upgraded and proper management and planning strategies were in place.

Strong concern was raised on issues dealing with the conditions of the Corridor's infrastructure, such as stormwater management and problems arising from aging water and sewage pipes. Concern was raised on how to deal with the lack of proper stormwater and sewage management in Municipalities such as South Connellsville, Connellsville, Dunbar, Ohiopyle, and other places throughout the Corridor. It was identified that not having the proper infrastructure that would allow for current business expansion and the possibility of locating new businesses and industry in the Corridor was a constraint to future growth in the area.

Issues and concerns regarding the management of the Youghiogheny River Lake were also raised. Individuals who live around the Lake were concerned over the extended period of low pool levels at the Lake. Those who live around the Lake noted this extended period of low pool as a recreational constraint. Furthermore, individuals living around the Lake identified that the low pool levels was a contributing factor in the failure of their wells. Those who live around the Lake also noted that keeping the Lake pool

levels higher and for a longer period of time would greatly improve the recreational draw of the Lake.

Increased concern is being raised over the level of nitrogen in the water emanating from the Youghiogheny Hydroelectric plant during certain periods of the year. This nitrogen is being released via the oxygen blowers during times when the blowers are operating. The Plant is mandated by Federal Regulations to keep a level of dissolved oxygen in the River. The blowers are used to raise the dissolved oxygen in the River.

3.4 FAYETTE COUNTY PLANNING COMMISSION

The Fayette County Planning Commission held a series of public meetings to allow the citizens of the County a chance to identify issues that were of concern to them. Assessing the comments from the citizens living within the Corridor, it was found that they focused mainly on aspects dealing with transportation, tourism, infrastructure, and cultural opportunities as they pertain to the future of the area.

A major concern to those who live and work in the area and know the Corridor first hand is the condition of the road and transportation systems in the Corridor. Many questioned the availability and adequacy of the public transportation system for the elderly of the region. Other comments were focused on the ways and means of getting people to and from activities and locations throughout the Corridor.

It was also noted that a constraint in the Corridor was the lack of a proper road system that is needed to accommodate existing businesses and industries, as well as any future businesses and industries that are looking to locate themselves in the Corridor.

Citizens also brought forth issues dealing with tourism and growth in the area. The comments received dealing with tourism in the Corridor were mixed. Several individuals were in favor of increasing the promotion of the Corridor on a regional basis. Citizens also expressed interest in promoting the Corridor's intrinsic beauty and opportunities to those who may not know first hand what the Corridor has to offer.

In addition, individuals were concerned over the balance between increased tourism and over exploitation of the Corridor. In other words, with increased use of the Corridor, citizens are concerned this could have a negative effect on the conservation of the land and other resources in the area. It was suggested that an investigation is needed that would investigate ways to increase tourism while preserving and protecting the resources of the Corridor.

Along with the comments concerning tourism, came concern over the lack of affordable accommodations for those who would like to spend more than one day in the area, specifically those individuals who travel into the Corridor to use the Youghiogheny River Bike/Hike Trail. Concern was raised over the number of individuals who spend only one day in the Corridor because a lack of accommodations and/or lack of adequate promotion of the available places to stay in the Corridor. It was noted that the local economies would benefit greatly from multi-day visitors.

3.5 SUMMARY LIST OF ISSUES

The following is a summary of the issues, concerns, constraints and opportunities identified by the comment soliciation efforts and the public meetings. We first summarize comments specific to the two prime project area features (Ohiopyle State Project and Youghiogheny River Lake) and then we summarize general comments for the Corridor.

3.5.1 Ohiopyle State Park

1. Modernize the Ram Cat Restroom-Converting this to a flush facility.

2. Provide drinking water at no more than (5) five mile intervals along the Bike/Hike Trail.

3. Install A.D.A. accessible fishing platforms off of the bike trail between MP 0 and MP 5.

4. Construct a new Middle Youghiogheny boaters takeout and ramp under the bike trail.

5. Improve Ram Cat Boat launch Area.

6. Improve Lower Youghiogheny Loop and Bruner Run Boaters Takeouts.

7. Construct Restroom facilities on bike trail at no greater than 8 (eight) mile intervals.

8. Construct fisherman parking near Confluence Rt. 281 bridge.

9. Improve Mine-Acid Treatment Facilities at Clay Strip Site on Laurel Run.

10. Treat drainage from mine near bridges at Connellsville end of trail.

11. Provide additional safety railing along the trail as needed.

12. Improve interpretive signing on Bike/Hike Trail and Ferncliff Trails.

13. Improve displays and accommodations at the Train Station Visitor Center.

14. Construct a restroom facility at Ferncliff Bike/Hike Trail access.

15. Construct additional parking at Ohiopyle.

16. Purchase and clean up Wheeler Bottom near Connellsville.

17. Construct Bike/Hike Trail Spur connection to Dunbar.

3.5.2 Youghiogheny River Lake

1. Install lights at Jockey Hollow Boat Launching Area.

2. Install Courtesy docks at boat launches, as needed. Place larger courtesy docks at Somerfield North and Spillway Launch areas, and Tub Run Campground.

3. Pave surface of existing boat launch parking lots at Somerfield North and Jockey Hollow Boat Launching Area.

4. Provide restroom facility at the Spillway Launch Area.

5. Install and maintain benches, around the Lake, including the Jockey Hollow Launch Area.

6. Install fishing piers so non-boaters can reach deeper waters.

7. Provide universal access wherever possible.

8. Install courtesy docks made from low maintenance plastics at Somerfield North, Spillway launch Areas, and Tub Run Campground.

9. Construct trails in the Outflow Recreation Area, the Klondike Ridge Natural Area and the Youghiogheny River Lake Wildlife Area, as proposed in the Youghiogheny River Lake Master Plan Update.

10. Add additional lanes to boat launches, and/or extend them out into deeper water.

11. Establish no wake zones.

12. Construct and sign angler access trails along reservoir shoreline (utilizing existing parking areas), and link these to areas of the Lake which have been improved for angling by the installation of fish attractors. Wherever possible, provide universally accessible fishing stations of these trails large enough to accommodate a wheelchair.

13. Mark fish attractor locations with buoys, and identify major bays around the Lake with shoreline signs.

14. Construct and maintain a fish cleaning station at the Outflow recreation Area, as proposed in the Master Plan Update.

15. Install and maintain informational bulletin boards at various access sites around the Lake (developing exhibits for these), and initiate an adopt a bulletin board program to assist the USACE in informing the public.

16. Provide restroom facilities and trash receptacles where non exist at Jockey Hollow.

17. Develop Wildlife observation blinds and other viewing facilities (e.g. trails, observation towers, feeders) in appropriate areas around the lake, including the Klondike Ridge Natural Area, Mill Run and Tub Run, consistent with the USACE Watchable Wildlife program.

18. Install Fish cleaning stations at the outflow area, Somerfiled North, and Jockey Hollow Launch Area.

19. Initiate limestone sand projects in selected tributaries of the lake, including Tub and Hall Runs, to reduce impacts of episodic acid flows into these streams. Implement a water quality and biological monitoring program to evaluate the impacts of tributary limestone sand additions.

20. Install submerged fish habitat around the Lake to improve fish spawning and increase sport fish populations.

21. Dredge and/or place boulders in the southwest corner of the slack water area of the tailrace to provide refuge for fish.

22. Construct Rock Jetties 2-3 feet high extending out into deep water, perpendicular to the shoreline, to provide fish habitat.

23. Shoreline stabilization at Spillway recreation Area and Tub Run Campground.

24. Install stream improvement structures in tributaries in which there are established trout populations.

25. Stabilize eroded riparian habitat at selected sites on tributary streams, along shoreline, and access areas including the Spillway Recreation Area and Tub Run Campground.

26. Construct sedimentation ponds and/or catches on tributaries to reduce sediment load.

27. Install interpretative facilities that would educate the public about water and safety issues.

28. Fund biological and habitat surveys at the Youghiogheny River Lake to document threatened or endangered species, and species of special concern which may occur at the Lake.

29. Fund inventory of lands to identify existing possible wetlands, and identify potential wetlands development or restoration projects. Fund development of permanent ponds and sub-impoundments to support migratory waterfowl during low-water periods.

30. Fund the operation and maintenance of Trout Unlimited's existing trout rearing station in the Youghiogheny tailrace.

31. Fund study to investigate/evaluate ways to eliminate or reduce the seasonal nitrogen supersaturation problem in the tailrace, and to develop and initiate appropriate solutions.

32. Fund study to investigate/evaluate the Pennsylvania Fish and Boat Commission's proposal to initiate a lake fertilization program at Youghiogheny River Lake below the dam.

33. Fund and implement a Deep Water Habitat Study at the Youghiogheny River Lake.

34. Fund project-wide archeological/Cultural resource survey at the Youghiogheny River Lake, and identify potential candidates for nomination to the National Register of Historic Places.

35. Fund development of a complete historic property management plan for the Youghiogheny River Lake.

36. Fund activities to mitigate the effects of erosion on archeological sites in the lake's drawndown zone.

3.6 RIVERSIDE CAMPING FACILITY

1. Construct new Comfort Station – Along River
2. River side campsites.
3. Construct Riverside parks including parking and playgrounds.

3.7 EDUCATION OPPORTUNITY

1. Establish nature tours in the Corridor.
2. Assess the effects of dumping and pollution in the Youghiogheny River.
3. Conduct Envirothons.
4. Dissemination of information to the public.
5. Implement Community Education Program at Izaak Walton Park.
6. Encourage Public Schools to use the watershed as a tool for learning.

3.8 MONITORING

1. Establish a standardized Monitoring Plan for the Watershed.
2. Establish a Biological monitoring program.
3. Monitor Insecticide spraying program closely.

3.9 PROGRAMS/ASSESSMENTS/PLANS

1. Create plans for storm water management.
2. Create plan for Sewage treatment systems.
3. Create plan for Erosion control systems.
4. Create plan for Agriculture and livestock runoff systems.
5. Create plan for Acid Mine Drainage remediation

3.10 PROGRAMS TO IDENTIFY FUTURE ECONOMIC DEVELOPMENT OPPORTUNITIES

1. Program to identify new river related business opportunities.
2. Program to accentuate the river's recreational capabilities
3. Program to Assess Sub-watershed including the following:
    a. Low flow/high flow water quality of all tributaries.
    b. Identify of all mine permitted areas.
    c. Identify mine discharges.
    d. Identify chemistry and flow rates of individual mine discharges.
    e. Identify known discharges being treated perpetually.
    f. Identify un-reclaimed areas (abandoned mines).
4. Evaluate potential of mine drainage impacted streams segments for passive treatment.
5. Identify streams impacted by acid deposition-geologic assessment.
6. Identify highest quality streams or stream segments for protection.
7. Identify dirt and gravel roads adjacent to all streams.
8. Establish GIS coverages of all above mentioned items.
9. Develop a prioritization scheme for stream restoration/enhancement based on gathered data.
10. Survey and prepare land around the river for future development.
11. Clear and clean of potentially hazardous land surrounding the Youghiogheny River.
12. Recognize Volunteers.
13. Clean Up Indian Creek Valley.
14. Re-develop access points in the Hawkins Hollow/Camp Carmel areas near Indian Creek.

15. Upgrade facilities at the Izaak Walton Park on Meadow Run.
16. Provide additional Handicapped fishing access at the Izaak Walton Park on Meadow Run.
17. Preservation/upgrading of historical entities.
18. Tourism information centers.
19. Monitor aging bridges.
20. Enhance cultural activities and opportunities and develop new attractions.
21. Re-write the Zoning Ordinance and have staff for enforcement.

4.0 LAND RESOURCES

4.1 SOILS

Soil is a non-consolidated, three-dimensional natural body that covers the landscape. Its natural limits are bedrock or water too deep to support the growth of rooted plants. The characteristics and properties of soils are the result of a complex interaction of physical, chemical, and biological reactions. The rate and extent to which these reactions proceed are governed by the soil-forming factors (climate, organisms, parent material, topography, and time). The non-consolidated masses from which the soils are formed are referred to as the parent material. The parent material has a role in both the mineralogical and chemical composition of the soil and the rate that soil-forming processes take place. The interaction between the soil-forming factors and the reactions determine the physical and chemical characteristics of a soil. Most soil-forming reactions are surface related; thus, soil characteristics vary from the surface downward from one zone or horizon to another (Geology of PA, 1999).

In the Middle Youghiogheny River Corridor, several processes are involved in the formation of soils and soil horizons. The accumulation of organic matter; the leaching of soluble salts, the reduction and translocation of clay minerals, aluminum, silica, and iron are among the formation processes. The formation of soil horizons is affected by gains, losses, transfers, and transformations of components of the soil material. Gains occur where organic matter is accumulated. Losses occur where soluble salts are leached from the soil. Transfers occur where clay is moved to lower horizons. Transformations are continually taking place, generally at the same time throughout the soil profile.

An important process in the formation of soil layers in the region is the formation and translocation of silicate clay minerals. The kind and amount of clay minerals in a soil profile depend on the kind and amount of minerals in the parent materials, but the amount of clay varies from one soil layer to another. Clay minerals are generally moved from the higher layers down to the lower layers

In the region, most of the soils are developed from remnants derived from folded sedimentary rocks, such as sandstone, siltstone, shale, and limestone.
(USDA Soil Survey, 1973 and 1983).

Interactions between climate, plant and animal life, parent material, topography, and time have also helped formed the soils in the Corridor. The relative influence of each factor normally varies from location to location. Local variations in soils are the result of differences in the parent material and in topography and drainage. Although many factors influence the formation of soils in the Corridor, it is not un-common that one factor may dominate the formation and determine most of its properties.

It is known that all living organisms affect soil formation. These organisms, which include vegetation, animals, bacteria, and fungi, can all be found in the Corridor. The content of organic matter, color of the surface layer, and the amount of plant nutrients in the soils are strongly affected by vegetation. Animals, such as earthworms, cicada, and burrowing animals, help keep the soil open and porous. Bacteria and fungi function as decomposers in the vegetation and release nutrients for plant use. The native forests throughout the area have also influenced the soil formation in the Corridor. The soils of the Corridor are typical of soils developed from forest vegetation. The organic matter concentrated near the surface of the soils comes from decomposed leaves and twigs.

The formation of the soils in the area have also been influenced by the shape of the land surface, percentage of slope, and position in relation to the water table. In the Corridor, soils formed in sloping areas where runoff is medium to rapid, generally are well drained, have a bright-colored unmottled subsoil, and are deeply leached in most places. An example of this type of soil would be the Gilpin, Hazleton, and Westmoreland soils. In more gently sloping areas where runoff is slower, the soils generally are mottled in the subsoil or show some other evidence of saturation by water for short periods. Wharton, Cookport, and Guernsey soils are examples of this type. In level areas or slight depressions where the water table is at or near the surface for long periods, the soils show evidence of wetness to a defined degree. They have a fairly dark-colored surface layer and a strongly mottled or grayish subsoil. Brinkerton and Elkins soils are of this kind. Also, the permeability of the soil materials, as well as the length, steepness, and shape of

the slopes, influence the kind of soil that is formed. In this region, local differences in soils are largely the result of differences in parent material and topography.

Soils formed on low bottomlands in the Corridor and subject to varying degrees of flooding may receive new sediments from each flood. These soils have only weak soil structure and weak differences in color of their layers.

4.1.1 Soil Characteristics

Throughout the Middle Youghiogheny River Corridor, four general soil association types can be found. These soils would include:

Rayne–Gilpin–Wharton–Cavode: Nearly level to very steep, deep and moderately deep, well drained to somewhat poorly drained, underlain by acidic shale and some sandstone bedrock; found on hills and ridges.

Hazelton–Cookport–Dekalb: Nearly level to very steep, deep, well drained to moderately well drained, underlain by bedrock that is dominantly acidic sandstone; found on foot slopes of hills and on mountains.

Leck Kill–Albrights–Upshur: Gently sloping to very steep, deep, well drained to somewhat poorly drained, reddish soils; found on hills and ridges.

Monongahela–Philo–Atkins: Nearly level to sloping, deep, moderately well drained to poorly drained, medium-textured, found on stream terraces and floodplains.

4.1.2 CLASSIFICATION OF THE SOILS

Soils are classified such that their significant characteristics can be easily remembered, allowing for the quick comparison and evaluation of relationships between soil types. The following is a listing of the soils of the Corridor aligned by series.

Series	Family
Cavode	Clayey
Cookport	Fine-loamy
Dekalb	Loamy-Skeletal
Ernest	Fine-loamy
Gilpin	Fine-loamy
Hazleton	Loamy-Skeletal
Leck Kill	Fine-loamy
Monongahela	Fine-loamy
Philo	Coarse-loamy
Rayne	Fine-loamy
Wharton	Clayey

4.1.3 Soil Types Found Along the Corridor - Grouped by Series

The following soil types have been identified near or along the Middle Youghiogheny River and Youghiogheny River Lake and are grouped into the following series: (Series - Type)

Andover - AnB	**Mine Dump** – Md
Elkins - EK	**Hazelton** – HzF, HzD, HbF
Ernest – ErB2, EsB, EsD, ErC	**Buchanan** – BuD
Chavies – Ce, ChB	**Allegheny** – A1C2, AhB
Albrights – AbB2	**Rayne** – RgF, RgD
Dekalb – DbF, DbD, DaF	**Udorthents** – UoA
Philo – Ph	**Fluvaquents** – Fu
Gilpin – GnF, Grf	**Rubble Land** – Ru
Upshur - UpF	**Urban Land** – UrB, UrD, UqA
Wharton - WhB	

(USDA Soil Survey, 1973 and 1983)

Appendix B provides a summary description of the soil series found within the Corridor and limitations of the soil groups.

4.2 GEOLOGY

The geologic characteristics of the Corridor have had a key role in the history of the Corridor and the surrounding areas due to the coal beds formed throughout the regions geologic history. Large coal mining and coke manufacturing industries once directed the region. The resources extracted from the region added tremendously to the economic and social makeup of the Corridor. Aspects of coal mining within the Corridor and surrounding areas sustained local economies and provided citizens with jobs. The coal found within the Corridor that once bolstered the area is now one of the most degrading factors to the water quality in the Corridor. The resultant drainage from the coal mines continues to degrade the Middle Youghiogheny River and many of the tributaries discharging into it.

The following is summary of at the geologic structures and geomorphic factors in development of the Allegheny Mountain Section of which the Corridor is found:

Geologic Structures – Relatively tight, narrow north-northeast-trending anticlines and broad, intervening synclines.

Factors in Development – Strongly folded anticlinal mountain ridges; variations in erodibility of exposed rocks; northwestern and northeastern borders with less-folded terrain probably relate to deep-seated tectonic activity; uplift; erosion.

The Permian, Pennsylvania, Mississippian, and Devonian geological time periods are exposed in the geologic formations throughout the Corridor. All except the Devonian are carboniferous. The current flood plains of the Corridor are less than one million years old, which would place them in the Pleistocene age. In the uplands, about 150 to 250 feet above the present river, are remnants of the old river channels floodplains.

The Laurel Hill anticline, the Ligonier syncline and the Chestnut Ridge anticline are the major folds that cross the Corridor. These features cross the Corridor generally from east

to west. These folds are generally parallel to each other and are parallel to similar structures found at other locations in the Plateaus Sections. The eastern limb of the Laurel Hill anticline dips in a fairly regular manner, having a maximum inclination of about 600 feet per mile, and a minimum of 500 feet per mile in the Ohiopyle area. In the Sugarloaf Knob area the western limb dips approximately 1,000 feet per mile. The total structural relief on the Laurel Hill anticline is more than 1,700 feet.

Just north of Stewarton, Pennsylvania, the axis of the Ligonier syncline reaches its low point. The syncline rises southwestwardly about 40 feet in the next 5 miles to a point south of Ohiopyle, Pennsylvania. Here the axis turns more southwestward and strata rise 290 feet in the five miles to Farmington, Pennsylvania (Ohiopyle Master Plan, 1976).

Rocks in the Appalachian Plateau have been pressed into folds. Near the Middle Youghiogheny River, the great open folds are as much as 2,000 to 3,000 feet high. The surface drainage has been influenced dramatically by the surface features and the folding in the area. The most significant role of the surface drainage is the wearing down, or erosion, of the folds into a mature plateau.

Unconsolidated recent alluvial deposits can be found in the stream and river valleys in the Corridor. The larger deposits are common to the larger streams and valleys. Near the confluence of the Casselman River, the Youghiogheny River and Laurel Hill Creek, older alluvial terrace deposits have been found at higher elevations than present stream levels (Geology of Ohiopyle State Park).

The rocks of the Corridor and most of Western Pennsylvania, can be classified as sedimentary in nature. These rocks are formed on the surface of the earth by consolidation of deposits of loose material called sediment that has been produced by the breakdown of existing rocks. Common examples of sedimentary rocks found in the Corridor are sandstone, shale, and limestone.

Sedimentary rocks can be further subdivided into various rock types based upon the size of particles of which they are composed or by their mineralogy. The major rock types that are encountered throughout the Corridor are as follows:

Conglomerate – Conglomerates are rather coarse-grained rocks. The majority of the particles or fragments are greater than 2 mm in diameter.

Sandstone – Sandstone is a finer grained rock than a conglomerate. Particles generally range from 2 mm – 1/16 mm. Generally sandstone occurs in rather thick or massive units.

Siltstone – Siltstone is composed of fine particles between 1/16 mm and 1/256 mm. When seen in the field, siltstone beds are generally not as thick as sandstone and conglomerates.

Shale – Shale is a relatively thinly bedded or layered rock, which is composed of very fine-grained particles, less than 1/256-mm diameter. Shale is usually found in very thin beds, one on top of the other. It is common to find shale inter-layered between sandstone units. In the Corridor, the shale forms slopes, while sandstone, being more resistant and stronger, generally forms cliffs.

Limestone – Limestone is a sedimentary rock whose major constituent is calcium carbonate (CaCO3), which forms as a chemical precipitate from water. Often, these rocks will have many other rock fragments along with the calcium carbonate. (Laurel Highlands Hiker's Guide, 1992).

4.2.1 Geologic Features of Interest

The Allegheny Mountain section of the Appalachian Plateaus Province is noted for its long and orderly high anticlinal ridges and broad synclinal valleys. The highest discrete peaks in Pennsylvania are found in this section. The eastern and western boundaries of the Allegheny Mountain section are sharply defined by the Allegheny Front and the west slope of Chestnut Ridge, respectively. Steepest dips of strata on Chestnut Ridge and Laurel Ridge commonly are 20 degrees or more in the areas in around the Corridor. The Youghiogheny River creates water gaps through these ridges. These water gaps provide impressive exposures of strata within the anticlines.

Sedimentation, deformation, and erosion have been the major players in the geologic history of the Corridor. The rock exposures and landscape of the area are representative of features expected to be found in this part of the Appalachians. The predominant structural features in the Corridor area are a series of open folds which trend generally northeastward. The folds have an amplitutde as great as 3,000 feet.

4.2.1.1 Devonian Rocks

The Devonian Age rocks, which are the oldest rocks found in the Corridor, are present in the deepest part of the Youghiogheny Gorge, between Victoria and Bidwell, Pennsylvania. The rocks consist of brown, gray, and reddish-colored sandstones and shales. Younger Mississippian Age rocks are present throughout much of the area. They are more varied in nature, ranging in type from light-gray conglomerates, made up of small, white quartz pebbles, to red and green shales all the way to gray, very sandy limestones. The conglomerates can be readily seen along the roads to some gas wells on the south side of the River. Red shales are present along the paved roads east of Sugarloaf Knob. The limestones can be found in the area between Sugarloaf Knob and the smaller knobs to the east.

4.2.1.2 Pennsylvania Rocks

The Pennsylvanian Age rocks are the youngest rocks in the area. They played a tremendous role in the economic history of the Corridor due to their inter-bedded coal layers. Of the Pennsylvanian Age rocks, the oldest are called the Pottsville group and consist of tan to gray sandstones and conglomerates. These rocks enhance the scenery, since they form the falls and rapids in the Middle Youghiogheny River and the prominent cliffs along the sides and top of Laurel Hill. The younger Pennsylvanian rocks are mostly tan to dark-gray shales with some sandstones and coal beds.

During the Paleozoic Era of geologic time, much of the rock layers exposed in the Corridor were deposited as sediment. Older rocks are present but are deeply buried and known only from well drillings. A shallow sea existed in the area during the Paleozoic Era, extending from the mid-continent area eastward into Pennsylvania. Over several million years, these sediments hardened into the present rock layers.

4.2.1.3 Youghiogheny Gorge

Laurel Hill is a high ridge that was formed by resistant rock layers that were arched up to form a long anticline that extends from West Virginia northward into Cambria County, just north of Johnstown, Pennsylvania. The sides of the Youghiogheny Gorge provide an excellent opportunity to view a cross-section of this anticline. The rock layers along the railroad west of Victoria, Pennsylvania are tilted to the west and the rocks east of Bidwell, Pennsylvania are tilted to the east. This relationship can be easily identified from a topographic map of the area.

At the Ohiopyle Falls, the Middle Youghiogheny River flows across what is known as the Pottsville sandstone. The elevation here is about 1180 feet (msl). As the road rises eastward toward Sugarloaf Knob, it follows at or near the top of that same Pottsville sandstone. At the crest of the fold, on Fire Tower road, the same Pottsville sandstone is at an elevation of 2920 feet. The sandstone and the road then drop back to the river level at Confluence, Pennsylvania. At Confluence, the Pottsville sandstone is about 500 feet below the actual ground surface.

The falls and rapids in the Corridor were formed when the Youghiogheny River gained new energy and began to downcut dramatically and erode new valleys. Where resistant layers were encountered, falls and rapids were formed. Where non-resistant layers were met, they were eroded away and valleys were formed. The Grand Canyon was formed in a similar fashion. Over millions of years, the water eroded any and all non resistant rocks, leaving only the most resistant rocks standing today. Water always chooses the path of least resistance; when it hits resistant rock, it will meander its course. This concept is extremely evident throughout the Corridor.

The Ohiopyle Falls represent a brief interruption in the downcutting of the Middle Youghiogheny River. Because the Pottsville sandstone is more resistant than the surrounding shales, the River expended more eroding energy at this point than elsewhere along its course. In the future, the Ohiopyle Falls will cease to exist. The River will eventually cut completely through the sandstone layers that form the Falls and rapids, and the River's path will become smooth throughout its length. This same action is

slowly taking place at Niagara Falls, although on a much larger scale. Each year, more and more of the Gorge is being cut away.

Above the Ohiopyle Falls, along the banks of the Middle Youghiogheny River, fossil tree trunk impressions of both Sigillaria and Lepidodendron are abundant. These trees flourished over 300 million years ago and provided much of the plant matter that later became coal.

Ferncliff Park is located on a knob of the Pottsville sandstone that was left as the Youghiogheny River eroded downward 10 to 50 feet above the present River level potholes scoured in the rocks by turbulent water are present, and old channels can be observed around the sides of the Park (Geology of Ohiopyle State Park).

4.2.2 Impact on Recreation

The geological formations of the Corridor present some problems in terms of overall recreational development of the Youghiogheny River Lake. In areas where deep cuts expose the rock layers, rock falls may occur as subsurface water freezes and thaws, which in turns fractures the rocks. Construction projects are hampered in areas where the steepness and shallowness of the soils are too severe and cause safety issues (Youghiogheny River Lake Master Plan-Draft Report, 1999).

4.3 YOUGHIOGHENY RIVER LAKE OWNERSHIP

The Federally controlled land area at the Lake (PA and MD) totals 3,915.52 acres. The Federal Government owns approximately 3,915 acres in fee. The remaining land acres consist of easement lands. At present time there are no project lands available for accessing. ***Table 4-1*** is a listing of the Youghiogheny River Lake ownership statistics.

4.3.1 Public Lands of the Corridor

The majority of the land within the Corridor is made open for public use and enjoyment. Ohiopyle State Park alone contains 18 miles of the Middle Youghiogheny River and encompasses over 19,000 acres of protected land.

Other public lands in the area include the Forbes State Forest. Forbes State Forest contains over 20 separate tracts of land and totals over 50,000 of protected land.

Furthermore, Laurel Ridge State Park is open to the public. This State Park contains over 13,000 acres of protected land. Furthermore, land surrounding the Youghiogheny River Lake is open for public recreation and enjoyment.

In addition, to the aforementioned public lands, State Game Lands 111 and 51 can be found within the Corridor. With the number of State Parks and Game Lands found in the Corridor, there is ample land open to the public to use and enjoy.

The remaining lands within the Corridor are privately held.

4.3.2 Critical Areas

The critical land areas in the Middle Youghiogheny River Corridor give exceptional value to the Corridor. Many of these areas, as listed below, have been set aside and protected.

- State Game Lands No. 51 and 111 surround much of the Corridor;
- Ohiopyle State Park contains of 19,000 acres of protected land;
- Youghiogheny River Lake and surrounding land; and
- Forbes State Forest encompasses areas in and around the Corridor.

The Forbes State Forest contains over 20 separate tracts of State Forest Land in Fayette, Somerset, and Westmoreland Counties. The total acreage is over 50,000 acres. For management purposes, Forbes State Forest is broken down into 5 divisions including the

Blue Hole Division, the Braddock Division, the Linn Run Division, the Kooser Division, and the Negro Mountain Division.

The following is a summary look at three areas, even though they are outside the study area, that are also critical to the quality of the Corridor:

4.3.2.1 The Roaring Run Natural Area

Roaring Run is a 3,070-acre tract of second and third growth mixed mesophytic forest in southeastern Westmoreland County, located south of PA Route 31, east of PA Route 711 and 381, and north of L.R. 64070. It occupies the major portion of the watershed of Roaring Run on the west slope of Laurel Ridge. Roaring Run is a tributary of Indian Creek, which empties into the Middle Youghiogheny River. Two high points of the ridge, known as Painter Rock Hill and Birch Rock Hill are within the natural area.

The Roaring Run Natural Area was acquired by the Commonwealth in 1975. Prior to acquisition, numerous roads had been constructed and much of the timber removed. Nature with some help from man has done much to restore the area.

Although the entire area is closed to all vehicles, it is open to hiking, cross-country skiing, and in the appropriate seasons, to access on foot by hunters and fishermen.

4.3.2.2 The Mt. Davis Natural Area

The Mt. Davis Natural Area comprises 581 acres in Elk Lick Township, Somerset County surrounding the rock known as Mt. Davis on the summit of Negro Mountain. The top of this rock is 3,213 feet above sea level, and is the highest point in Pennsylvania. The elevation of the lowest point in the natural area is 2,823 feet. Drainage is to the Southeast into Tub Mill Run, a tributary of the Casselman River, which is in turn a tributary to the Middle Youghiogheny River.

The timber is of the mixed oak type, with a significant representation of species belonging to the northern hardwood group. Trees tend to be short, brushy, and twisted and severely deformed by strong winds and winter ice storms. The thin rocky soil

provides a meager supply of nutrients and water. Tree growth is slow. Tree species found at the lower elevations include black birch, black cherry, red maple, red oak, scarlet oak, white oak, cucumber tree, sassafras, and eastern hemlock. On the high flat of the mountain near the Mt. Davis observation tower are black birch, yellow birch, quaking aspen, black cherry, fire cherry, black gum, red maple, chestnut oak, red oak, scarlet oak, sassafras, serviceberry, and pitch pine.

Near the observation tower are such shrubs and species of ground vegetation as mountain laurel, rhododendron, scrub oak, greenbrier, painted trillium, and several species of clubmoss.

An interesting geologic feature of the area is the scattering of small concentric stone rings caused by localized frost heaving. Each ring surrounds a spot in the soil that is a little softer and looser than the adjacent ground. Under the action of frost, these soft spots rise up as slight humps. Surface rocks on the humps tend to slide off, and over thousands of years, the sliding progresses enough to deposit the rocks in ring like formations at the bases of the humps.

The Natural Area is bounded by L.R. 55008 on the north, by the Shelter Rock Road on the east, and the South Wolf Rock Road from L.R. 55008. The Shelter Rock Road is closed to vehicles. A picnic area is located about 1 mile from Mt. Davis along L.R. 55008. Hiking trails connect the picnic area with the high point, and from Mt. Davis lead into the lower elevations of the natural area. Motorized vehicles are not permitted in the area except on the road to the High Point.

4.3.3.3 The Spruce Flats Wildlife Management Area

The Spruce Flats Wildlife Management Area is a tract of 305 acres located behind the Laurel Summit Picnic Area. The dominant feature of the area is the 28-acre Spruce Flats Bog, which contains large cranberry, pitcher plant, sundew, cotton grass, and other plants more typical of plant communities farther north.

The origin of the original bog is obscure. Past geologic activity which may or may not have included glaciation, left a depression on top of Laurel Ridge. This depression

passed through natural succession from open water to marsh or swamp, to bog, to meadow and finally to forest. Early in the 20th century, lumbermen found a forest of virgin hemlock, which they misnamed "spruce" growing on the flats. They clear-cut the forest, and without realizing it caused the water table to rise. Evapo-transpiration from the tree leaves had been the major method by which water was removed from the undrained basin. Devastating fires at about the same time burned away the upper layers of organic matter that comprised the forest floor above the water table. These events set back the successional clock, probably to the late swamp or early bog stage. Once more Spruce Flats Bog is making its slow trek though time toward a mature forest.

All management activities in the area surrounding the bog are specifically directed toward improving wildlife habitat. Mammal track counts are made after January and February snowstorms. The Audubon Society of Western Pennsylvania conducts an annual bird survey in the late spring. A few small clearings have been cut in the forest to provide additional food and cover. The wildlife census activities monitor the response of the wildlife to these practices (DCNR Internet Site).

4.4 STATE PARKS IN THE CORRIDOR

4.4.1 Ohiopyle State Park

Located primarily in Fayette County, Ohiopyle State Park encompasses approximately 19,116 acres of rugged natural beauty and serves as the gateway to the Laurel Mountains. The focal point of the area is the more than 14 miles of the Youghiogheny River Gorge that passes through the heart of the Park. In all, the Park surrounds 18 miles of the Middle Youghiogheny River. The River provides some of the best whitewater boating in the Eastern U.S. as well as spectacular scenery.

Other points of interest in the Park include Cucumber Falls and the Cucumber Run Ravine, which is blanketed with wildflowers and flowering rhododendron. Baughman Rock, Tharp Knob and the Kentuck Scenic overlooks provide spectacular views of the Youghiogheny River Gorge. Ferncliff Peninsula, formed by a great horseshoe bend in the river, provides a unique natural habitat for numerous botanical treasures, particularly

southern wildflowers. Ferncliff Peninsula, a registered National Natural Landmark, contains four miles of easy hiking trails and several outlook areas.

4.4.2 Laurel Ridge State Park

Laurel Ridge State Park, 13,625 acres, stretches along the Laurel Mountain from the Youghiogheny River at Ohiopyle to the Conemaugh Gorge near Johnstown. This large park spans Cambria, Fayette, Somerset, Westmoreland and Indiana counties.

The Laurel Highlands Hiking Trail stretches for approximately 70 miles from its origin in Ohiopyle State Park to Johnstown, PA. The Trail is known for the great diversity of vegetation and wildlife that can be encountered. The trail traverses state parks, state forests, state game lands, other public lands, and private lands is open year-round (DCNR Internet Site).

4.5 LAND FILLS

4.5.1 Hazard Areas

Official notification from the PA DEP has not been received on these issues. Conversations with the Fayette County Planning Commission indicated that neither licensed land fills or hazardous waste areas exist in the Corridor.

4.6 YOUGHIOGHENY RIVER LAKE LAND RESOURCE DESCRIPTION

Detailed information regarding the Youghiogheny River Lake was provided by the USACE and is part of the Youghiogheny River Lake Master Plan-Draft Report (1999). We summarize this information in the following 14 Resource Descriptions.

RESOURCE DESCRIPTION 4.6-1
OPERATION AND MANAGEMENT AREA

Size	105 acres
Location and Access	This area is located on the north end of Youghiogheny River Lake. A public road that intersects Pennsylvania Route 281 to the north provides access.
Site Use	Two buildings which were government dwellings, a project maintenance building, the dam structure and associated spillway, an intake structure, a stilling basin, an administration building, a building formerly used as a ranger office, and the area of the lake surface near the dam are located in this area. The former concession building near the administration building which houses the ranger offices and public restrooms are also located in this area. 2.62 acres of this area are under license to D/R Hydro, Inc. for a hydropower facility. The Chestnut Ridge Trout Unlimited operates a cage culture trout nursery in the stilling basin adjacent to D/R Hydro's hydropower plant. They also have a small storage shed near the trout pens in this area. As part of the bank protection of the stilling basin, the licensee has provided paved walkways and a universally accessible pier for anglers.
Adjacent Land Use	Land beyond this area is primarily vacant wooded hillsides, privately owned with potential for timber harvesting. Project property adjacent to this area is the Youghiogheny Outflow Area (Area B), the Youghiogheny Recreation Area, and the Pennsylvania Lake Area.
Soils/Landform	The area is located along a moderate slope (8 to 15 percent). The soil is classified as Wharton silt loam, a deep, moderately well-drained soil. Bedrock is 4 to 6 feet below the surface.
Limitations and Hazards	The presence of the dam, its control building, outlet works and spillway serve the primary purpose of the Lake. As such, their function must be preserved.
Land Use Classification	This area is classified as project operations. The residences are closed to the public, but visitors are allowed on a personal basis. Visitors are allowed to drive across the dam to access the Youghiogheny Recreation Area (Spillway).

RESOURCE DESCRIPTION 4.6-2
OUTFLOW AND RECREATION AREA

Size	34 acres
Location and Access	This area is located on the north side of the dam downstream of the lake. Pennsylvania Route 281 provides direct access to this area. The access road shown leading from Flanigan Road to the Day Use Area was constructed by the D/R Hydro Company and is not intended for use by the public.
Site Use	The site is currently used as a picnic and camping area, as well as for outdoor education programs sponsored by the District for school children and special event days for physically challenged. The campground has 75 sites that support primitive camping and recreational vehicles. It has a flush restroom and a shower house, a camper check-in station, sanitary dump station, and parking. The site includes a small pond that is stocked with fish for electro fishing demonstrations. Access to the Middle Youghiogheny River is provided by trails from parking areas located in this area. The water from the reservoir is cold and well aerated, supporting an excellent trout fishery.
Adjacent Land Use	The area is located adjacent to the operation and management area and a privately owned and operated campground. The spillway is located east of the area across the Middle Youghiogheny River and the hydroelectric power plant is located across the River at the base of the dam.
Soils/Landform	The soils of this area belong to the Monongahela-Philo-Atkins association, particularly the Wharton and Philo soil series. These soils are typically deep, moderately well drained to poorly drained, medium textured, sloping to nearly level. The area is mostly composed of the poorly drained Philo soil on the flat area adjacent to the river, with Wharton soils on the 8 to 15 percent slopes on the western side of the area.
Limitations and Hazards	Periodically, large volumes of water must be released. High discharge exiting under the wheel gate has resulted in excessive spray. When the volume of discharge is high, the water level in the outflow area rises rapidly creating safety concerns for anglers who frequent the area below the dam. As a precaution, the hydropower station installed an alarm system to warn those in the area when the condition occurs.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-3
YOUGHIOGHENY RECREATION AREA
(SPILLWAY AND POPLAR HOLLOW)

Size	35 acres
Location and Access	This area is located on the east and west sides of the dam. To access the eastern portion of this area requires driving across the top of the dam.
Site Use	The eastern or Spillway section was developed as an emergency overflow for the dam in the case floodwaters resulting from unusually high rainfall threatened to overtop the dam. Boat launching, picnicking, and swimming are the primary uses of the area. A parking area for 100 cars/trailers is provided at the lake end of the spillway with two boat launches. Picnic areas are limited to a narrow wooded ledge adjacent to the Lake on the east side and a wooded bench south of the parking lot on the west or Poplar Hollow side.
Adjacent Land Use	On the east side of the dam, the area is bordered by the Klondike Ridge Natural Area to the east and the Operation and Management Area to the north. On the west side of the dam, land beyond the project property is primarily wooded hillsides, privately owned with potential for timber harvesting. Parking for the Poplar Hollow picnic area is accommodated in the Administration Building parking lot.
Soils/Landform	The upper portion within this area is a relatively flat bedrock bottom originating at the edge of the water with a sheer rock cliff to its east. West of the dam, the landscape is steep to very steep slopes (12 to 60 percent) from the boundary to the edge of the water except where the existing structure and parking area have been developed. The soils in the area belong to the Gilpin-Wharton-Ernest association, particularly the Gilpin series. These soils are moderately deep-to-deep, well-drained to moderately well-drained, medium-textured soils underlain by acid shale and some sandstone bedrock.
Limitations and Hazards	The proximity of Boat-Launching Activities and Swimming is a potential safety hazard. The Current Slope of The Beach is A Safety Hazard.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-4
KLONDIKE RIDGE NATURAL AREA

Size	126 acres
Location and Access	There is minimal access to this area. A public road parallels this area to the east, but there is no connection from that road to the area. Access could be provided from the Youghiogheny Recreation Area (Spillway), which shares a common boundary and has motor vehicle and boat access, as well as a parking area.
Site Use	This area is currently maintained as a natural and wildlife habitat area.
Adjacent Land Use	The site is bordered by privately owned farmland (pasture) and woodland.
Soils/Landform	The area is a very steep, predominantly west-facing slope, although it includes a steep cove with north and south facing slopes. The soils belong to the Rayne-Gilpin-Wharton-Cavode association. The soils in the area are steep to very steep, deep and moderately deep, and well drained to moderately well drained. The soils are mostly stony, with some bedrock outcrops and rocky talus slopes.
Limitations and Hazards	Lack of direct access for low-density recreation has prevented visitors from experiencing the mature hardwood forest.
Land Use Classification	This area is classified as a multiple-use area.

RESOURCE DESCRIPTION 4.6-5
YOUGHIOGHENY LAKE WILDLIFE AREA

Size	736 acres
Location and Access	This area is the largest one at the Youghiogheny River Lake and comprises most of the lakeshore on both the east and west sides of the reservoir extending to the Pennsylvania/Maryland border. Automobile access on the east side of the lake is limited to a few access points. On the west side of the lake there are more opportunities for access from state and local roads, some of which parallel the lake to serve residential developments that border the west side of the project.
Site Use	The area is used for general wildlife and vegetation management. Portions of this area have been identified in the USACE Shoreline Management Plan for the Lake has a limited development area. This means that certain private facilities may be permitted. As defined by the Shoreline Management Plan, the density of floating facilities will not exceed 50 percent of the shoreline allocated for limited development when the lake level is at summer pool.
Adjacent Land Use	The land uses adjacent to this area on the east side of the Lake are primarily agricultural and forest outside the project boundary. Along the western side of the project are a number of second-home developments, many of which abut USACE property. Because of the extent of this area, several other areas border and divide this area into several distinct parcels.
Soils/Landform	This area is mostly steep to very steep (up to 70 percent) wooded slopes adjacent to the reservoir. The soils along the west side of the reservoir are designated the Gilpin-Wharton-Ernest soil association. The soils in this association are steep to very steep, deep and moderately deep, and well drained to moderately well drained. The soils are mostly stony, with some bedrock outcrops and rocky talus slopes. On the east side, the soils are designated in the Rayne-Gilpin-Wharton-Cavode soil association. These soils are moderately deep-to-deep, well drained to moderately well drained, and medium-textured and are underlain by acid shale and some sandstone bedrock. Like the west side, these soils are typically stony.
Limitations and Hazards	Generally steep slopes prohibit future development in this area.
Land Use Classification	This area is classified as multiple resource.

RESOURCE DESCRIPTION 4.6-6
SOMERFIELD NORTH

Size	13 acres
Location and Access	This area is located on the north side of U.S. 40 and on the east side of the Lake. Immediately east of this area is Township Road 860, which intersects U.S. 40 and parallels the project until it eventually intersects another township road. Because of this area's proximity to U.S. 40, access to it is excellent.
Site Use	This site is used for high-density recreational purposes such as picnicking and boat launching. The two-lane boat ramp and parking area for 205 cars and 75 trailers was upgraded in 1994. The area was designated as a no swimming area in April 1999
Adjacent Land Use	Because of this area's proximity to U.S. 40, adjacent land use is a mixture of commercial and residential uses to the east, U.S. 40 to the south, and the Youghiogheny River Lake Wildlife Area area to the north.
Soils/Landform	The soils in this area are designated the Gilpin-Wharton-Ernest soil association. In the sloping (15 to 70 percent) eastern portion of this area, the soils are Berks channery silt loam and Weikert silt loam. These soils are shallow to moderately deep, well drained, and formed from gray to brown shale and silt stone. Bedrock outcrops and rocky talus slopes are possible. The lower, flatter soils adjacent to the reservoir, in the area of the existing development, are Udorthents. Udorthents are deep and well-drained soils that are a mixture of soil and unconsolidated fragments of shale, sandstone, and coal.
Limitations and Hazards	Fluctuations in the water level impact recreational facilities and cultural resources. The access road to this area intersects with Route 40. Westbound traffic on Route 40, which includes a significant number of trucks, is coming down a long hill and is often traveling at excessive speeds. People turning into and out of the recreation area are subjected to dangerous conflicts with these vehicles. Although steep underwater slopes are a common problem at the project, underwater slopes in excess of 14 percent can be found at the Somerfield North swimming area. Federal design standards state that the optimal underwater slope is between 2 and 5 percent; but in any case, the underwater slopes should never exceed 10 percent. The slope limits the usable swimming area, crowds swimmers, and creates quick drop-offs. A slip-prone area was identified on the hillside about 100 yards north of the picnic shelter. Before a beach is constructed, the area needs studied and its boundaries established. The upper hillside continues to experience land slide and soil shifting.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-7
SOMERFIELD SOUTH

Size	12 acres
Location and Access	This area is located immediately south of U.S. 40 and Somerfield North Recreation Ara. A gated road that intersects with U.S. 40 provides access. Because the marina has a marine fueling station, some available dock space, and marine store, boaters on the lake who use these facilities frequent this area.
Site Use	Operated by a concessionaire, Leskinen, Inc., this area caters exclusively to boaters' needs such as a launching ramp, boating fuel, dock space, a marine store, and a parking lot for marina patrons. Restroom facilities are also provided.
Adjacent Land Use	The adjacent land uses are similar to those around Somerfield North. U.S. 40 borders the area to the north. Adjacent tot he area to the east are several residential structurs. Further to the east and southeast is a relatively large development of year-round and second homes, generally of much higher quality than in most other areas around the project. Immediately south of the area is another parcel of the wildlife area.
Soils/Landform	The area is situated on a west-facing, moderately steep (8 to 25 percent) slope. The soils in this area are Berks channery silt loam and Ernest silt loam. These are deep, well-drained to moderately well-drained soils. The lower, flatter areas adjacent to the reservoir are Udorthents. Udorthents are deep and well-drained soils that are a mixture of soil and unconsolidated fragments of shale, sandstone, and coal.
Limitations and Hazards	This area contains the greatest density of boaters. Some boats are operated at high speeds near the marina, causing large wakes that damage boats docked at the end of the marina. The potential for boating accidents is high due to the number of boats and the operating speeds. The access road to this area intersects with Route 40. Westbound traffic on Rte 40, which includes a significant number of trucks, is coming down a long hill and is often traveling at excessive speeds. People turning into and out of the recreation area are subjected to dangerous conflicts with these vehicles.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-8
BRADDOCK RUN

Size	36 acres
Location and Access	This area is located in the next cove upstream from Somerfield South on the right bank. Access is limited to township road T858 that intersects with U.S. 40 to the north.
Site Use	The site is currently out granted to the Penn's Woods Council of Boy Scouts for use as a primitive campground.
Adjacent Land Use	The land bordering this area is primarily forested, with some agricultural uses further to the east and south. The adjacent project lands are two parcels of the wildlife area areas. To the north beyond the project are some of the residential properties that also border Somerfield South.
Soils/Landform	This area is located in a narrow stream valley. The narrow valley floor has gentle to flat slopes with moderately steep to very steep (15 to 70 percent) slopes along each side of the valley. Along the sloping valley walls of this area, the soils are Rayne-Gilpin channery silt loam and Wharton silt loam. These soils are deep and well drained to moderately well drained. Some bedrock outcrops and rocky talus slopes are possible. The valley floor is mostly deep, well drained to moderately well drained Philo and Chavies soils. The lowest end of the valley is Fluvaquents. Fluvaquents are deep, frequently flooded, alluvial soils. These soils frequently occur in wetland areas along floodplains.
Limitations and Hazards	Steep slopes on the valley walls and floodplain with some wetlands characterize this area.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-9
MILL RUN RECREATION AREA

Size	13 acres
Location and Access	This area is located south of the Pennsylvania/Maryland state line on the east side of the lake. A gravel road that intersects Maryland Route 53 to the east provides access. This road essentially divides the area into two areas. This road also intersects with another public road to the east. A boat ramp provides access from the lake.
Site Use	Camping is the primary use of this area. Facilities include 31 campsites, a restroom, and playground equipment. The area also has a boat-launching ramp and a trailer dump station.
Adjacent Land Use	The Wildlife Area is adjacent to this area to the north and the Mill Run Natural Area is located immediately to the south. Adjacent land uses off project property are generally forest, agricultural, and some residential development along the road that accesses this area.
Soils/Landform	This area is located in the gently sloping lower portion of the Mill Run and Collier Hollow stream valleys, with some limited steeper slopes along Collier Hollow. The primary soils are Cavode silt loam, Ernest and Cookport stony silt loams, and stony alluvial lands. These soils are typically moderately deep and somewhat poorly drained to moderately well drained. The lower lying areas are subject to periodic inundation by the Lake.
Limitations and Hazards	Steep slopes preclude expansion for high-density recreation uses.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-10
MILL RUN NATURAL AREA

Size	64 acres
Location and Access	The Mill Run Natural Area is located south and east of the Mill Run Recreation Area and is accessed by the same road. This gravel access road runs along the northern part of the area making most of the area relatively inaccessible.
Site Use	General wildlife management and fishing are the primary uses.
Adjacent Land Use	Mill Run Recreation Area is located directly west of the area, and another parcel of the Maryland management area is located on the southern end of this area. There is no access to adjacent properties to the south of project lands so there has not been any second-home development in this area.
Soils/Landform	The area includes the lower end of the rocky Mill Run Valley and a substantial area south of the stream. A nearly vertical rocky cliff borders the stream to the south. Above the cliff is a gently sloping bench, bordered by steeper slopes, especially to the southwest. Very stony alluvial soils occur along the bottom of the Mill Run Valley. The bench and steep slopes south of the valley are primarily Cookport, Ernest, Dekalb, and Gilpin very stony silt loams and other unclassified very stony soils.
Limitations and Hazards	The location of Mill Run along the northern boundary limits accessibility.
Land Use Classification	This area is classified as multiple resource

RESOURCE DESCRIPTION 4.6-11
JOCKEY HOLLOW BOAT LAUNCH AREA

Size	7.12 acres
Location and Access	This boat-launching area is located on the west side of the lake and along U.S. 40. There is direct access from U.S. 40 to this area.
Site Use	The facilities, which are limited to a boat-launching ramp, parking, and a vault restroom at this area, are currently leased to the Pennsylvania Fish and Boat Commission (PFBC). Restroom facilities consist of port-a-johns supplied by the PFBC.
Adjacent Land Use	The southern boundary of this area is U.S. 40. To the west and north is wooded open space.
Soils/Landform	This area is located in a confined stream valley. The side slopes of the valley are steep, with a somewhat flatter, alluvial area at the edge of the lake. The slope soils are Gilpin-Weikert channery silt loams. These are shallow to deep, well-drained to moderately well-drained, medium-textured soils underlain by acid shale and some sandstone bedrock. Some bedrock outcrops may occur along the slopes.
Limitations and Hazards	The size of the site and its location next to U.S. 40 limit its ability to be expanded.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-12
JOCKEY HOLLOW RECREATION AREA

Size	3 acres
Location and Access	This area is located on the west side of the lake in the same cove as the Jockey Hollow boat-launching area. However, it is closer to the main portion of the Lake. This area is also located on U.S. 40, which provides direct access.
Site Use	This recreation area is the location of the visitors' center for the project. Other facilities at the area include picnic **Table**s, a short walking path, and automobile parking.
Adjacent Land Use	The southern boundary for this area is U.S. 40. The land on either side of the area is a portion of the Youghiogheny River Lake Wildlife Area.
Soils/Landform	The area currently contains a parking lot constructed at road elevation. The remainder of the area retains its steep slope landform. The soils are typically Gilpin-Weikert channery loams. These soils are moderately deep to shallow, well-drained loamy soils.
Limitations and Hazards	
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-13
TUB RUN

Size	65 acres
Location and Access	Tub Run is located on the west side of the Lake further downstream from the Jockey Hollow area. Access to this area is provided by a public road, which intersects with Pennsylvania Route 281 in two locations.
Site Use	This recreation area provides 101 camping sites (supporting both primitive campers and recreational vehicles), amphitheater, boat launching, swimming, two flush restrooms and two washhouses, a camper check-in, a trailer dump station, and parking. The camping areas are physically separated into three locations in this area. The easternmost restroom building is not used because funding required to complete the camping development has never been available, and the building is too distant from existing camping areas to be useful.
Adjacent Land Use	Adjacent areas are portions of the Youghiogheny River Lake. Property located outside this area is primarily wooded open space on the south side of the area. However, there are a few residential structures on the south side as well. Located between the area and adjacent land uses to the south is a public road. North of this area is a cluster of residential structures that are used as second/weekend homes.
Soils/Landform	The Tub Run Recreation Area is relatively flat over much of the area adjacent to the stream. The Brinkerton and Armagh silt loams are predominant along the lower, flatter area currently used for camping and recreation. These are typically poorly drained, loamy to clayey soils. Ernest very stony silt loam predominates along Tub Run in the western end of the area. These are deep, moderately well-drained soils. The steep slopes on the north and south sides of the area are predominantly Gilpin and Weikert stony silt loams and Ernest silt loam, moderately eroded. These are shallow to deep, moderately well- to well-drained soils.
Limitations and Hazards	Seasonal high water limits shoreline recreation expansion. Water seepage in the hillside adjacent to the easternmost restroom is an additional limitation to this site.
Land Use Classification	This area is classified as recreation.

RESOURCE DESCRIPTION 4.6-14
LAKE AREA - PENNSYLVANIA

Size	2,147 acres
Location and Access	The Lake area comprises the entire lake surface within Pennsylvania borders, including those lands below the maximum conservation pool exposed during draw down. Because of the public roads that encircle much of the Lake, the Pennsylvania portion of the lake is accessible from numerous locations around the shoreline.
Site Use	The project is essentially used for storage of water as a flood control measure and for regulation of downstream flows. The lake surface also serves as a recreation resource. Recreation uses on the lake include boating, fishing, swimming, and water-skiing. The lake is leased to the Pennsylvania Fish and Boat Commission (PFBC) for public recreation and licensed for fish management. The PFBC and the USACE Park Rangers patrol the lake and enforce their own regulations.
Adjacent Land Use	Several other areas border the Lake. Management of the Lake surface fringe must be consistent and compatible with resource use objectives for adjacent lands. Although the property bordering the lake was purchased for operation of the project, these areas are also used for other purposes such as wildlife management and recreation.
Soils/Landform	The lake bottom, portions of which become exposed during winter draw down and periods of drought, consists of gently sloping to steep lower slopes.
Limitations and Hazards	Seasonal low-water elevations effectively narrow the width of the lake and limit water-based recreation.
Land Use Classification	The zoning plan for the Lake surface incorporates several areas of the lake where boating activities are regulated to protect the public by minimizing boating conflicts. Several areas are affected by these regulations - the area within 600 feet of the dam, which totally prohibits any boating activity; the recreational areas in the coves such as Jockey Hollow; the cove where the Reason Run tributary enters the lake; and Tub Run. To reduce boater conflicts in the area of the marina on the south side of the U.S. 40 Bridge, a no-wake zone is recommended that extends from the U.S. 40 bridge, upstream to the southern extent of the Somerfield area. This no-wake zone would extend the entire width of the Lake.

5.0 WATER RESOURCES

5.1 MAJOR TRIBUTARIES

There are some 32 named tributaries within the Middle Youghiogheny River Corridor. Due to the nature of the topography of the Corridor, numerous small, unnamed water sources also feed the River. Some of the major tributaries are extremely steep, with an average slope from two to seven times that of the main channel. Figure 9 displays the name and location of the major tributaries to the Middle Youghiogheny River.

Appendix C provides comprehensive data for the streams located in the Middle Youghiogheny River Basin. Figure 10 provides a geographical survey of the individual watersheds that comprise the Middle Youghiogheny River Watershed. Figure 11 displays visually the size in square miles of each of the watersheds in the Corridor.

Several tributaries of the Middle Youghiogheny River are of such quality that they need to receive special protection. Table 5-1 is a list of the Chapter 93 protected streams within the Corridor.

5.2 WETLANDS

Wetlands are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (PADEP Fact Sheet, 1993).

Wet environments, together with large quantities of nutrients, often result in an abundance of vegetation. This mass of plant material traps the sun's energy and is a driving force in the wetland. Due to their great productivity, wetlands are rich with bio-diversity. Wetlands function to improve water quality, which adds to a healthy environment. They also help control flooding and assist in purifying water.

Several types of wetlands have been described by biologists, based on their vegetation. They include:

- Forested Wetlands – Wet habitats where large woody trees, such as red or silver maple, river birch, and green ash are found.

- Scrub-shrub Wetlands – Inhabited by spicebush, swamp honeysuckle, highbush blueberry, winterberry, alder, and willows. This type of wetland is also dominated by small trees less than 20 feet in height.

- Emergent Wetlands – Vegetated by grasses, sedges, rushes, and other herbaceous plants that emerge from the water or soil surface. Emergent wetlands are only about a third as abundant as forested, and only half as common as the scrub-shrub wetlands.

An important function of the wetlands in the Corridor is habitat for wildlife. The wetlands in the Corridor also are spawning and nursery grounds for various species of aquatic life. Most fresh water fish feed in wetlands or upon food produced in wetlands.

From a socio-economic view, the wetlands in the Corridor function to protect land and property from flood and storm damage. The rise and fall of water levels along rivers with neighboring wetlands is more gradual than what occurs when no wetlands are present. Water-purifying and damage-reducing values of wetlands can save communities thousands of dollars.

Wetland vegetation slows down or temporarily stops the movement of water as it travels through wetlands. This causes soil (silt), carried in the water from erosion and runoff, to settle. Wetlands are being used as an effective tool against acid mine drainage. They function to filter and buffer metal-ladened acid water, altering its chemistry (pH) and removing toxins such as iron and aluminum (PADEP Fact Sheet, 1993).

The steep topography that generally surrounds the Corridor precludes the establishment of large areas of wetlands. However, some wetlands have developed at or near the

mouths of several tributaries to the Youghiogheny River Lake. For example, at least some of the areas identified as floodplain woodlands would be considered wetlands.

National Wetland Inventory maps, developed by the U.S. Fish and Wildlife Service, provide a rough measure of the extent of wetlands at the Youghiogheny River Lake. The maps identify limited palustrine wetlands in the lower valleys of Braddock Run, Mill Run, Buffalo Run, Reason Run, and Wilkins Hollow and along the floodplain terraces of the Youghiogheny River west and south of Selbysport.

Depending on the plant species composition and structure, wetlands often serve as a preferred habitat for nesting, cover, and foraging for a variety of game and non-game animals. During periods of high water, the permanent vegetation of wetlands can also serve as important fish spawning habitats.

Wetlands are outstanding relative to other vegetation cover types because regulations that prohibit their degradation. Physical disturbance of regulated wetlands, requires a permit from the USACE under Section 404 of the Clean Water Act and from state agencies under their respective wetland protection laws (Youghiogheny River Lake Master Plan-Draft Report, 1999). Table 5-2 gives a listing and reference legend for the types of wetlands found in the Middle Youghiogheny River Corridor.

5.3 FLOODPLAINS

The nature of the steep valley walls helps in the protection of large spread flooding in the Corridor. Conversely, flooding that does occur in the Corridor's valleys are highly concentrated in the flood prone areas. For the most part, flooding is concentrated between narrow regions of the River valley. Furthermore, in the Corridor, areas around tributary valleys and sharp river bends are prone to flooding. Figure 12 provides a summary of the floodplains contained within the Middle Youghiogheny River Corridor. Table 5-3 provides summary listing of the flood prone areas along the Middle Youghiogheny River Corridor.

5.4 LAKES AND PONDS

Lakes and Ponds Found within the Corridor include the following:

- Youghiogheny River Lake;
- Deer Lake;
- Russell Lake;
- Peters Lake;
- Oak Lake;
- Alanconnie Lake;
- Surprise Lake;
- Bluegill Pond;
- Mill Run Reservoir;
- Cranberry Glade Lake;
- Foleys Dam; and
- McGowans Lake.

5.5 WATER QUALITY

5.5.1 Monitoring

Throughout recent times, water quality monitoring studies have been implemented on the Middle Youghiogheny River and its tributaries. Unfortunately, most of these studies have been discontinued for several years and other studies were not comprehensive or not maintained long enough to document any tangible results.

The USACE has conducted the most consistent and long-term monitoring of the Youghiogheny River and the Youghiogheny River Lake. The USACE has focused mainly on the Youghiogheny River Lake, but does maintain several stations along the Middle Youghiogheny River in the Corridor. In addition, the USGS maintains real time river flow gauges in the Corridor.

The USGS and the Pennsylvania Department of Environmental Protection have also conducted monitoring studies in the past, but these studies were conducted on a small scale and for a short period of time. These studies were usually undertaken for a specific project.

For the purposes of Fisheries Management, the PA Fish and Boat Commission has conducted biological studies for portions of the Middle Youghiogheny River. The last known update was conducted in 1994.

A major shortage of water quality and biological survey data exists for the Middle Youghiogheny River and especially many of its tributaries. This lack of data are hindering the ability of interested local groups and governmental agencies to accurately categorize and identify specific remediation projects necessary for the protection of the water quality in the Corridor. A Scientific and long-term monitoring program is necessary to fully understand the impacts of pollution sources on the Middle Youghiogheny River and its tributaries.

As more current scientific monitoring data become available, a better understanding of the impacts caused by development and other activities will be obtained. ***Appendix D*** is an inventory of all known historic and current monitoring locations in the Corridor. Figure 13 displays the locations of the initial CRTU monitoring stations.

5.5.2 Quality

Historic land uses throughout the basin were concentrated almost exclusively on resource extraction. The Youghiogheny basin was recognized for its coal resources as early as 1770. During the period between 1860 and 1919 the region grew to become among the world leaders in the mining of bituminous coal and coking. The coal industry was benefited by the navigational abilities of the River. Navigation of the Youghiogheny River allowed for increases in trade and travel. Around the early 1800's coke was floated by barge down the Youghiogheny River to the Monongahela River and down to Pittsburgh.

As a result of intense resource extraction, the most serious water quality problem in the Youghiogheny River Valley has been Acid Mind Drainage (AMD). The most significant source of AMD in the Corridor is the Casselman River. The Casselman River enters the Youghiogheny River about 1.2 miles downstream of the Youghiogheny River Lake Dam.

Intense research and remediation efforts on the part of federal, state, and local governments as well as public and private watershed groups have resulted in significant improvements in water quality throughout the basin. Compared to the historically noted degraded condition of the water in the Corridor, today the water is in relatively good condition. On the other hand the Middle Youghiogheny River is a very fragile system due to the lack of a buffering capacity. Efforts must be directed at improving and protecting the quality of the water in the Corridor. The waters of the Corridor must be safeguarded against all potential threats, whether they are identified presently or not. All potential scenarios and actions that could lead to the degradation of the water resources in the Corridor must be considered and protected against. ***Appendix E*** provides Water Quality Data for the Corridor.

5.5.3 Point Source Discharge

Among the responsibilities facing local municipalities is the issue of providing safe and adequate sewage disposal for citizens as required by Act 537, Pennsylvania's Sewage Facilities Act.

Over the years, development in Pennsylvania has moved from the inner city to the suburbs to the rural areas, thereby creating new urban/suburban centers along the way. The population density of built-up areas made the use of large collection and treatment systems cost-effective. As new suburban areas grew, onlot sewage systems were used until population densities economically justified connection to central sewer systems.

As population densities increased, municipalities were forced to install new collection and treatment systems to replace crowded onlot systems; federal grant programs encouraged this process.

Residential development continued beyond the limits of existing central sewage systems and generally relied on small community treatment systems or onlot sewage systems. A historical lack of system design and installation standards and maintenance practices has resulted in a high percentage of system malfunctions, requiring immediate repair by connecting to community or shared treatment systems.

Developers who turned over the responsibility for operation and maintenance to local governments often built such shared systems. As these systems aged or were poorly maintained, severe water quality problems occurred, and as a result, state government developed legislation to tighten up permit issuance for these systems.

Before passage of the Sewage Facilities Act in 1966, sewage systems were built with minimal consideration for the science of sewage disposal. A septic tank was considered a highly effective treatment devise, and as long as the wastewater was disposed of, development continued.

5.5.3.1 Pennsylvania Sewage Facilities Act 537

The Pennsylvania Sewage Facilities Act (Act 537) provides for the planning and regulation of onlot sewage disposal systems. The Act forced municipalities to plan for the orderly provision of sewage services by recognizing and planning for central sewage collection and disposal facilities for built-up areas. The Act also designated areas where sewage disposal could be handled by onlot sewage systems.

The main purpose of a municipality's official sewage plan is to protect the health, safety, and welfare of its residents by preventing future problems and addressing existing problems with overloaded treatment plants, malfunctioning onlot sewage systems, and wildcat sewers. Untreated or improperly treated sewage in surface water, on the surface of the ground, or in the groundwater allows disease organisms to reach people through direct contact.

Some municipalities employ Sewage Enforcement Officers (SEOs), who are certified by the state to issue sewage permits in accordance with construction and permitting standards set by the State. The Sewage Facilities Act requires each municipality, either separately or jointly, to develop and maintain an official sewage plan that addresses the present and future sewage disposal needs of its residents.

The sewage disposal needs cover a broad range and include central sewerage and onlot sewage disposal systems. Individual municipalities or groups of municipalities prepare plans to describe the sewage disposal methods used by existing development within their

borders and the methods proposed for use in areas not yet developed. Act 537 establishes the requirements for these plans and allows for reimbursement of up to 50 percent of the eligible costs incurred in preparing the plans.

5.5.3.2 Trends With Act 537

Since Act 537 was enacted, growth patterns and sewage needs in Pennsylvania's municipalities have changed. Some municipalities have kept pace with the need for adequate sewage facilities, while others have critical needs for repairing existing systems and adding new public treatment systems. New development has increased pressure for new or expanded public sewage treatment facilities, increased the use of onlot sewage disposal systems and privately owned treatment facilities, and caused overloads to existing central sewerage facilities. Many municipalities have reacted to these changes by revising their official sewage plans several times since the original plan was completed, resulting in new or improved sewage facilities to meet the needs of the municipality.

Municipal officials may find it necessary to update their official sewage plan because it is out-of-date, cannot be completed, is inconsistent with other municipal planning, or does not provide adequate solutions to resolve existing sewage problems or provide for growth. Municipalities may be ordered to update their official sewage plans when the Department determines that the existing plan does not adequately meet the sewage disposal needs of the municipality.

Development and implementation of plans for the sanitary disposal of sewage can be very effective in resolving existing problems that threaten public health. Such planning is also required before funding, permitting, and construction of new or improved sewage treatment and disposal systems can begin.

Another critical purpose of the official sewage plan is to help protect both the groundwater and surface waters of the commonwealth. All citizens of Pennsylvania are guaranteed clean water by the State Constitution.

A less obvious but equally important purpose of the official sewage plan is to prevent future sewage-related problems from occurring. Where official sewage plans are consistent with land-use planning, zoning, and other municipal planning, municipal officials are able to direct new land development to areas where adequate sewage facilities are now or will be available. Ideally, planning provides for sewer lines to be extended in a planned manner, treatment plants to be upgraded as planned, and onlot sewage systems to be installed in suitable soils and maintained through municipal sewage management programs.

Municipalities now face sewage related problems on a scale never before realized. The need for sewage planning in these areas is becoming far more commonplace, and the number of onlot sewage disposal systems is increasing. Over the years, many small subdivisions, village crossroads, and single-family lots have used onlot sewage disposal systems. Prior to Act 537, many of these homes would have been served by small septic tanks connected to wildcat sewers that discharged to gullies and small streams, sewer lines from homes directly into pits or dry wells, or septic tanks with an insufficient amount of subsurface drainage area. Such systems are now causing or soon will cause stream and groundwater pollution, ponding of liquid waste material in backyards, and discharges to road culverts (Managing Onlot Sewage Disposal Systems, 1998).

5.5.4 Sewage Disposal

Each Municipality was asked to respond regarding their individual sewage concerns as part of this Plan. The following is based on the returned responses:

5.5.4.1 Connellsville/Wharton Townships

From information obtained from the PA DEP, the following two townships have recently updated their ACT 537 plans.

Connellsville Township – updated 1996
Wharton Township – updated 1995

5.5.4.2 Ohiopyle Borough

The Borough has recently been awarded a grant to improve and enlarge their sewage treatment facilities. Work has begun on this system. This should significantly decrease the potential for discharge of sewage pollution from Ohiopyle Borough into the Youghiogheny River.

5.5.4.3 Dunbar Township and Dunbar Borough

Currently there is no official sewage treatment. A majority of the sewage is treated in septic tank systems. It has been reported that a vast majority of the sewage runs directly into the Middle Youghiogheny River.

These two Municipalities have initiated preliminary planning for two sewage collection and treatment projects that directly impact the Youghiogheny River.

The envisioned goal for the Route 119 Corridor is to provide public sewage facilities to facilities along the Route. Presently untreated sewage is channeled through open ditches and wildcat sewers, which discharges to Dunbar Creek. It discharges near its confluence with the Youghiogheny River near the bike trail.

The Village of Liberty and Dickerson Run are located directly adjacent to the bike trail and the Youghiogheny River. These areas are part of the Yough Sewage Authority's district. The Authority has initial planning for an upgraded ACT 537 plan.

The projects call for approximately 70,000 feet of sewage lines and would encompass about 1,050 customers with the ability to cover another 300 more.

5.5.4.4 South Connellsville

No Official Response.

Citizens who are familiar with the South Connellsville area have stated that the sewage and stormwater runoff systems are inadequate and are in need of upgrading.

5.5.4.5 Stewart Township

No Response.

5.5.4.6 Connellsville Township

No Response.

5.5.4.7 Springfield Township

Only a small number of residents live within the limits of Springfield Township. The residents use septic systems as a means of sewage treatment.

5.5.4.8 Confluence Borough

Confluence has combined sewage and storm runoff sewers. During dry periods, the sewage plant can handle the incoming flow; there is no overflow into the Youghiogheny River. However, during wet periods there is a bypass of the treatment plant and combined sewage and stormwater pollution enters the Middle Youghiogheny River.

The maximum capacity for the system currently being used is 137,000 gpd. It is reported that the daily average dry period load is 70,000 gpd

The DEP has contacted Confluence Borough about falling behind in their sewer system work required by the Corrective Action Plan approved September 24, 1997. The DEP is currently forcing an improvement project for the treatment plant and the sewer system in Confluence. The upgrades are currently being worked on and are scheduled to be complete in December 2000.

Currently the DEP has mandated a tap restriction for Confluence. The DEP has also suggested that Confluence take on sewage from portions of: Addision, Urisa, Lower Turkeyfoot and Suttersville Camp.

5.5.5 Non-Point Source Discharge

Non-point source (NPS) pollution, unlike point source pollution from industrial and sewage treatment plants, comes from many diffuse sources. Rainfall or snowmelt moving over and through the ground causes NPS pollution. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even our underground sources of drinking water. These pollutants include:

- Excess fertilizers, herbicides, and insecticides from agricultural lands and residential areas;
- Oil, grease, and toxic chemicals from urban runoff;
- Sediment from improperly managed construction sites, crop and forest lands, and eroding stream banks;
- Salt from irrigation practices and acid drainage from abandoned mines;
- Bacteria and nutrients from livestock, pet wastes, and faulty septic systems; and
- Atmospheric deposition and hydromodification.

To a certain extent, all of these pollutants and sources can be found in the Corridor. Most attention in the Corridor is given to the identification and remediation of point source pollutants. The identification and management of all point and non-point pollution sources in the Corridor will be needed to improve and maintain the quality of the water resources in the Corridor. This also involves the proper managing of sources present currently and those projected in the future.

States report that NPS pollution is the leading cause of water quality problems. The effects of NPS pollutants on specific waters vary and may not always be fully assessed. However, these pollutants have harmful effects on drinking water supplies, recreation, fisheries, and wildlife.

It takes a concerted effort to reduce and prevent NPS pollution. Some activities are federal responsibilities, such as ensuring that federal lands are properly managed to reduce soil erosion. Some are state responsibilities, for example, developing legislation to govern mining and logging, and to protect groundwater. Others are best handled locally,

such as by zoning or erosion control ordinances (EPA Pollution Brochure, 841-F-94-005, 1994).

The following is a partial list of detention and control methods that could be utilized in storm water management systems:

- Porous pavement and concrete lattice block surfaces;
- Grassed channels and vegetated strips;
- Detention basins;
- Parking lot and street ponding;
- Roof-top storage;
- Seepage pits or trenches;
- Cisterns and underground reservoirs;
- Decrease impervious coverage, and
- Route flow over grass.

(PADEP Dams and Waterway Management Fact Sheet, 1984).

5.5.5.1 NPDES Permits

The Federal Clean Water Act and the Pennsylvania Clean Streams Law require wastewater dischargers to have a permit establishing pollution limits, and specifying monitoring and reporting requirements. National Pollutant Discharge Elimination System (NPDES) permits regulate household and industrial wastes that are collected in sewers and treated at municipal wastewater treatment plants. Permits also regulate industrial point sources and concentrated animal feeding operations that discharge into other wastewater collection systems, or that discharge directly into receiving waters. More than 200,000 sources are regulated by NPDES permits nationwide.

NPDES permits regulate discharges with two goals: protecting public health and aquatic life, and assuring that every facility treats wastewater. To achieve these ends, NPDES permits include the following terms and conditions:

- Site-specific discharge (or effluent) limits;

- Standard and site-specific management, compliance monitoring and reporting requirements; and

- When and if regulated facilities fail to comply with the provisions of their permits, they may be subject to enforcement actions. DEP and EPA use a variety of techniques to monitor permittees' compliance status, including on-site inspections and review of data submitted by permittees. Technical assistance is also available to facilities struggling with NPDES compliance.

The NPDES permit is generally valid for a period of five years. Applications for renewal of NPDES permits must be submitted at least 180 days prior to the expiration of the current facility permit. Applications for NPDES permits can be obtained from DEP regional offices or obtained electronically.

Owners, operators and local officials affiliated with treatment facilities become familiar with their facility's NPDES permit. The NPDES permit has reporting and notification requirements including a requirement to file a monthly discharge monitoring report (DMR). They can refer to the permit for requirements specific to the site. The NPDES permit spells out in detail the duties and responsibilities for proper operation of a wastewater treatment system. Table 5-4 is a listing of all known NPDES permits found in the Middle Youghiogheny River Corridor.

5.5.5.2 Regulated Pollutants

Conventional pollutants are contained in the sanitary wastes of households, businesses, and industries. These pollutants include human wastes, ground-up food from sink disposals, and laundry and bath waters. Conventional pollutants include:

- Fecal Coliform - These bacteria are found in the digestive tracts of humans and animals; their presence in water indicates the potential presence of pathogenic organisms.

- Oil and Grease - These organic substances may include hydrocarbons, fats, oils, waxes, and high-molecular fatty acids. Oil and grease may produce sludge solids that are difficult to process.

- Toxic pollutants are particularly harmful to animal or plant life. They are primarily grouped into organics (including pesticides, solvents, polychlorinated biphenyls (PCBs), and dioxins) and metals (including lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium).

- Nonconventional pollutants are any additional substances that are not conventional or toxic that may require regulation. These include nutrients such as nitrogen and phosphorus. (PA DEP Internet Site).

5.5.5.3 Non-Complying Waters

Under Section 303(d) of the Clean Water Act, each State must prepare a list of waters that are not meeting their water quality standards. These lists are required to be submitted to EPA for review and approval every April of even years (e.g. 1996, 1998). Total Maximum Daily Loads (TMDLs) should then be established from the most recently approved list.

These waters were identified from the DEP's ongoing program to assess the quality of waters in Pennsylvania. Water quality standards are uses that waters can support, such as fishing and swimming, and the criteria established to protect those uses. Waterbodies that do not meet water quality standards are identified as impaired. All impaired waters are described in the 305(b) report that is required by the federal Clean Water Act.

Waters that would still be impaired even after required treatment technology is applied to discharges, must be included on the 303(d) list of impaired waters. The 303(d) list must also include the reason for impairment, such as point source pollution from industrial or sewage discharges or non-point sources like abandoned mine lands or agricultural runoff. Once the EPA approves the list, the DEP will develop TMDLs for the listed waters.

5.5.6 Total Maximum Daily Load (TMDL)

A TMDL identifies allowable pollutant loads to a waterbody from both point and non-point sources that will prevent a violation of water quality standards. TMDLs are used as the basis for setting NPDES permit effluent limitations, and identify where best management practices for non-point sources are necessary to improve and protect water quality. Table 5-5 is a listing of all the known 303 (d) listed waters for the Region.

The TMDL is the amount of a particular pollutant that a particular stream, lake, estuary or other waterbody can 'handle' without violating state water quality standards. Once a TMDL is established, responsibility for reducing pollution among both point sources (pipes) and diffuse sources is assigned. Diffuse sources include, but are not limited to run-off (urban, agricultural, forestry, etc.), leaking underground storage tanks, unconfined aquifers, septic systems, stream channel alteration, and damage to a riparian area.

Ultimately the responsibility for reducing pollution lies with everyone who lives, works, or plays in a watershed that drains into an impaired waterbody. However, according the Clean Water Act, the EPA is responsible if the states forgo their responsibility.

The TMDL process includes the following steps:

- Identify waters that do not meet water quality standards. In this process, the state identifies the particular pollutant(s) causing the water not to meet standards.

- Prioritize waters that do not meet standards for TMDL development (for example, waters with high naturally occurring "pollution" will fall to the bottom of the list).

- Establish TMDLs (set the amount of pollutant that needs to be reduced and assign responsibilities) for priority waters to meet state water quality standards. A

separate TMDL is set to address each pollutant with concentrations over the standards.

- Strategize to reduce pollution and assess progress made during implementation of the strategy. This is the time when a watershed partnership most likely will want to get involved. If the partnership has already developed a plan of action, it should be shared with the state. In fact, several states have incorporated watershed partnership plans in the state's strategy for specific TMDLs.

5.6 Water Supply

The main source of water for the communities along the Corridor comes from The Youghiogheny River. Other sources of water throughout the Corridor are drilled wells, dug wells, springs, and storage reservoirs. Rural residents use wells and springs.

Municipal water supplies are also derived from storage reservoirs and are supplemented by wells. Ground water yields from wells are most productive in sandstone formations. Ground water yield in shale formations is not generally high, except where joints and bedding planes are prevalent. Limestone formations are not important producers of ground water, but yields are high in a few wells and springs.

5.6.1 Water Uses

The Youghiogheny River supplies water to many communities along its route. The Youghiogheny River Lake helps to maintain this supply, and it is an integral part of the Ohio River flood control system. Water supplies are generally sufficient for the people in the region.

The areas of primary concern to the water users of the Middle Youghiogheny River and the Youghiogheny River Lake are:

- Flood Control;
- Water quality;
- Hydropower;
- Potable water supply;

- White-water rafting; and
- Lake boating.

5.7 YOUGHIOGHENY RIVER CHARACTERISTICS

The portion of the Youghiogheny River investigated in this report, the Middle Youghiogheny River, flows northwestward in a winding fashion for 39 miles and makes up a portion of the border between Somerset and Fayette Counties. The Middle Youghiogheny River continues to flow through Fayette County. As it enters Ohiopyle State Park, it drops about 10 feet per mile. Below the Falls at Ohiopyle, is a gorge that becomes narrower and the gradient of the River steepens to 80 feet in 1.3 miles. For another 9 miles, the Middle Youghiogheny River is rapid and is an excellent white water area for rafts and kayaks. A rail line parallels the River and is used on a regular basis.

The riverbed is gravel, sand, and slab rock with boulders protruding above the surface. The Youghiogheny River water is not of the best quality, but has been improving through the years. The Middle Youghiogheny River receives a majority of its pollutants from Acid Mine Drainage (AMD) and inadequately treated sewage discharging directly to it and its tributaries.

It must be noted that the water resources in the Corridor are being polluted from sources other than AMD and Sewage; sources such as agricultural runoff, farmland runoff, sedimentation, to name only a few. All present pollutants and those that could develop in the future will affect the quality of the water resources in the Corridor.

A natural advantage of the Middle Youghiogheny River is its ability to prevent undue damage to the environment. Most significant among these factors is the predominant rock embankment along most of the Middle Youghiogheny River. These granite and sandstone boulders afford numerous hard-based usage points along the River as well as a protective base and enclosures for small sandy beaches.

The flow of the Youghiogheny River is regulated initially by the Deep Creek Hydroelectric project located in western Maryland and then by the Youghiogheny River

Lake located approximately one mile upstream from Confluence, Pennsylvania (USACE Report, 1978).

5.8 YOUGHIOGHENY LAKE CHARACTERISTICS

The Youghiogheny River Lake project was authorized under the Flood Control Act of June 28, 1938 (P.L. 75-761). It was constructed for the authorized purposes of flood stage reduction in the Youghiogheny and lower Monongahela Rivers, and low flow augmentation for water quality control. Fish and Wildlife Conservation was authorized as a project purpose by the Fish and Wildlife Coordination Act of 1958. Recreation was authorized in accordance with the 1988 Water Resources Development Act, and includes both lake and river activities. Hydroelectric power facilities were completed in 1989, becoming an integral feature of this project.

The Lake is called upon to serve a variety of often-conflicting purposes. It is important to remember that only the initial purposes of flood control and low flow augmentation for water quality have storage allocated, and therefore, all other water uses are subordinate to these. Water can be stored or released for other uses only if there is no significant adverse impact on the purposes for which storage is allocated.

During the last decade, a dramatic shift in the commercial-industrial mix and the demographics of the region has taken place. The region has lost a significant portion of its heavy industry that once dominated the employment base. This loss of heavy industry, as well as a reduction in the severity of acid mine pollution from tributary streams, has reduced the pollution load of the Youghiogheny River. Consequently, the original, authorized storage and release schedule for Youghiogheny River Lake, which focused on low flow augmentation for water quality control, may now be modified to meet these shifts in the region's industry and demographics. This modification can only occur if there is no appreciable adverse effect to the water quality of the Youghiogheny River.

Two large Public water supply systems serve the study area. These systems, the Municipal Authorities of Westmoreland County (MAWC) and North Fayette County, depend upon withdrawals downstream of the Youghiogheny Dam. Both water purveyors

have water allocation permits issued in 1979 by the Pennsylvania Department of Natural Resources (PA DER). MAWC is permitted to withdraw up to 39 million gallons per day and North Fayette County is permitted to withdraw 11.9 million gallons per day.

In May 1983, PADER revised the conditions of the MAWC's permit to assure that the demands of water quality, recreation, and the projected increases in residential water usage would be met. This revision outlined the procedure to be followed whenever the permittee exceeded their authorized withdrawal. Included in this revision were sources of additional storage, including the acquisition of storage from Youghiogheny River Lake.

Youghiogheny River Lake is considered a fragile system because of very low alkalinity, which causes a low level of productivity and slow growth rates in fish and is caused by the lack of limestone in the basin. The Lake has a mean alkalinity level of 9 mg/l. A level of 20 mg/l is the minimum necessary for an aquatic system to be considered productive and fertile. A level of 10 mg/l is considered acid sensitive.

Since 1982 there has been a marked decrease in mine drainage into the Youghiogheny system which has lead to a slight improvement in the fertility of the Lake.

In spite of these limitations, the Youghiogheny River Lake provides a high quality sport fishery, which includes trout, walleye, northern pike, yellow perch, rock bass, and both smallmouth and largemouth bass. It is the only two-story trout fishery in southwestern Pennsylvania managed by the Pennsylvania Fish and Boat Commission by stocking with fingerling trout. It is one of only six lakes in Pennsylvania, and the only one in the southwestern region, with a naturally reproducing walleye fishery.

Essentially all of the storage in the Youghiogheny River Lake is dedicated for water quality. AMD from bituminous coal mines has been the most serious water quality problem in the basin, and therefore has been the principle target of water quality operations at Youghiogheny River Lake (USACE Report, 1978).

5.9 RE-ALLOCATION PROJECT

The USACE Pittsburgh District, is presently studying current water usage and quality demands in the Youghiogheny River basin, and is contrasting these demands with the existing operating rules for the Youghiogheny River Lake. This study is being conducted in response to the Fiscal Year 1996 Energy and Water Development Appropriations Act. It is authorized by Section 216, Public Law (P.L.) 91-611, of the Flood Control Act of 1970.

Before going into the details of this specific investigation, it is appropriate to understand the purpose of a "Reconnaissance Study" and a "Feasibility Study" as conducted by the USACE.

5.9.1 Reconnaissance Study

A Reconnaissance Study is conducted to prove that there is a "Federal Interest"; a solution or scenario that will meet the goals of the specific study economically, and fall within the guidelines of Federally Appropriated Funding. Complete analyses that optimize every possible scenario are not necessary. Reconnaissance Studies are 100 percent federally funded.

5.9.2 Feasibility Study

After the favorable completion of a Reconnaissance Study, the USACE can initiate the next, and usually, final investigation, know as a Feasibility Study. It is here that the study becomes rather complex, analyzing and optimizing many possible solutions until an optimal answer is obtained. Feasibility Studies are cost shared, with a Local Sponsor contributing 50 percent of the total cost, and the Federal Government matching the local contribution. Feasibility Studies cannot be initiated without a "Letter of Intent" from a local sponsor, which must detail their willingness to cost share.

Feasibility studies look at all impacts of the proposed reallocation, to optimize changes, and assuring that the final product is as complete as it can reasonably be.

5.9.3 Interests

The MAWC has on numerous occasions expressed a desire to provide both technical and financial support for this study. To confirm their (MAWC) support, they have provided the District with a Letter of Intent to act as the non-Federal local sponsor for the Feasibility Study. The original letter is dated November 18, 1993 and is on file in the Planning Division of the Pittsburgh District USACE.

5.9.4 METHODOLOGY

In the Reconnaissance Study, water currently stored in Youghiogheny River Lake for release as low-flow augmentation was redistributed by modeling a revised reservoir release schedule. A numerical model was applied to the revised schedule to quantify changes that may have an adverse effect on the Project's authorized purposes. The revised model released more water during dry meteorological conditions, and released less water during average and wet periods.

The Feasibility Study was scheduled to commence in March of 1999. There are many aspects that must be investigated prior to the formulation of a final revised release schedule.

5.9.5 POTENTIAL IMPACT

Preliminary examination of the water quality modeling results and the user profile of the Lake indicate that changes to the Project's current release and drawdown schedules have the potential to adversely impact many significant environmental resources. These resources include those associated with the Lake, the river downstream of the Lake and the lower Monongahela and Upper Ohio Rivers. Areas of concern are:

- Chemical and physical water quality parameters, especially acidity related to acid mine drainage;
- Aquatic biological productivity and associated sport fisheries;
- Ohiopyle State Park;
- Recreational activities;
- Special concern species and associated habitats; and

- Fish and wildlife habitat.

The reservoir simulation model indicates that the change in the release schedule, (an additional 25 cfs over approximately 75 days per year to downstream water supply users), does not appear to involve significant changes in the hydrology of the River. For this simulation exercise, this supplemental flow was selected since it will provide the minimum additional water quality for MAWC to fully satisfy its demand while remaining in compliance with PADEP permit requirements.

Similarly, the dissolved oxygen models indicate no significant impact under reasonable release schedule changes. The water quality modeling parameters were tested against data for two years; 1991, a drought year, and 1992 an average "wet" year.

The temperature parameters tested in the water quality model indicate the potential for a slight temperature increase for the River downstream of the dam during dry summers, which could adversely impact the cool/cold-water fisheries along the Youghiogheny River. This is more significant with releases made to satisfy the commercial whitewater rafting industry. A minimum of 800-cfs flow during the late summer/early fall would result in slightly decreased downstream temperatures and slightly cooler Lake temperature. Testing the temperature parameters against a larger database is necessary to accurately predict the effects of any release schedule changes.

Any water management and reallocation proposal will only affect the way water is released from the reservoir, and it is unlikely to have any potential impact on cultural resources. Such a change probably would not be considered an undertaking under Section 106 of the National Historic Preservation Act.

5.9.6 ENVIRONMENTAL CONCLUSION

There is potential for the reallocation study to impact several significant resources in the Lake and the River. While the modeling efforts conducted as part of these Reconnaissance Study address some of these impacts, more intensive modeling, particularly for impacts on temperature and acid mine drainage are warranted for the feasibility phase of this project. Further, the effects of dam release schedule changes on

periodicity, velocity, intensity and duration of extreme flows, recreation and any existing wetlands around the Lake must be addressed adequately in order to receive continued support from the environmental resources agencies.

The results of model studies indicate that the proposal to modify operations at Youghiogheny River Lake to accommodate water supply storage could be implemented without compromising the authorized water quality operation of the project.

The only potential significant adverse impact identified from the one selected operational scenario tested during this Reconnaissance Study was a warming of the River downstream of the dam. The summer season discharge from the dam would actually be cooler under the revised schedule scenario during most years.

Despite the cooler discharge, a decrease in the volume of cool releases would tend to result in some summer warming of the Youghiogheny River downstream of the confluence of the Casselman River. This warming influence could result in water temperature marginalization of some portion of the lower part of the 29-mile reach of the river classified as "approved trout waters" by the PFBC. Any losses in the tailwater trout fishery would be offset to some degree by benefits to the lake fishery managed by both Pennsylvania and Maryland.

The PFBC has suggested several ways of improving the overall ecological health and productivity of the Youghiogheny River Lake and the River downstream. Maintaining a stable pool in the Lake during the spring spawning season would likely lead to healthier and larger fish populations.

The PFBC is currently conducting a study that addresses a decompression problem noted for walleye and alewife passing through the USACE gates.

An increase in primary biological productivity in the Lake would be expected to occur as a result of longer summer retention times. This would also help maintain the critical dissolved oxygen and temperature criteria for the two-story trout fishery during drier years. Increasing productivity in the lake will in turn, increase productivity in the river.

Maintaining adequate flow in the River during the late summer/early fall is crucial to supporting the fisheries noted above. It should also be noted that the flow regime that would result from the proposed schedule change would not increase the downstream stage by more than one-inch, and would thus reduce stage variability in the fall. In effect, this should reduce the potential for scouring of sensitive shoreline habitat (rocky ledges and sand/gravel shorelines) (USACE Internet Site).

5.10 STREAM DESIGNATIONS

This Section lists the Stream Designations for streams in Fayette County and Somerset County. Streams called out in bold face letters are in the Corridor.

5.10.1 Fayette County

The following is a 2000 listing of streams with Approved Trout status for the region:

- Back Creek, Chaney Run, Dunlap Creek, Dunlap Creek Lake, **Dunbar Creek**, Georges Creek, **Indian Creek, Meadow Run, Mill Run - tributary to Indian Creek**, Mill Run - tributary to Quebec Run, Mountain Creek, Big Sandy Creek, Virgin Run Dam, **Youghiogheny River** .

The following is a 2000 listing of the steams with Special Designations in the Corridor:

- **Delayed Harvest Fly Fishing Only**
  Dunbar Creek: 1 mile; From the confluence of Glade Run and Dunbar Creek downstream to the stone quarry along S.R. 1055.

- **All Tackle Trophy Trout**
  Youghiogheny River - 3.5 miles - section from the confluence with Ramcat Run downstream to the pipeline crossing at the confluence with Lick Run.

- **Delayed Harvest Artificial Lures Only**
  Meadow Run - 1.7 miles; section from the confluence with Laurel Run downstream to the SR 0381 bridge.

5.10.2 Somerset County

The following is a 2000 listing of streams with Approved Trout status for the region:

- Allen Creek, Beaver Dam Creek, Beaverdam Run, Bens Creek, Bens Creek - South Fork, Breastwork Run, Brush Creek, **Casselman River**, Clear Shade Creek, Cub Run, Elk Lick Creek, Flaugherty Creek, Gladdens Run, Jones Mill Run, Juniata River - Raystown Branch, Kimberly Run, Kooser Lake, Kooser Run, **Laurel Hill Creek**, Laurel Hill Lake, Little Piney Creek, McClintock Run, Glade Run, Middle Creek, Miller Run, Piney Creek (Big), Piney Run, Shaffers Run. Stony Creek, **Tub Mill Run**, Whites Creek, Wills Creek, **Youghiogheny River** .

The following is a 2000 listing of the steams with Special Designations in the Corridor:

- **Delayed Harvest Fly Fishing Only**
  Clear Shade Creek - 1 Mile: From the cable at Windber Water Dam upstream.

- **Delayed Harvest Artificial Lures Only**
  Laurel Hill Cr. - 2.2 miles; From Laurel Hill State Park at B.S.A. Camp downstream to T-364. Laurel Hill Cr. - 1.2 miles; From the footbridge on the State Game Lands No.111 Road on Humbert Downstream to Paddytown Hollow Run.

- **All Tackle Trophy Trout**
  Youghiogheny River - 3.5 miles - section from the confluence with Ramcat Run downstream to the pipeline crossing at the confluence with Lick Run (DCNR Internet Site).

5.11 NATIONAL RECREATIONAL FISHERIES CONSERVATION PLAN

The basic objective of the National Recreational Fisheries Conservation Plan is closely aligned with the goals and guiding principles of the National Recreation Lakes Study Commission. The Commission was created in November 1996 with the passage of the

Omnibus and Public Land Management Act (P.L. 104-333). This legislation recognized that reservoirs and lakes created by federal dam projects, primarily for other purposes, have become powerful magnets for diverse and growing recreation activities. The Youghiogheny River Lake falls into this type of Lake.

The goals of the Commission include improving habitat for fish, increasing opportunities for the angler, educating the public about recreational fisheries programs, and developing partnerships to achieve these aims. These goals are all means of enhancing recreation and conserving the environment.

Congress has lent support to this initiative by adding $36 million to the FY 1999 budget to be spent over the next five years to develop public outreach plans to promote sportfishing and boating at federal lakes (Reservoirs of Opportunities, 1999). The steering committee supports the recommendations provided in this Federal Plan to increase recreational opportunities at federal lakes, like the Youghiogheny River Lake.

To receive a copy of this report write to:
National Recreation Lakes Study
1951 Constitution Avenue
Room 320 SIB
Washington, DC 20240

Or electronically: www.doi.gov/nrls.

5.12 FLOW GAUGE STATIONS

Table 5-6 provides information pertaining to the USGS real time flow data stations found with the Middle Youghiogheny River Corridor.

6.0 BIOLOGICAL RESOURCES

6.1 WILDLIFE

Numerous game and non-game wildlife species make the Middle Youghiogheny River Corridor their home. Species that can be found in the Corridor include squirrel, cottontail rabbits, muskrat, deer, quail, pheasants, dove, woodcock, grouse, wild turkey, wild duck, and many other non-game songbirds.

Within the Corridor, distinctions can be made between land that is open and land that is covered with forest, and the habitats each provides. Although a majority of the land in the Corridor is covered with forests some open spaces do exist. In areas where the land is open, wildlife consists of birds and mammals such as quail, pheasants, doves, woodcock, cottontail rabbits, meadowlarks, killdeer, and field sparrows usually found in crop fields, meadows, pastures, and all non-forested areas..

Where the land is covered with forest, common wildlife consists of grouse, wild turkey, deer, squirrel, wood thrushes, warblers, vireos, and bears (USDA Soil Survey, 1973 and 1983).

Wildlife found in the Corridor's wetlands include wild ducks, wild geese, rails, muskrat, beaver, and various types of waterfowl, such as wood ducks, mallards, and Canada Geese.

6.2 TERRESTRIAL

The vegetation along the Middle Youghiogheny River Corridor provides areas for nesting and food sources for a wide arrange of wildlife. Mammals such as white-tailed deer, gray/red/fox squirrels, rabbits, gray/red fox, raccoon, opossum, muskrat, beaver, and woodchuck populate the hills and valleys of the Corridor.

Ohiopyle State Park has been designated as an important bird area. The important bird areas initiative is a key component of the Comprehensive North American Bird

Conservation Plan now being developed under the Partners in Flight Umbrella. They bring together government agencies, conservation organizations, and private industry groups interested in the conservation of neo-tropical migrant songbirds.

Chestnut and Laurel Ridges together with the Youghiogheny River Corridor represent an important migratory and breeding Corridor. It represents a critical link between Pennsylvania's Allegheny Plateau and similar landforms stretching from upstate New York to Alabama. If this Corridor is degraded, populations of at least 15 bird species will be at risk, including the Chestnut-Sided and Magnolia Warbler.

During the past decade, breeding bird surveys conducted by over 2,000 birders across North America (100 of them in Pennsylvania) documented declines of many migratory species. Deep forest birds have been hindered because older forests have been cleared for development. Much of the remaining undeveloped land has been broken into small parcels, a process known as forest fragmentation. Although small woodlots may look like good habitats for forest birds, they are easily accessible to predators that destroy eggs and young, and to cowbirds which lay their eggs in the nests of other birds.

Throughout the Corridor, especially at the Youghiogheny River Lake, green heron, wood duck, and game birds such as wild turkey, ruffed grouse, and woodcock have been identified. Many songbirds are also present in the Corridor during their nesting season. Scarlet tanagers and other neotropical species are especially noticeable during migration and many remain to nest in the area.

In the early spring and fall, the Corridor attracts many species of migratory waterfowl. Birds of prey are also present, though not abundant, and may include osprey, kestrel, and various hawks and owls. Because the Corridor is located on the western slopes of the Allegheny Mountains, birds of prey heavily use the Corridor as a migration route.

Reptiles in the Corridor include wood turtle, snapping turtle, painted turtle, and 15 species of snakes including the venomous Northern copperhead and timber rattlesnake. Bull frogs, leopard frogs, and red-spotted newts are a few of the resident amphibians. Six species of salamanders have been identified in a variety of upland habitats (Youghiogheny River Lake Master Plan-Draft Report, 1999).

The connections between Chestnut Ridge, Laurel Ridge and the Middle Youghiogheny River Corridor have some of the highest concentrations of active Woodrat sites in the state.

Historically, a large array of bat species called the Middle Youghiogheny River Corridor their home. As mines closed, the number of bats in the region has declined. Fayette County has more active hibernating sites than any other county in the State. By finding and protecting hibernating sites, further declines of these important predators can be slowed (PA Game Commission, 1999).

6.3 AQUATIC

6.3.1 Middle Youghiogheny River

The cold water release from the Youghiogheny River Lake provides one of the best trout fisheries in the state. The Middle Youghiogheny River between Connellsville and Confluence and the outflow fishery located within a mile downstream of the Youghiogheny River Lake Dam are intensively managed by the Pennsylvania Fish and Boat Commission (PFBC). This cold water fishery stretch of the River is stocked throughout the year. In addition to the trout population, a good quality smallmouth bass fishery is also supported. At least ten percent of the fish in the Youghiogheny River are not native to the River. ***Appendix F*** provides a survey of aquatic data for the Middle Youghiogheny River Corridor.

6.3.2 Youghiogheny Lake

The Youghiogheny River Lake is home to a diverse fish population that includes small mouth bass, walleye, yellow perch, Northern Pike, tiger muskellunge, largemouth bass, rock bass, black crappie, brown trout, bluegill, brown bullhead, and channel catfish. The Lake also contains numerous species of forage fish, such as golden shiners, white suckers, Northern hogsuckers, carp, emerald shiner, and a variety of minnows. Alewife have been stocked in the Lake and has resulted in a emergent forage base.

Several rare or unusual insect species have been documented at the Youghiogheny River Lake including two species of caddis flies new to science, which were discovered in the tailrace in 1991. The Middle Youghiogheny River below the dam is noted for its year round trout fishing opportunities (Youghiogheny River Lake Master Plan-Draft Report, 1999).

6.3.3 Trout Nursery

The Chestnut Ridge Chapter of Trout unlimited, in partnership with the Pennsylvania Fish and Boat Commission, the USACE and D/R Hydro, Inc., has researched, designed, constructed, and put into operation the first Cage Culture location in Pennsylvania. A similar Cage Culture has been installed at the Jennings-Randolf Outflow Area of Maryland's Potomac River. It has been documented that this project has improved alkalinity levels, bio-diversity, fertility, and other water quality factors.

The Nursery has also increased recreational opportunities, improved awareness of the importance of high quality waterways, and systematic on site monitoring factors through the daily presence of volunteer nursery attendants. Furthermore, the Nursery has had a role in the increased numbers of concerned sportsmen using the area, and the living biological monitoring of the Trout being nurtured in the flow of the River.

The Cage Culture is located adjacent to the D/R Hydro facility and near the Youghiogheny River Lake outflow. The Trout Nursery is a low tech, easily constructed and maintained nursery that consists of two floating thirty-five foot long enclosures anchored in the stream flow.

Trout fingerlings are reared to adult size in the Trout Nursery resulting in greatly improved survivability when they are added to area streams. Automatic feeders and natural food sources provide for the nutritional needs. Volunteer nursery staff conduct daily maintenance and also provide regular monitoring of water quality, growth, mortality and morbidity conditions in the enclosures and surrounding waterway areas.

The presence of the commercial feed and the natural bodily functions of the rapidly growing fingerlings add needed nutrients that benefit a river that historically suffered

from infertility. This hatchery produces trout ready for the river and various tributaries at a cost that is approximately 40 percent of the cost of a conventional hatchery.

The function of the Youghiogheny Trout Nursery is to try to increase the alkalinity of the water in the Youghiogheny River, which presently is at low levels. In addition to the Trout Nursery, several local sportsmen's clubs annually volunteer their time stocking trout into the river.

It is envisioned that the Trout Nursery will facilitate the development of natural reproduction in the Youghiogheny River. Raising the trout in the Youghiogheny River will allow for genetic imprinting of the river water on the fish. At current times, there is no natural reproduction in the Youghiogheny River.

6.3.4 Phytoplankton

Appendix G is a survey of Phytoplankton data for the Middle Youghiogheny River Corridor.

6.3.5 MacroInvertebrate

Appendix H is a survey of MacroInvertebrate data for the Middle Youghiogheny River Corridor**.**

6.3.6 Invasive Species

With the large number of recreational boaters who use the Youghiogheny River Lake as well as other water bodies in the region, accidental introduction of invasive species to the Lake is of great concern. Species such as the Asiatic clam, zebra mussel, spiny water flea, Eurasian water milfoil, and ruffe have the potential to have serious detrimental impacts on the ecology and the balance of the lake.

A species that is of particular concern to the Corridor is the Japanese KnotWeed. This species is not native to the region and causes tremendous harm to the area. There is no known method for removing this species. It spreads extremely easily and overtakes many

native species throughout the Corridor. There is no known habitat advantage to this plant, so it can be considered a nuisance species. Until an effective method for preventing or removing this species from the area is found, it will continue to harm and degrade the vegetation and habitats of the Corridor.

6.4 Lake Wildlife

The following information was provided by the USACE and is part of the Youghiogheny River Lake Master Plan-Draft Report (1999).

6.4.1 Operation and Management Area

Landscaped areas typically support wildlife populations of limited diversity, primarily songbirds.

6.4.2 Outlfow Recreation Area

Wildlife species are limited in the landscaped areas, due to the lack of cover and preferred food sources. Species that may be present in this unit are cottontails, bob-white quail, and a variety of songbirds. Species such as skunk and raccoon, which frequently forage for refuse in areas of intense human activity, may periodically visit the area at night, especially when use of the picnic area and the nearby camping area is the greatest. The altered woodland area on the west side may provide habitat for other species, but its size and the proximity of human disturbance limit the habitat value of this area.

6.4.3 Youghiogheny Recreation Area (Spillway & Poplar Hollow)

East of the dam, the lack of vegetation and suitable habitat reduces the value of this area as a habitat for most wildlife. Species such as raccoons and skunks may occasion the picnic area to forage for food refuse.

West of the dam, wildlife that typically inhabits the mixed mesophytic woods is expected. Common game animals in these areas include turkey, ruffed grouse, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds.

6.4.4 Klondike Ridge Natural Area

Wildlife species expected in this unit are those associated with the mixed mesophytic forest, since it is the dominant vegetation type. Common game animals in these areas include turkey, ruffed grouse, woodchuck, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds. The mature forest typically does not support a great variety of wildlife because of the reduced understory vegetation. However, the interspersion of altered woodlands on Klondike Ridge provides for some diversity of habitat and greater understory vegetation. Additionally, the open pastures and altered woodlands on adjacent properties provide increased habitat diversity for wildlife in this vicinity.

6.4.5 Youghiogheny River Lake Wildlife Area

Wildlife in this area varies depending on the vegetation and intensity of adjacent land use. Because this is the largest unit and it includes several small tributaries and a long shoreline, it is the most important unit for wildlife in the Pennsylvania portion of the project. Although species from the adjacent habitats visit the landscaped areas, the landscaped areas typically provide limited habitat value. Squirrels and songbirds are the most likely inhabitants.

The most common wildlife species expected in this unit are those associated with the mixed mesophytic forest, since it is the dominant vegetation type. Common game animals in these areas include turkey, ruffed grouse, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds. In the altered woodlands and invaded thicket areas, with a somewhat more open canopy and denser understory, cottontail rabbits are common along with various songbirds and ruffed grouse.

Wetlands and floodplain forest also attract a variety of wildlife species. Wood duck nest boxes have been placed in the floodplain woods, and a wildlife pond has been created in this unit just north of the Jockey Hollow boat launch. A wildlife food plot has been established in Wilkins Hollow. The food plot is an open area that is periodically planted in preferred forage plants such as oats and clover.

6.4.6 Somerfield North

Landscaped areas typically do not support a large variety of wildlife due to the general lack of preferred food sources and cover. Species that may be present in these areas are cottontails, bob-white quail, and a variety of songbirds. The mixed mesophytic woods along the slope likely support common game animals including turkey, ruffed grouse, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds.

6.4.7 Somerfield South

This area does not support a wide range of wildlife because of the lack of food sources and cover. Species that may be present in this location may include cottontails, bob-white quail, and a variety of songbirds that are transient. The limited mixed mesophytic and altered woods may support common game animals including turkey, ruffed grouse, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds.

6.4.8 Braddock Run

The mixed mesophytic forest of the upper slopes may support a variety of wildlife typical for this type of forest, including turkey, ruffed grouse, squirrels, and white-tailed deer. Other species include songbirds and other forest-dwelling birds. The sycamores and willows that dominate the bottomland hardwoods and floodplain have limited value as wildlife forage. Sycamores do provide good nesting habitat for woodpeckers, wood ducks, and owls. These areas also typically have poorly developed understory because of the mid-season flooding, which further limits the value of these areas for game species such as rabbits, squirrels, ruffed grouse, turkey, and deer. The meadow habitats may provide for occasional grazing but are usually not highly productive for wildlife unless managed to support desirable wildlife food source plants.

6.4.9 Mill Run Natural Area

The wildlife value of the hemlocks is limited because they do not provide much forage for wildlife. Their primary value is as year-round protection from weather and predators, particularly for birds and squirrels. The mesophytic woods are also only moderately valuable to wildlife because of the dominance of yellow poplar, which also provides little forage, and the poorly developed understory in these woods.

The most notable animal habitat feature is Mill Run. Mill Run has excellent water quality and supports a preferred, year-round trout fishery for local fishers. The MDNR stocks the stream to bolster the natural populations of trout.

6.4.10 Jockey Hollow Boat Launching Area

The wildlife that is expected in this area is typical for the mixed mesophytic woodland and altered woodlands. Species would likely include turkey, ruffed grouse, squirrels, woodchuck, and white-tailed deer. Other species would include songbirds and other forest-dwelling birds. In the altered woodlands, with a somewhat more open canopy and denser understory, cottontail rabbits are common along with various songbirds and ruffed grouse.

6.4.11 Jockey Hollow Recreation Area

Because of the nature of the site development, most of the unit does not provide wildlife habitat. The adjacent invaded thicket provides a woodland thicket habitat of moderate value to game and nongame wildlife.

6.4.12 Tub Run

The wildlife within the area is expected to be somewhat reduced because of the predominance of landscaped area and frequency of human disturbance. Species that may be present in this unit are cottontails, bob-white quail, and a variety of songbirds. Species such as skunk and raccoon, which frequently forage for refuse in areas of intense human activity, may periodically visit the area at night, especially when uses of the camping area

is the greatest. The floodplain and mixed mesophytic woodlands may provide habitat for a mixture of game and nongame species.

6.4.13 Lake Area - Pennsylvania

Canada geese can be seen on the Lake throughout the year. Other waterfowl that can be found include mallards, wood ducks, teal, and scaup. The USACE encourages the habitation of osprey at the project by erecting nesting platforms in Wilkins Hollow, Tub Run, and Braddock Run. Transient bald eagles are occasionally sighted. A variety of sport fish, including largemouth bass, Northern pike, walleye, bluegills, bullheads, crappies, and channel catfish, inhabit the lake. Forage fish include minnows, alewife, carp, and shiners.

The sterility of the reservoir water, the steepness of the shoreline, and a lack of suitable spawning sites contribute to a low density of forage fish in general. Thus, the forage base of panfish, roughfish, and minnows is inadequate to maintain high populations of several major game fish species. Because the depth of the reservoir contributes to a two-tier fishery, alewives have been stocked to establish a broader forage base.

6.5 VEGETATION

The vegetation found along the Middle Youghiogheny River Corridor is the result of a combination of climate, site characteristics and vegetation native to this area.
A three tiered vegetation system can be found in the Corridor:

1. The region is largely forested in hardwood types.
2. A second component is the understory. Major components of the understory are the rhododendron, azalea, viburnums and allied shrub species.
3. An additional element is herbaceous materials; including various grasses, ferns, and wild flowers.

This three tiered system provides a dense cover of protective vegetation along the River.

The following is a summary description of the categories of vegetation located throughout the Corridor and the associated wildlife expected to be found in each area. The following information was provided by the USACE and is part of the Youghiogheny River Lake Master Plan-Draft Report (1999).

6.5.1 Thickets

6.5.1.1 Typical Thicket

The composition of typical thickets varies with location depending on the physical characteristics of the site. On the bottomlands, speckled alder (*Alnus rugosa*), hazel alder (*Alnus serrulata*), silky dogwood (*Cornus amomum*), willows (*Salix* spp.), and spireas (*Spiraea* spp.) can be found. On the upland sites, american hazel (*Corylus americana*), hawthorn, wild crab apple, apple (*Malus pumila*), ninebark (*Physocarpus opulifolius*), sumacs (*Rhus* spp.), blackberry, raspberry, and dewberry (*Rubus* spp.) are found.

Thickets usually represent the most productive of habitats for native game. Ruffed grouse, cottontails, and woodcock inhabit these dense areas in good numbers because both food and protective cover occur within these vegetative units.

6.5.1.2 Invaded Thicket

Typical shrubs and small trees found in the invaded thicket are the same species that occur in the typical thicket, with invasion by significant numbers of larger trees. Typical invading tree species are red maple (*Acer rubrum*), sugar maple, ashes, yellow-poplar, black cherry, black locust, and American sycamore.

Because of some shading and soil drying caused by the invading trees, shrub growth may be inhibited to some degree. In some cases, this loss may be offset in part by mast production by the trees or by additional cover furnished by trees with dense foliage.

6.5.1.3 Aged Thicket

Aged thickets are characterized by the dominance of small trees and large shrubs with few ground-level branches. Low, trailing brambles are sparse or absent. The dominant shrubs and trees are hawthorns, wild crab apple, common apple, and black cherry.

The wildlife values decrease as thickets age, but aged thickets are still heavily used by wildlife. Food production is high from the hawthorns, crab apple, and wild cherry. Protection, provided by the thorny branches of the hawthorns and crab apple, is excellent. Woodcock and grouse are the most prominent game species. Songbirds use the dense treetops for nesting.

6.5.2 Meadows

6.5.2.1 Typical Meadow

Meadows are comprised of sedges (*Carex* spp.), povertygrass (*Danthonia spicata*), cinquefoils (*Potentilla* spp.), goldenrods (*Solidago* spp.), and so on. They are not high game-producing areas, primarily because they lack good grazing materials for rabbits and are low on seed production for pheasants and bob-whites. Cover varies from site to site, but it is often sparse.

6.5.2.2 Invaded Meadow

The dominant species are as listed above for a typical meadow with invasion by significant numbers of alders, silky dogwood, ashes, American sycamore, and willows on the bottomlands and red maple, sugar maple, flowering dogwood, hawthorns, ashes, yellow-poplar, wild crab apple, black cherry, sumacs, black locust, and brambles on the uplands.

Invaded meadows are most productive for woodcock, with the possibility of limited use by ruffed grouse, cottontails, and bob-whites. They are used to some degree by songbirds and other non-game wildlife.

6.5.3 Manipulated Areas

6.5.3.1 Cultivated Field

Mowing, pasturing, or cultivation artificially maintains the dominant species in this community. Open fields, particularly those mowed to prevent excessive growth of tall weeds and invasion by trees and shrubs, are primarily of value to cottontails and bob-whites. Open field songbirds are also attracted.

6.5.3.2 Disturbed Land

This classification includes borrow areas, road cuts and fills, and so on, usually with infertile soils and relatively sparse herbaceous vegetation. Normally disturbed areas have limited value for either game or non-game animals.

6.5.3.3 Landscaped Area

These areas are primarily in recreation areas and around project structures. Mowed grasses usually are dominant but shrubs and trees of various species may be considered dominant in some cases based on crown coverage. Because of the openness of these areas, game may be relatively scarce there.

6.5.3.4 Lakeshore Floodplains

This community, located between the normal winter pool elevation and the normal summer pool elevation of the Youghiogheny River Lake and near the mouths of moderately sloping tributary valleys, is subject to prolonged flooding. The dominant woody plants are black willow (*Salix nigra*), seral shrubby willows (*Salix* spp.), silky dogwood, and American sycamore.

The lakeshore floodplain rarely produces sufficient ground cover of the right kind to encourage wildlife. Dense stands of willow may be used occasionally as nesting cover by certain songbirds. Food production for wildlife on these flooded areas is extremely low.

6.6 Forests

Forests are complex biological communities that are home to hundreds of wildlife species and thousands of plants. Forests protect fragile soils from erosion, purify waters, and even improve air quality. Healthy forests also provide us with wood products, recreational opportunities, natural beauty, and peace of mind.

The forests in the region can be characterized as deciduous in nature, losing their leaves in the fall and re-growing them in the spring. In the majority of the world's land areas, deciduous forests are unusual and not common like they are in this region.

The forest community includes a wide range of life, such as grubs and worms. Mosses, ferns, wildflowers, grasses, lichens, insects, fish, reptiles, birds, and mammals have their essential place in the complex forest ecosystem. The trees of the Corridor dominate the landscape. They form the framework within the developing forest community. The trees of the region provide the citizens with excellent and easy opportunities to study the nature of the Corridor.

6.6.1 Tree Diversity

The Corridor supports a wide diversity of tree species. There are several reasons for the vast diversity of trees in the area. First, there is usually enough rain and a long growing season for trees to prosper. The soils in the region provide a good environment for trees to grow.

Second, there is a wide range of microclimates in the Corridor. South facing slopes warm early in the spring and then dry in the summer. North facing slopes along mountain streams may be cool and moist even in the summer. Rocky areas create obstacles for some plants and opportunity for others. The west side of the hills receives oncoming storms first, and gets more rain than the east side. Furthermore, the tops of the ridges are more exposed to wind and cold than the protected valley areas.

Third, the area is near the meeting point of four major types of eastern forest. To the north is the Hemlock-Northern Hardwoods Region. To the northwest was originally a

vast beech-Maple forest and to the east is the Appalachian Oak Forest. To the south is the rich Mixed Mesophytic forest.

Finally, portions of the region's forests are second, third or even fourth growth. A few areas may contain virgin timber, but most of the area has been lumbered throughout the years. As a result, every stage of forest succession can be found in the Corridor (Laurel Highlands Hikers Guide, 1992).

The forests near the Youghiogheny River Lake are classified as mixed mesophytic. Mixed mesophytic is a term applied to much of the forest of the southern Appalachian Mountains. The term means that the forest is not typically dominated by a few particular species. Instead, a diverse number of moist habitat tree and shrub species comprise the forest. The dominant species vary from place to place in the landscape depending on the physical conditions of the area, such as slope direction, slope position, and soil characteristics.

Past disturbance of the forest is also an important factor that determines species composition and dominance in the forest. Throughout the eastern U.S., most of the forest was logged in the early part of the twentieth century. The Corridor is no exception and generally supports typical recovering forest. In addition to the natural physical characteristics of the Corridor, the time for natural succession to proceed since the disturbance occurred determines the forest composition and structure. Because of the irregular disturbance history, forests of various ages occur in the Corridor. In order of youngest to oldest, based on prevalent tree diameters, forest stands are categorized as "sapling," "pole-age," "maturing," and "mature." In most areas, the forest is of an intermediate, successional form, that is, one of the first three age groups. The relatively small areas of "mature" woodlands may resemble the pre-disturbance forest of the region.

Three subtypes of the mixed mesophytic association have been identified, based on substantial differences in dominant species. They are the typical subtype, the bottomland subtype, and the hemlock subtype.

With regard to wildlife habitat, the somewhat closed canopy typical of the mixed mesophytic forest type causes a scarcity of ground cover, especially of the denser shrubs

and vines that furnish food and protection from predators for the smaller wildlife. In addition, because of the scarcity of ground cover, the amount of browse available to deer and cottontails is restricted. However, the mixed mesophytic forests are suited to the requirements of a large number of wildlife species, including snakes, turtles, toads, salamanders, various songbirds, small mammals such as mice, shrews, chipmunks, and squirrels, raccoons, turkeys, deer, bear, and ruffed grouse.

The mixed mesophytic forests do furnish large quantities of tree seeds and nuts. Almost all game birds and mammals and, to a lesser degree, the larger songbirds use these foods. These forests also provide excellent nesting and living quarters for birds and mammals that use tree cavities, such as squirrels, raccoons, woodpeckers, owls, and wood ducks. Larger hawks use the mature trees for nesting sites.

The following is a survey of the Mixed Mesophytic types found around the Youghiogheny River Lake:

6.6.1.1 Youghiogheny River Lake and Surrounding Land

The following is a summary survey of the types of Mixed Mesophytic Forest identified at the Youghiogheny River Lake. The excerpts for the following section were obtained in the Youghiogheny River Lake Master Plan–Draft Report (1999).

6.6.1.2 Mixed Mesophytic Forest, Typical Subtype

Approximately 83 percent of the woodlands around the Youghiogheny River Lake have been classified in this category. This typical subtype occurs on all site types on the project except moist stream margins and the cool microclimates of ravines and steep north slopes.

The dominant woody plants that comprise this subtype are sugar maple (*Acer saccharum*), shagbark hickory (*Carya ovata*), American beech (*Fagus grandifolia*), yellow-poplar (*Liriodendron tulipifera*), black cherry (*Prunus serotina*), white oak (*Quercus alba*), Northern red oak (*Quercus rubra*), and basswood (*Tilia americana*).

Primary game species occupying this subtype on the project are turkeys, ruffed grouse, squirrels, and deer. Because of the great diversity of tree and shrub species, this subtype is particularly attractive to songbirds and other forest-dwelling, nongame birds. Small mammals and a variety of reptiles and amphibians are also common in this forest type.

6.6.1.3 Mixed Mesophytic Forest, Bottomland Subtype

About 10 percent of the forested area around the Youghiogheny River Lake has been placed in this category. This bottomland subtype occurs on moist soils close to streams.

The dominant woody plant that comprises this subtype is the American sycamore (*Platanus occidentalis*). Some other relatively abundant woody plants typical of this subtype are sugar maple, shagbark hickory, ash (*Fraxinus* spp.), white oak, rosebay rhododendron (*Rhododendron maximum*), and basswood.

This forest type is not a highly productive habitat for game. It has little value for woodcock, rabbits, and ruffed grouse and limited value for squirrels, wild turkeys, and deer. It is acceptable habitat for raccoons. Large sycamores often provide nesting cavities for certain birds such as woodpeckers, wood ducks, and owls. Reptiles, amphibians, and small mammals commonly use these habitats.

6.6.1.4 Mixed Mesophytic Forest, Hemlock Subtype

Approximately 3 percent of the woodlands around the Youghiogheny River Lake have been assigned this classification. This hemlock subtype occurs in the moist, cool microclimates of steep-sided stream valleys and steep, low-elevation north slopes.

The eastern hemlock (*Tsuga canadensis*) is the dominant woody plant. Other relatively abundant woody plants include sugar maple, shagbark hickory, American beech, yellow-poplar, black cherry, Northern red oak, rosebay rhododendron, and basswood.

This subtype provides little forage for wildlife; its primary value is year-round shelter from natural enemies and weather. Ruffed grouse make some use of hemlocks for these purposes. Red squirrels, which are not considered an important game species, also live in and around hemlocks. These trees may be used by owls as nesting and roosting sites.

Altered Woodlands - Approximately 4 percent of the woodlands around the Youghiogheny River Lake have been placed in this category. This category consists of woodlands formerly in pasture, part of an old homestead, or subject to other major past disturbance. The canopy frequently is somewhat open. Seedlings, saplings, and typical forest-dwelling shrubs often are sparse or absent. Plants more commonly found in old fields, such as thicket-forming shrubs and grasses, often are present. Species composition is determined mainly by the nature of the disturbance and by the predominance of typical "volunteer" or early succession species.

Indicator woody plant species in this community include hawthorns (*Crataegus* spp.), black walnut (*Juglans nigra*), wild crab apple (*Malus coronaria*), black cherry, and black locust (*Robinia pseudo-acacia*).

Depending on the composition of the overstory and understory, these altered woodlands can have considerable value for game. Often they provide habitat for cottontails and ruffed grouse. Woodlands with a dense canopy are likely to be less productive than the altered woodlands with a more open canopy. A listing of the representative tree species of the Corridor can be found in Table 6-1.

The predominant vegetation of the riverbank areas between Ohiopyle and Stewarton is sweet birch, American sycamore, red maple, red oak, and tulip tree. Azalea, witch hazel, mountain laurel, rhododendron, alder, and arrowwood were the most commonly occurring shrubs. Lesser vegetation most frequently found included various grasses, rushes, and sedges, several asters and goldenrods, royal fern, flase bugbane, wild geranium, bluets, Joe-Pye-weed, green-headed coneflower, and tall meadowrue.

The Youghiogheny connection inclusive of Chestnut and Laurel Ridge is an integral part of the Allegheny Corridor. If this connection is severed by unplanned, “sprawl-and-haul” development, or by the fragmentation of forested lands and narrow Corridors, watershed

and recreational values will be compromised and numerous wildlife species will be threatened with regional extirpation (PA Game Commission, 1999).

6.6.2 Youghiogheny Corridor

Pennsylvania Natural Diversity Index (PNDI) is a partnership between the Western Pennsylvania Conservancy, the Pennsylvania Bureau of Forestry and The Nature Conservancy.

The PNDI conducts inventories and collects data to identify and describe the Commonwealth's rarest and most significant ecological features. These features include plant and animal species of special concern, rare and exemplary natural communities, and outstanding geologic features. Site-specific information describing these features is stored in an integrated data management system consisting of map, manual, and computer files.

The PNDI information system is continually refined and updated to include recently discovered locations and to describe environmental changes affecting known sites. The goal is to build, maintain, and provide accurate and accessible ecological information needed for conservation, development planning, and natural resource management.

PNDI methodology follows that of the Nature Conservancy's Natural Heritage Network. This international network links programs in all 50 states, 6 Canadian Provinces, and 12 countries in Latin America and the Caribbean. Standard data collection and transcription procedures are used throughout the network. Use of consistent methodology presents an opportunity to assess the status of a given species or natural community over a broad geographic area across any number of political boundaries. Conservation strategies can then be developed at the local, state, or national level or may target an ecological unit.

Species tracked within the PNDI information system are those classified as Endangered, Threatened, or Rare as listed by the Department of Conservation and Natural Resources, PA Game Commission, PA Fish and Boat Commission, U.S. Fish and Wildlife Service and species recommended by the PA Biological Survey. Natural community types and

geologic features are identified and mapped based on the recommendations of PNDI ecologists and the Bureau of Topographic and Geologic Survey, respectively.

Species records and associated location information are initially gathered from plant and animal specimens maintained in museums, universities, and personal collections. Research, publications, and contacts supplement these data with knowledgeable individuals. Intensive field surveys are conducted to verify historically known plant and animal sites and to search for previously undocumented locations. Natural communities can be located through species records or a variety of other sources including air photos, soil surveys, and geologic maps. Field surveys are then conducted to identify component species and gather ecological data. Through this science-driven inventory, vital ecological resources, and sites rich in natural diversity are identified and monitored for future conservation efforts.

Protection of the Commonwealth's natural heritage can be accomplished in harmony with the need to develop and use natural resources. With objective and accurate data, PNDI can help guide planning and development, while avoiding damage to unique ecological areas. The Commonwealth has lost at least 192 species of plants and animals while nearly 500 species have been diminished to endangerment status. Since 1988, PNDI use has become routine in most environmental assessments, and subsequently has prevented losses of species of special concern without negatively affecting the State's economic growth. PNDI also assists conservation organizations by providing information so that funds directed toward land acquisition, easements and other agreements can be more effectively used to protect significant ecological resources.

PNDI relies upon information from a wide variety of sources to develop and sustain the ongoing inventory. Concerned citizens are encouraged to make suggestions or provide information that will assist with the project. The loss of species and natural communities is often inadvertent and easily avoidable. The more complete our information on what exists where, the greater our chances of preventing additional losses (DCNR Internet Site). Table 6-2 is a listing of the information regarding the PNDI inventory conducted for the Middle Youghiogheny River Corridor.

6.7 IMPORTANT HABITATS

Several habitats are associated with the Middle Youghiogheny River and its surrounding watersheds. Three specific areas represent the Middle Youghiogheny River:

6.7.1 Riparian Buffer Zones

In the Corridor, these areas are located where trees, smaller shrubs, and vegetation grow up to the River and tributaries. The importance of these zones is their ability to maintain the stability of tributary banks and river shorelines. Another key feature of riparian buffer zones are their ability to diminish the impacts of pollution by trapping, filtering, and holding sediments, nutrients, and other chemical pollutants. These zones provide excellent habitat and food sources for wildlife. The riparian buffer zones can extend for some distance and width or they can be narrow strips along the River. The following are important species found within Corridor's Riparian Buffer Zones:

- Saxifraga micranthidifolia (Lettuce Saxifrange); and
- Cimicifuga americana (Mountain Bugbane).

6.7.2 Flowing River Aquatic Habitat

A noted asset of the Middle Youghiogheny River Corridor is its aquatic habitat. The rocky substrate along with larger boulders found in the river provide for excellent habitat for aquatic species. The following are noted species of particular concern to the River's aquatic habitat:

- *Tachopteryx thoreyi* (Thorey's Grayback Dragonfly); and
- Chryptobranchus allegheniensis (Hellbender Giant Salamander).

6.7.3 Shoreline Transition Zones

Large boulders and sharp rocky ledges that are adjacent to the River characterize this area. This zone provides escape cover for wildlife and protected areas for vegetation. Of special concern to these areas are:

- *Vitis rupestris* (Sand Grape) – The only recently documented occurrence in Pennsylvania is along the Youghiogheny River;
- Trautvetteria caroliniensis (Carolina Tassel-Rue);
- Orontium aquaticum (Golden Club);
- Cacalia suaveolens (Sweet-Scented Indian Plantain);
- Asplenium pinnatifidum (Lobed Spleenwort); and
- Marshallia grandoflora (Large-Flowered Marshallia) – In Pennsylvania its only known occurrence is along the Youghiogheny River between Confluence and Connellsville.

6.7.4 Youghiogheny River Lake

The topography surrounding the Lake area has produced the shoreline and bottom contours of the Youghiogheny River Lake. Furthermore, the Lake is modified by fluctuations in water levels, which change the shoreline, depth, in stream cover, and other numerous factors throughout the year. The upper reaches of the Lake where the Youghiogheny River enters exhibit more lotic or riverine characteristics, while the area near the dam is more lentic or lake-like. Thermal stratification occurs near the dam, providing cold-water habitat at depth year-round, while the rest of the Lake offers warm water habitat. The slope associated with the majority of the shoreline of the Lake is steep, exposed bedrock that offers very little suitable habitat for spawning, protection of young, attachment of macrophytes (aquatic vegetation), or substrate for benthic macro invertebrates. This problem is further exacerbated by water level fluctuations.

Fish that are pelagophillic (open water spawners with free-floating eggs) are naturally more suited to reproduction in the Lake. The Lake offers an abundance of forage habitat for piscivorous fish and moderate to good habitat for planktivorous fish. The practice of sinking evergreen trees in the Lake provides cover for juvenile fish and attracts other species to congregate (Youghiogheny River Lake Master Plan-Draft Report, 1999).

6.8 REINTRODUCED SPECIES

Because of its remote, undisturbed character, the Middle Youghiogheny River was one of only a few areas in the State chosen by the PA Game Commission for the reintroduction of the *Lutra Canadensis* (River Otter). This species had become extinct throughout the State, except for a few individuals in the Pocono Mountains in northeastern Pennsylvania (USACE Report, 1997).

6.9 WILDLIFE DIVERSITY

Wildlife diversity conservation consists of endangered species recovery and prevention. Preventing species from becoming endangered is less costly and focuses on landscape integrity rather than species by species management. Saving the wildlife in the Middle Youghiogheny River Corridor requires preventing species from becoming endangered.

Endangered species such as the Large Flowered Marshallia and the Green Salamander are unique to the Corridor. Their fates depend mainly on the foresight of stewards, but also on concentrated development zones and non-traditional tree harvesting strategies.

The Green Salamander needs clean water, hardwood forests and sandstone rock cliffs and outcroppings. Habitat loss or degradation was responsible for approximately 73 percent of the cause of endangerment.

Over-foresting of the region has negatively effected species such as turkey, bobcat, and bears. Only regulating the tree harvest will return these species back to their native haunts.

The River Otter was eliminated from the area by a combination of overharvesting and pollution. Closed trapping seasons and pollution control regulations set the stage for its re-introduction. The PA River Otter Recovery Project has used an integrated approach to reintroduce otters successfully. There are five stages necessary for re-introduction: Site selection, obtaining wild otters, transfer care, public relations and education, post-release monitoring and evaluation.

Disrupting the remaining forests in the Corridor for road construction must be minimized in order to maintain the native diversity in the Middle Youghiogheny River Corridor. Furthermore, relocating streamside dirt roads to higher and dryer ground is an integral part of maintaining healthy streams throughout the Corridor (PA Game Commission, 1999).

Table 6-3 provides information regarding representative species found in the Middle Youghiogheny River Corridor.

A description of representative tree species of the Corridor can be found in ***Appendix I***. A description of selected species of concern found in the Corridor can be found in ***Appendix J***.

6.10 Description of the Vegetation Found at Youghiogheny Lake

The following information was provided by the USACE and is part of the Youghiogheny River Lake Master Plan-Draft Report (1999).

6.10.1 Operation and Management Area

The vegetation of the area is landscaped (it is mostly lawn with scattered planted trees).

6.10.2 Outflow Recreation Area

The vegetation is mostly landscaped in this area. The area is primarily a mowed lawn/open field setting with a number of deciduous and evergreen trees scattered

throughout the area. A limited area of altered woodland, composed of shrub and small tree growth, occurs on the western slope.

6.10.3 Youghiogheny Recreation Area (Spillway & Poplar Hollow)

East of the dam, except for the narrow wooded picnic area, the Spillway portion of the unit is composed of hard-packed soils, pavement, and exposed bedrock. Therefore, there is no vegetation over most of the area. West of the dam, the Poplar Hollow portion of the unit is composed of mostly maturing, second growth, and typical mixed mesophytic forest. Dominant trees in this area include sugar maple, hickories, American beech, yellow poplar, black cherry, white and Northern red oaks, and basswood.

6.10.4 Klondike Ridge Natural Area

The vegetation of the Klondike Ridge is entirely typical mixed mesophytic forest type. However, the deciduous forest in this unit is unusual due to its apparent history and diversity of habitat. Portions of this area appear to have been avoided for timber harvesting, probably due to the steepness of the slope; therefore, sections of mature woods, the largest of the project, have been preserved. Other portions of the area have remained relatively undisturbed for some time and are maturing. Sections that have been more recently disturbed support-altered woodlands. The altered woodlands are located along the edge of the lake and divide the mesophytic woodlands into two sections.

Within the mixed mesophytic woodlands, white, black, and Northern red oaks are dominant. Beech is abundant on the moister, north-facing slope. Chestnut oak, scarlet oak, and pignut hickory are abundant near the ridge top. Other chief woody species include white ash, shagbark hickory, black cherry, sugar maple, yellow poplar, flowering dogwood, and common spicebush. Most of the larger trees are oaks, beech, and sugar maple. A large variety of woodland herbs is typically found in this forest habitat.

6.10.5 Youghiogheny River Lake Wildlife Area

Most of this unit is pole-timber age and maturing stands of typical mixed mesophytic forest. Dominant trees in this area include sugar maple, hickories, American beech,

yellow poplar, black cherry, white and Northern red oaks, and basswood. Altered woodlands dominated by invasive species such as black locust, hawthorn, black cherry, and sweet crab apple occur in some areas formerly used as homesteads or pasture where trees or the understory have been selectively cut. Some landscaped areas occur where adjacent residents have encroached onto federal lands. The landscaped areas are typically lawn with scattered planted or preserved trees. Small areas of floodplain woods occur at the mouths of small tributaries. Some small areas of invaded thicket also occur.

6.10.6 Somerfield North

The vegetation in the unit is mostly landscaped. The landscaped areas are typically lawn with scattered planted and preserved trees. The northern end of the unit is less disturbed and is dominated by typical mixed mesophytic woods.

6.10.7 Somerfield South

The vegetation in the unit is mostly landscaped. The landscaped areas are typically lawn with scattered planted or preserved trees. The southern end of the unit is less disturbed and supports maturing mixed mesophytic woods and altered woodland, where trees and/or the understory have been selectively cut, along a small tributary. A small area of floodplain woods occurs at the north end of the unit.

6.10.8 Braddock Run

The upper slopes of the valley support maturing mixed mesophytic forest. Dominant trees in this area include sugar maple, hickories, American beech, yellow poplar, black cherry, white and Northern red oaks, and basswood. The lower slopes and valley floor are dominated by bottomland hardwood forest and strongly dominated by sycamore trees. Other less frequent species include sugar maple, shagbark hickory, ash, white oak, rosebay rhododendron, and basswood.

Willows, dogwoods, and sycamore dominate the floodplain area at the mouth of Braddock Run. The National Wetland Inventory identifies the floodplain woods as a

deciduous scrub-shrub wetland. A meadow occurs centrally along the stream. Pasture grasses dominate this area and a variety of old field herbs such as goldenrods.

6.10.9 Mill Run Recreation Area

Floodplain and maturing bottomland woods are dominant in the unit. A small area of invaded meadow occurs on the north side of the unit, and invaded thicket occurs near the mouth of Mill Run.

6.10.10 Mill Run Natural Area

The vegetation is remarkable in this area primarily because this unit contains the greatest expanse of hemlock forest at the project. It is also notable because it supports typical mesophytic and bottomland forest types. It is the only area at the project that contains these three forest types.

The hemlocks dominate the stream valley, mostly immediately adjacent to the stream and extending south over the elevated bench. The hemlock forest, along with the rocky stream valley and rocky cliff, provides an aesthetic feature that is unique for the project. Showy wildflowers, which prefer the acidic environment of the hemlock forest floor, such as lady's slippers and other orchids, may be more abundant here than anywhere else at the project. Maturing mixed mesophytic forest dominates the steeper southwestern corner of the unit.

Maturing bottomland woods occur along the stream valley where the hemlocks are excluded, primarily north of the stream. A limited amount of mesophytic forest and invaded meadow also occurs along the valley bottom. A constructed wildlife pond that supports some emergent herbs is identified as an emergent wetland on the National Wetland Inventory map.

6.10.11 Jockey Hollow Recreation Area

The area not already developed for the boat launch is wooded. Approximately half the area is altered woodland, and the other half is pole-timber aged mixed mesophytic

woodland. The upper slopes of the valley support maturing mixed mesophytic forest. Dominant trees in this area include sugar maple, hickories, American beech, yellow poplar, black cherry, white and Northern red oaks, and basswood. Altered woodlands are dominated by invasive species such as black locust, hawthorn, black cherry, and sweet crab apple.

6.10.12 Jockey Hollow Information Area

The area that has been developed is currently not vegetated. Invaded thicket is the primary vegetation on the surrounding slopes.

6.10.13 Tub Run

The flatter valley bottom is primarily landscaped with grass and clumps of trees. Small areas of floodplain woods occur along the water's edge. The surrounding steep slopes are pole-timber and maturing mixed mesophytic woodlands.

6.10.14 Lake Area - Pennsylvania

There is a distinct lack of any submerged or emergent vegetation along the perimeter of the lake due to the extensive fluctuation in the pool level. During high water, woodland vegetation on surrounding slopes is immediately adjacent to the water surface or partially submerged. During periods of draw down, the unvegetated lake bottom is exposed.

7.0 CULTURAL RESOURCES

7.1 RECREATION

Natural areas and numerous recreational opportunities surround the Middle Youghiogheny River Corridor. The Middle Youghiogheny basin is host to a variety of recreational opportunities including fishing, canoeing, rafting, kayaking, camping, hunting, swimming, picnicking, bird watching, and sightseeing. In addition, the adjacent Youghiogheny River Trail offers opportunities for hiking, biking, and cross-country skiing. The total benefits of the recreation resources, both at the Youghiogheny River Lake and downstream has been estimated at $10 million annually.

The recreational opportunities that are available in the Corridor are the most diverse and extensive in a four-state area surrounding the Corridor. An increase in the recreational use of the water resources in the Corridor is expected, especially at the Youghiogheny River Lake. The facilities at all the recreational locations must be upgraded to handle this projected demand for recreation.

With an increase in the number of persons using the resources of the Corridor for recreation, a natural strain will be placed on the resources. With proper management and planning, this strain can be minimized or even eliminated. Furthermore, if the recreational facilities and water quality of the Corridor are not upgraded and acted upon, the attractiveness of the Corridor's recreational assets will be diminished.

CRTU supports increasing the recreational opportunities and increasing tourism into the Corridor through methods that employ proper management and planning strategies. The relationship between water quality and recreation is highly evident in the Corridor. The ability of the Corridor to sustain its vast recreational diversity hinges on keeping the quality of water and the quality of the recreational facilities from declining. This not only incorporates acting upon pollutant sources that exist presently but safeguarding against all possible threats in the future, such as irresponsible mining and foresting.

7.1.1 Ohiopyle State Park

Located primarily in Fayette County, Ohiopyle State Park encompasses approximately 19,116 acres of rugged natural beauty and serves as the gateway to the Laurel Mountains.

The main attraction to the Park is the Falls in Ohiopyle, Pennsylvania. Another focal point of the area is the more than 14 miles of the Youghiogheny River Gorge that pass through the heart of the Park. The Youghiogheny River provides some of the best whitewater boating in the Eastern U.S. as well as spectacular scenery. Surrounding Ohiopyle Falls is the Falls Day Use Area, the central point for the casual visitor. This area provides parking, modern restrooms, gift shop/snack bar, and overlook platforms with magnificent scenery.

Other points of interest in the Park include Cucumber Falls and the Cucumber Run Ravine, which is blanketed with wildflowers and flowering rhododendron. Baughman Rock, Tharp Knob and the Kentuck Scenic overlook points provide spectacular views of the river gorge. Ferncliff Peninsula, formed by a great horseshoe bend in the River, provides a unique natural habitat for numerous botanical treasures, particularly southern wildflowers. Ferncliff Peninsula is a registered National Natural Landmark and contains four miles of easy hiking trails and several outlook areas.

7.1.1.1 Whitewater Rafting

White water rafting was authorized on the Youghiogheny River under the Water Resources Development Act of 1988. Since that time, Ohiopyle State Park has become one of the most popular State Parks in Pennsylvania. In 1996, it was calculated that a total of 135,000 rafters, kayaks, and canoeists used the Park's facilities and this number is increasing each year. It has been conservatively estimated that the total annual revenue from the whitewater rafting industry in Ohiopyle State Park is over $5 million.

The Park contains two segments of the Youghiogheny River that are used for whitewater boating. The famous Lower Yough begins after the Ohiopyle Falls and contains numerous class III and IV rapids. The Middle Yough, towards Confluence, contains class I and II whitewater. River levels change the difficulty of the rapids.

7.1.1.2 Picnicking

The Park contains the Cucumber Run Picnic Area and the Tharp Knob Picnic Area. Both areas have picnic tables, restrooms, grills, charcoal disposal units, pavilions for rent, playfields, and trailheads that connect to the park's main trail system. Tharp Knob also has a softball field, a volleyball court, and a scenic overlook that provides a panoramic view of the lower gorge and surrounding area.

7.1.1.3 Bicycling

Twenty-eight miles of an abandoned railroad right-of-way have been converted into a smooth, hard surface trail for bicycling and hiking. Called the Youghiogheny River Bike/Hike Trail, it parallels the Youghiogheny River between the Ramcat parking area near Confluence to the towns of Connellsville/Dunbar. The Trail features scenic views of the Middle Youghiogheny River, cascading feeder streams and a maturing deciduous forest. It is also an excellent area to see many species of wildlife that frequent the park.

This area is accessible for people with disabilities and rental bicycles are available. The Trail is excellent for hiking, jogging and cross-country skiing and can be used to combine a bike ride or hike with some excellent wilderness-type trout fishing or hunting.

A separate, 9.4-mile mountain bike/equestrian trail is also available.

7.1.1.4 Hiking

In addition to being the southern terminus of the 70-mile Laurel Highlands Hiking Trail, the Park also has more than 41 miles of day hiking trails.

The trails feature impressive rock faces, panoramic views, cascading streams, and a diverse sampling of plants and animals native to the area.

7.1.1.5 Equestrian Trails

9.4 miles of equestrian trails are available. The trail is also used for mountain bikes.

7.1.1.6 Camping

The Park campground provides 237 campsites and includes four children's play areas, camping and trailer areas, rentable walled tents on platforms, cottages, and walk-in campsites. Each site is equipped with a fire ring and picnic table. Water hydrants and garbage receptacles are located nearby.

The campground is open from the first day of March to the last day of antlerless deer season in December. All campsites can be reserved and advance reservations are required to insure availability.

7.1.1.7 Fishing

The Middle Youghiogheny River provides good wilderness trout fishing. Fingerling trout are stocked throughout the entire section of the River within the Park in cooperation with the Pennsylvania Fish and Boat Commission.

Meadow Run also provides fine trout fishing for anglers who prefer smaller stream fishing rather than the foamy waters of the Youghiogheny. An accessible area is available for people with disabilities.

7.1.1.8 Hunting and Firearms

Over 18,000 acres of Ohiopyle State Park are open to hunting, trapping, and the training of dogs during established seasons. Common game species are deer, turkey, grouse, rabbit, squirrel and other small game. Hunting of woodchucks, also known as groundhogs, is prohibited. Loaded firearms are not permitted within 50 feet of the Youghiogheny River Hike/Bike Trail.

State Game Lands 51 and 111 are adjacent to the park and provide additional hunting and recreational opportunities.

7.1.1.9 Winter Activities

Snowmobiling, tobogganing, cross-country skiing, sledding, trout fishing in the Middle Youghiogheny River, hunting, winter hiking and backpacking are available to cold weather visitors.

Sugarload Knob, at 2,640 feet above sea level, offers 9.4 miles of maintained trials for snowmobilers. There is a parking area with an unloading ramp for trailers. An excellent hill for tobogganing and sledding is located adjacent to the parking area. This area serves as the mountain bike trailhead during the warmer months.

The Kentuck and Sproul trails were designed for cross-country skiing. These trails connect to several hundred acres of meadow that is excellent for skiing. These areas are closed to snowmobiles.

7.1.1.10 Access for People with Disabilities

Facilities designed for people with disabilities are available at the Falls Area picnic areas and the campground (Ohiopyle State Park Visitors Guide).

7.1.2 Youghiogheny River Lake

In the heart of the Laurel Highlands and spanning the Mason-Dixon Line between Maryland and Pennsylvania lies the Youghiogheny River Lake. The Lake offers clean waters, mountains and steep-sided valleys that encompass the area and provide an unsurpassed setting for outdoor recreation opportunities. Visitors enjoy a popular location for recreation, with boating, fishing, camping and many other outdoor activities available for the public's convenience.

The Youghiogheny River Lake and the tributaries that flow into it represents a major scenic and recreational resource in the region. The Lake has approximately 38 miles of

shoreline and over 13 tributaries which enhances the diversity of the natural landscape. Many of the tributaries, including Mill Run, Buffalo Run, and Tub Run have areas of rock outcroppings and are lined with large boulders.

Visitation has been tracked at the Lake from 1954 to the present. The average yearly visitations between 1992 and 1996 have been approximately 500,000 persons. It has been conservatively projected that the number of visitations will increase by 2 percent annually.

7.1.2.1 Boating

Boaters consider Youghiogheny River Lake, with its 16-mile length and channels up to one-half mile wide, the best power boating and water skiing lake in southwestern Pennsylvania. Recreational boating on the Lake has increased dramatically since the early 1980's. Recreational boaters are drawn to the Lake to enjoy the natural features found there, such as: a generally undeveloped shoreline, numerous secluded locations, and relatively healthy waters.

It has been estimated that nearly 1.8 million people visit the Lake each year with approximately 234,000 using the Lake for boating. Several different types of boats can be found on the Lake and include types ranging from power cruising and water-skiing boats to canoes and sailboats.

Public access to the Lake can be found at four public launching ramps. These include the following:

- Youghiogheny Recreation Area – A day use facility located near the spillway with both three-lane and two-lane ramps. There are 75 unpaved parking spaces provided.

- Jockey Hollow Boat Launching Area – This area has a two-lane ramp and 40 paved parking spaces.

- Mill Run Recreation Area – This location has a campground and a one-lane ramp.

- Somerfield North Recreation Area – This is a day use area with a two-lane ramp and 39 paved parking spaces.

In addition to these public launches, the Tub Run Recreation Area has a two-lane ramp reserved for those using the Tub Run Campground. Furthermore, the Somerfield South Marina boat launches are open to the public Mondays through Fridays and has 316 slips available for rent and 112 parking spaces. This area is the only fueling station on the Lake.

7.1.2.2 Fishing

There are numerous coves and backwater areas along the Lake that provide excellent fishing. The Lake is inhabited by a large variety of game and panfish and is especially known as a hotspot for walleye and smallmouth bass. A license has been granted to the Pennsylvania Fish Commission for fish management purposes in the Pennsylvania portion of the lake. The Fish Commission has developed and maintains the Jockey Hollow Boat Launching Area and the tailwaters of the dam are very popular for trout fishing. Youghiogheny River Lake's outflow area is one of the few areas in Pennsylvania open for trout fishing year round, and is stocked by the Fish Commission on a regular basis throughout the spring and summer.

7.1.2.3 Camping

Another popular activity at Youghiogheny River Lake is camping. Campers have a choice of three campgrounds at which to stay, each offering something different with facilities ranging from modern to primitive. Camping areas at Mill Run, Tub Run, and the Outflow Recreation Areas provide approximately 206 campsites. All of these areas have drinking water, restrooms, and trailer sanitary stations. Shower facilities are provided at the Outflow Recreation Area and the Tub Run Recreation Area.

7.1.2.4 Picnicking

There are four picnic areas at the Lake. These areas are located at Jockey Hollow, Somerfield North, the Youghiogheny Recreation Area, and the Youghiogheny Outflow Recreation Area. These areas combined provide approximately 110 picnic tables and 1 shelter (Somerfield North). There is also a shelter in the day-use part of the Outflow Recreation Area below the Dam. At all the picnic areas, drinking water and restrooms are available.

7.1.2.5 Swimming

Four areas offer recreation swimming at the Lake and include Tub Run, Mill Run, Somerfield North Recreation Area and the Youghiogheny Recreation Area. Unique to the Tub Run and Mill Run locations is the fact that these spots are shared with camping areas and are used mainly by campers. (Youghiogheny River Lake Information Brochure, 1997) Table 7-1 provides a summary of the recreation opportunities at the Lake.

7.1.3 Laurel Ridge State Park

Laurel Ridge State Park, 13,625 acres, stretches along the Laurel Mountain from the Youghiogheny River at Ohiopyle to the Conemaugh Gorge near Johnstown. This large park spans Cambria, Fayette, Somerset, Westmoreland and Indiana counties.

7.1.3.1 Hiking

Located in Laurel Ridge State Park, The Laurel Highlands Hiking Trail stretches for approximately 70 miles from its origin in Ohiopyle State Park to Johnstown. The Trail is known for the great diversity of vegetation and wildlife that can be encountered. The Trail traverses state parks, state forests, state game lands, other public lands, and private lands. The Laurel Highlands Hiking Trail is open year-round and is blazed approximately every 100 feet with 2 inch and 5 inch yellow blazes. Side trails are marked with blue blazes. Mileage monuments are found every mile. Large wooded signs mark trail access points at every major highway crossing. Every 8 - 10 miles along the

Trail is located one of eight overnight shelter areas containing 5 adirondack-type shelters with fireplaces, 2 latrines, a water supply, and spaces for 30 tents.

7.1.3.2 Hunting

Hunting, trapping, and training of dogs are permitted in designated hunting areas from the fall archery season until March 31, of the following year. Common game species are deer, turkey, and grouse.

7.1.3.3 Snowmobiling

A trail system of over 70 miles is open daily to snowmobiling after the end of the antlerless deer season in late December. The trail is located on state parks and forestlands. Snowmobiles are restricted to designated trails within designated forestlands. Snowmobiles are not permitted on the Laurel Highlands Hiking Trails.

7.1.3.4 Cross-Country Skiing

Approximately 35 miles of trail are available for cross-country skiing. Check with the park office to see which sections are suitable for skiing.
(DCNR Internet Site)

7.1.3.5 Youghiogheny River Hike/Bike Trail

In 1995 the Trail expanded its reach when a stretch opened from Dawson, Pennsylvania, through Connellsville, Pennsylvania. In addition a stretch is open from Connellsville through Ohiopyle State Park to Confluence, Pennsylvania.

The Trail between the city of Connellsville and Confluence, Pennsylvania, provides scenic views of the Youghiogheny River Gorge, an array of forest vegetation, and large rock formations. An abundance of wildflowers, thick vegetation, and forest trees populate the edges of the trail from the city of Connellsville to the borough of Confluence, Pennsylvania. This stretch is in excess of 27 miles.

In the Corridor, the Trail segment has several interesting features located along it. In addition to the features of Ohiopyle State Park, south of Connellsville are the Wheeler Bottom Bridges. These two bridges extend for more than 200-feet and provide a view of South Connellsville. Furthermore, there is a small waterfall south of the Wheeler Bottom Bridges.

Horseback riding is not allowed on most of the Trail. Motorized vehicles are forbidden on the entire Trail. The Youghiogheny River Trail provides about one to two benches for every mile, many of which were built by volunteers. The trail is approximately 10 to 12 feet wide, and is made of crushed compacted limestone laid over abandoned railroad beds.

The Trial is designed as a non-motorized, shared-use, recreational trail for bicycling, walking, fishing and canoe access, hiking, nature study, historic appreciation, cross country skiing, picnicking, and horseback riding. It must be noted that no horses are permitted on the trail within Ohiopyle State Park.

The smooth surfaced Trail is accessible to people of all ages and all physical abilities. The Youghiogheny River Trail parallels the west side of the Youghiogheny River and connects many small towns and rural open spaces along the entire Youghiogheny River Valley.

Youghiogheny River Trail Distances

McKeesport to Connellsville	43 Miles
Connellsville to Confluence	27 Miles
Total distance	70 Miles

7.2 ARCHAEOLOGICAL / HISTORICAL

The Middle Youghiogheny River Corridor and the surrounding areas were extensively occupied over a time span of some 10,000 years. This area represented a major passageway for individuals moving between the Ohio Valley and the Potomac Valley. The Delaware, Shawnee, and Iroquois Indian tribes were known to have used the Youghiogheny River Basin as hunting and fishing grounds.

There are at least 34 identified archeological sites at the Youghiogheny River Lake. Most of these sites have been sighted as being below normal lake pool elevations. Presently none of the archeological sites identified at the lake have been determined to be eligible for listing on the National Register of Historic Places (Youghiogheny River Lake master Plan-Draft Report, 1999).

7.2.1 Fayette County

Fayette County, named for the Revolutionary War hero General Lafayette, is one of Pennsylvania's southern border counties. Like other southwestern counties, early settlement was slow because of territorial disputes, Indian troubles, and the French and Indian War. It was not until after the Revolutionary War that a larger scale development of the area began, mostly by people seeking new lands and homes. Growth of the area was greatly accelerated after the completion of the old National Turnpike from Cumberland to Wheeling and the development of navigation on the Monongahela River.

7.2.2 Ohiopyle State Park

American Indians of the Delaware, Shawnee and Iroquois Nations used this area as a hunting ground. Old records indicate that the name of Ohiopyle was derived from the American Indian word "Ohiopehhle" which means "white frothy water," a reference to the large falls on the Youghiogheny River. They named the river the "Youghiogheny" which means a stream flowing in a roundabout course.

In 1754, George Washington was trying to find a water supply route for his attempt to capture Fort Duquesne, now Pittsburgh. When Washington arrived at the falls, he abandoned his plans to use the Youghiogheny River. In the early 1900s, the Ohiopyle area, particularly Ferncliff Peninsula, was so popular as a summer resort that the Baltimore and Ohio (B & O) Railroad scheduled Sunday excursion trips from Pittsburgh. The Commonwealth acquired most of the parklands in the mid-1960s, and in 1970 the first phase of construction was completed with the development of the Falls Area.

The entire Park was part of the interconnected Finger Lakes system that covered much of Western Pennsylvania during the earth's early history. This fact accounts for the proliferation of sandstone conglomerate boulders found above and below the surface.

Small communities existed within the boundaries of what are now parklands, but have long since disappeared. They were generally small logging or mining villages, which disappeared when the log supply was exhausted and the mines were emptied.

Some of the industries at Ohiopyle during the 1800's were coalmines, a saltworks, a sawmill, a pulp mill, a spoke factory, a barrel factory, a gristmill, a tannery, and a water wheel generating plant. It was also a center for the resort industry in the late 1800's. Today there is one general store in the Borough, but no industries.

The logging and mining industries inevitably altered the landscape around Ohiopyle. The timber was cut over several times. Coalmines scarred the landscape and produced acid mine water which still finds its way into some of the streams. Clay mine residues also contaminate streams. The Commonwealth's mine reclamation programs are abating mine acid pollution of streams and are restoring the strip-mined areas to their former natural condition.

Little strip mining has taken place in the Ohiopyle area. This is due, in part, to the poor quality of the coal and to the rugged terrain. Contour stripping of steep topography is difficult and expensive since the equipment must be moved often. Clearly then, the environment has had to accept increased human usage (Ohiopyle Master Plan, 1976).

7.2.3 South Connellsville

In the 1700's the entire area of Pennsylvania was virgin forest, and only a few white men had ventured into the territory of the Indians. The flow of white settlers had yet to materialize. By the mid 1750's, a few white settlements had been started in this area, then known as Cumberland County. However, the French and Indian War was to stem the tide of white settlers and turn back those hardy few that had already effected settlements in the area. Not until 1759 were the boldest of the pioneers to return and once again build their homes, destroyed during the French and Indian conflict.

In 1768 the territory in Western Pennsylvania was acquired from the Indians, and in 1769 the Pennsylvania Land Office was opened to dispose of this land. At that time the entire area was part of Cumberland County. In 1771 the County of Bedford was established from Cumberland County and ten years later, Westmoreland County was set aside from Bedford. In 1783 the county of Fayette was to emerge from Westmoreland with the present boundaries.

In 1770, Zachariah Connell came to the area and settled with his family on the east bank of the Youghiogheny River. In 1793 he surveyed and secured a charter for the town of Connellsville. He also obtained other valuable tracts of land, some of which would comprise the Borough of South Connellsville over one hundred years later.

Rome, Constantinople, Newry, Connell's Last, the Jacob Furry Tract, and the Confidence Tract were the original land grants from William Penn that are a part of South Connellsville Borough. The individuals who acquired this land would sell it to others who came later. This, then, was the beginning of the ownership of private property in Fayette County, and was the start of the recording of deeds, as we know it today.

In the early 1900's industry still flourished in South Connellsville and among the new factories was the Pittsburgh Safe Company. It was built in 1902 on ground acquired from Joseph Soisson and was located where Anchor Hocking Cap Plant now stands. The factory had two main buildings, a blacksmith shop, and a cabinet room that extended into a court off the two main structures. Approximately ninety-five employees produced about ten safes each day.

South Connellsville also had a number of stone quarries that produced jobs for the people of the community in early years. The first quarry was opened in 1870 in the South Connellsville area. In 1965 the South Connellsville Rod and Gun Club purchased the property and now has a shooting range located in the quarry. Some of the stone mined from the quarry was used to pave Forbes Avenue in Pittsburgh and is still in use there after one hundred years.

In 1911 the Borough of South Connellsville was incorporated and council held its first meeting in January of 1912. The meetings were held in the old borough building on

Richie Alley until the present borough building was built in 1957. (South Connellsvile History – Fayette Internet Site). To find out more about the history of South Connellsville, contact the South Connellsville Historical Society.

7.2.4 Laurel Hill Area

7.2.4.1 Indian Inhabitants

The extensive use of Indian names in the Youghiogheny Corridor points to an ancient human heritage. Little is known of the earliest inhabitants, but there is a strong indication of a Paleo-Indian occupation dating around 10,000 BC. Fluted projectile points have been found throughout Somerset County.

Archaic, Early Woodland, and Middle Woodland campsites occur throughout the area reflecting a semi-sedentary existence from about 8,000 BC to 900 AD. A local archeologist has found 60 small campsites on Laurel Hill. Generally these sites are associated with rock shelters or flat areas adjacent to headwater springs. The hunters that used these sites were generally seeking black bear, deer and chestnuts.

Between 900 AD and 1,000 AD, the Monongahela People began constructing stockaded (protected) villages on flood plains and hilltops of the area. Monongahela subsistence depended on intensive horticulture. The Gnagey Site near Meyersdale produced charred remains of corn, beans, and squash, and bones of animals still living in the area plus passenger pigeon and elk. They made and used fabrics, pottery, the bow and arrow – all at 1,100 AD or before.

As for more “modern” tribes, the Iroquois reserved these lands as hunting and gathering grounds, but they did not settle in the area. Thus the region was devoid of a resident Indian population for a considerable period.

7.2.4.2 European Settlement

The earliest known date of European contact material on a local Indian site is 1630 AD, at the Gnagey site. As Europeans expanded their grip along the east coast during the first half of the 18th century, many tribes such as the Delaware, Shawnee, Mingo and Wyandots were pushed west into the Allegheny Wilderness.

Since the earliest days of colonization, Laurel Ridge has stood stubbornly across the westward path of American History. First came the displaced Indians, followed closely by the traders, the armies, and the endless streams of pioneers. Several of their paths across Laurel Hill evolved into important arteries of commerce:

- Nemacolin's Path - Cleared for horses in 1752, this trail became Braddock's Road in 1755. The alignment is now approximately the Old National Road, U.S. Rt. 40.

- Turkeyfoot Path - Cleared for horses in 1751, this path ran from present-day Confluence Road (L.R. 55021), crossing the trail at mile 11.3. Confluence was known as "The Turkeyfoot" because of the pattern created by the joining of Youghiogheny River, Casselman River and Laurel Hill Creek.

7.2.4.3 French and Indian War

Perhaps the most colorful chapter in the history of the Laurel Hill region surrounds the events of the French and Indian War. Events such as Washington's surprise attack against the French at Jumonville Glen, his narrow escape later at Fort Necessity, Braddock's bloody defeat, and General Forbes successful campaign mark the historic landscape of the region. At mile 2.3 lookout tower of the Laurel Highland Trail above the Youghiogheny Gorge, early British strategists assigned great importance to this natural gap through Laurel Hill. They felt that control of the Youghiogheny Gorge was essential to the settlement of the Western Lands.

7.2.4.4 Western European

For all intents and purposes, the real period of westward expansion did not begin until 1783. Literally millions of people poured across Laurel Hill on roads leading west to the Ohio Valley. The Pennsylvania and National Roads were popular Corridors for Conestoga wagons and stagecoaches because they were stone surfaced. Even with improved roads, the way across Laurel Ridge was not easy.

By the 1790's, the fertile lowlands on either side of Laurel Ridge were being rapidly converted from virgin timberland to subsistence farms. As the land became more settled, a new class of entrepreneurs began to exploit the rich mineral and timber resources of the uplands. Thus, inevitably, Laurel Ridge awoke from its wilderness slumber as the industrial revolution in America gained momentum.

The stone iron furnace era spanning from 1790 to 1860 was a period greatly affecting the use of the land on Laurel Mountain. Some 24 furnaces were built along the flanks of the ridge to capitalize on a variety of mountain resources. The vast upland forest of chestnut, oak and hickory was used for making charcoal, the furnaces' fuel. Since an iron furnace could consume an acre of forest a day, this was one of the first large-scale uses of the timber resources of the Laurel Hill region.

The mountain provided a tumbling supply of water, which could be harnessed to drive the furnaces' bellows. It also provided building stone for the furnace shell that was easily quarried in many locations. Minerals, including carbonate from ores and limestone, were mined where they outcropped on the mountainside. The depressions from these early mine workings are often still visible in proximity to the furnace sites.

As transportation improved, first by canal and then by railroad, the pace of commerce quickened. During the latter part of the 19th century lowland communities sprang up almost overnight to develop the coal resource which powered the steel industry.

Between 1886 and 1940 the Laurel Hill Forest was thoroughly plundered in classic cut and run fashion. Since streambeds presented the most gently sloping land to the ridge tops, they were often pre-empted for rail beds. Skid roads plunged directly down the

hollow slopes to the stream railways below, and countless tons of rich forest humus were flushed down the slopes during rain events.

7.2.4.5 Public Land Acquisition

Public land acquisition in the Laurel Mountain Region began modestly in 1909 with a State Forest purchase, which is now part of the Linn Run Division. Since that time numerous parcels were acquired all along Laurel Hill for gamelands, park and forest uses. Within the last 15 years this trend has greatly accelerated as a result of massive acquisition programs by a private land conservation organization, the Western Pennsylvania Conservancy. This organization acquired land using a revolving fund and then deeded the land, at cost, to the State.

The Conservancy's efforts resulted in the opening of the 18,483 acre Ohiopyle State Park in 1965, and the 15,037 acre Laurel Ridge State Park two years later. Recently they transferred a 9,500 acre tract to the Forbes State Forest, 3,000 acres of which has been permanently dedicated as the Roaring Run Natural Area.

Concurrent with State land procurement programs, other supporting land-use trends were growing in the Laurel Hill Region. Municipalities were acquiring watershed lands; private research areas such as the Powdermill Nature Reserve of the Carnegie Museum were set up, and private hunting and recreation areas were created.

Taken together, the historic changes seen in the land use along Laurel Ridge signaled a shift in values from a philosophy based on careless resource exploitation to one of wise use and conservation.

The emergence of a new regional character is a relatively new phenomenon that resulted principally from the creation of the Laurel Ridge and Ohiopyle State Parks. This forged an unbroken chain of public lands running the length of the Laurel Hill from the Youghiogheny River to the Ohio River (Laurel Highlands Hiker's Guide, 1992).

7.2.5 National Register of Historic Places

Preserving historic properties as important reflections of our American heritage became a national policy through the passage of the Antiquities Act of 1906, the Historic Sites Act of 1935, and the National Historic Preservation Act of 1966, as amended. The National Register of Historic Places is the official list of these recognized properties, and is maintained and expanded by the National Park Service on behalf of the Secretary of the Interior.

The National Register of Historic Places documents the appearance and importance of districts, sites, buildings, structures, and objects significant in our pre-history and history. The National Register is the nation's inventory of historic places and the natural repository of documentation on the variety of historic property types, significance, abundance, condition, ownership, needs, and other information. Figure 7-2 is a list of all the known National Register Listed Properties found in the Corridor.

7.2.6 Youghiogheny Lake

The following information was provided by the USACE and is part of the Youghiogheny River Lake Master Plan-Draft Report (1999).

7.2.6.1 Management Area

No known cultural resources sites are located in this unit; however, the entire unit has not been tested. Since the original project structures have recently turned 50 years of age, these must be treated as if they are eligible for the National Register for Historic Places until a formal determination can be made.

7.2.6.2 Recreation Area

There are no known cultural resources sites located in this unit, however, the entire area has not been tested.

7.2.6.3 Youghiogheny Recreation Area (Spillway & Poplar Hollow)

There are no known cultural resources sites located in this unit, however, the unit has not been completely tested.

7.2.6.4 Ridge Natural Area

There are no known cultural resources sites located in this unit. However, the entire unit has not been tested.

7.2.6.5 Youghiogheny River Lake Wildlife Area

This area contains three identified prehistoric-period archeological sites 36So19, 36So28, and 36So29. Site 36So28 evidences Early and Late Archaic and Woodland time periods on the presence of diagnostic artifacts. Erosion affected the integrity of this site at the time it was registered. Site 36So19 is assignable to the Archaic, Early, and Middle Woodland time periods, and 36So29 was not assigned to a specific prehistoric period. These sites were also being affected by fluctuations in the Youghiogheny Lake level.

The presence of cultural resources in this area attests to the use of the area prehistorically. For this reason and because both prehistoric and historic period cultural resources are located on other project lands, this area is considered to have the potential for containing additional cultural resources.

7.2.6.6 Somerfield North

This area contains two identified historic period archeological sites, 36So27, and 36So109. Neither site is assignable to a specific historic time period, but they do indicate the general historic period use of the area. Both sites were being affected by the fluctuations of the Youghiogheny River Lake level at the time of registrations in 1964 and 1991. Because of the presence of cultural resources within this area, and because both prehistoric- and historic-period cultural resources are located on other project lands, this area is considered to have the potential for containing additional cultural resources.

The southern boundary of this unit is U.S. 40 (the National Road). This roadway was an important link between eastern seaports and cities in the Midwest. The original road alignment in the area of the project was relocated and widened, and a new bridge was constructed to span the reservoir. Road remnants on the original alignment of the National Road and the town of Somerfield are located on this unit and are inundated by the reservoir.

7.2.6.7 Somerfield South

This area contains two identified prehistoric- and historic-period archeological sites, 36So20 and 36So22. Site 36So20 is assignable to the Early, Middle, and Late Archaic; Transitional; Early Middle; Late Woodland; and historic time periods. This site represents the use of the area over the largest part of prehistory and into the historic period. Site 36So22 is assignable to the Archaic and indicates a more limited chronological use of the area. Both sites were being affected by erosion associated with the fluctuations of the lake level at the time of their registration. Because of the presence of cultural resources within this area, and because both prehistoric- and historic-period cultural resources are located on other project lands, this area is considered to have the potential to contain additional cultural resources. The north boundary of this unit is U.S. 40 (National Road).

7.2.6.8 Braddock Run

There are no known cultural resources sites located within this area, however, no testing has been conducted. This area has been identified as having a high potential for both historic and prehistoric sites. Before the construction of the Great Crossings Bridge, the National Road and the trail which preceded it, followed Braddock Run down from Addison and crossed at a natural ford.

7.2.6.9 Mill Run Recreation Area

The floodplain and bottomland forests are typically not highly valuable for wildlife due to the lack of forage provided by the dominant trees, including sycamores and willows. However, larger trees in these areas are often used for nesting by wood ducks,

woodpeckers, and owls. The invaded thicket and invaded meadow generally provide good nesting and forage habitat. Two sites, 18Ga227 and 18Ga108, are located within this area. The unit has also been identified as a high potential area for both historic and prehistoric sites.

7.2.6.10 Mill Run Natural Area

There are no known cultural resources located within this area, however, the unit has not been thoroughly investigated. A study conducted by the District has identified this unit as having high potential for both prehistoric and historic sites.

7.2.6.11 Jockey Hollow Boat Launching Area

There are no known cultural resources sites located within this area.

7.2.6.12 Jockey Hollow Recreation Area

Within this area, there are no known cultural resources sites. The location of the recreation area between U.S. 40 and the lake limits its ability to expand. The bank on the western portion of this unit is slipping. The guardrail along the paved road has been affected, marking the upper limits of the slip.

7.2.6.13 Tub Run

There are no known cultural resources sites located within this area.

7.2.6.14 Lake Area - Pennsylvania

There are several known archeological sites that were inundated by the reservoir. The known sites are 36Fa23, 36Fa51, 36Fa84, 36So3, 36So4, and 36So21. The Great Crossings Bridge is located within the Lake area on the Pennsylvania side.

7.2.7 Other Areas of Local Significance

7.2.7.1 Fallingwater

The Western Pennsylvania Conservancy maintains and operates Fallingwater, designed by Frank Lloyd Wright in 1936. It is surrounded by the 5,000 acre Bear Run Nature Preserve, an expanse of wild mountain land with more than 20 miles of marked trails for hiking, nature study, backpack camping and ski touring. Originally Fallingwater was built as a weekend home for the Edgar J. Kaufmann family. The home is located in Mill Run, Pa, and was entrusted to the Western Pennsylvania Conservancy in 1963. Since that time, almost three million visitors have toured this National historic Landmark.

7.2.7.2 Ferncliff Peninsula

National Natural Landmark having many rare and interesting plants, magnificent rock outcrops and fossils is located in Ohiopyle State Park. Ferncliff Peninsula recognized for its unique botanical varieties for nearly a century was named a National Natural Landmark by the Department of the Interior in 1973.

7.2.7.3 Kentuck Knob

Kentuck Knob stands approximately 2,000 feet above sea level in the mountains of Western Pennsylvania. Frank Lloyd Wright designed this home in 1953 for the I.N. Hagan family of Uniontown. To the east stretches a breathtaking panorama of the Youghiogheny River Gorge and the mountains that surround it. The home is built on a hexagonal grid, and is constructed entirely of tidewater red cypress and native fieldstone. Kentuck Knob is located on Kentuck Road, Chalk Hill, Pennsylvania.

7.2.7.4 Fort Necessity National Battlefield

The National Park Service runs and operates this site. The reconstructed stockade at Fort Necessity marks one of the great milestones of colonial days. George Washington fought his first battle here and the French and Indian War began here in 1754. The site is

located 11 miles east of Uniontown on Route 40. Fort Necessity is a National Registered Site.

7.2.7.5 Braddock's Grave

The National Park Service runs and operates this site. Braddock's Grave marks the last resting place of the British general mortally wounded during the devastating defeat his army sustained near Pittsburgh in 1755. This site is located one mile west of Fort Necessity.

7.2.7.6 Wharton Furnace

The only one of more than 20 early Fayette County Iron furnaces to be restored to its original appearance. The furnace operated from 1839 to 1873. It produced cannonballs for the Civil War. This site is located on Rt. 40 and is listed as a National Registry Site.

7.2.7.7 Great Crossings Bridge

This bridge, built in 1818, lies below the reservoir on the north side of the existing Route 40 Bridge. The Great Crossings Bridge is a triple-arch bridge on the original National Road. Its name was derived from the nearby Great Crossings Ford where George Washington crossed with his troops in 1754, and distinguished it from the National Road's "Little Crossings Bridge" across the Casselman River. Designed and built by Kinkead, Beck and Evans, the bridge stands about 40 feet high, 30 feet wide, with a parapet length of 375 feet. Two rounded buttress piers originally having larger rounded bases support the 3 arches, measuring 90, 75, and 60 feet.

The Great Crossings Bridge has been inventoried in two recent historical surveys: the 1987 state survey of National Road properties (PHMC Survey Form survey code 111-AD-7) and the 1982 Fayette County Historic Resource Survey (PHMC Survey Form survey code Oh-1). The bridge is also described in Charles Stolz's, *The Early Architecture of Western Pennsylvania* (1936). The bridge has been determined to be eligible for the Historic Register.

Before the Youghiogheny Reservoir was built, it was suggested by several historical societies that the bridge be moved to another location and thereby preserved. This was not done and the bridge was inundated. A section of the bridge may still be seen during very dry years when the lake is at an extremely low elevation.

7.2.7.8 Great Crossings Ford

About 0.5 mile upstream from the bridge is the "Great Crossings Ford" of the Youghiogheny River where George Washington and his Continental Army crossed and camped November, 18 1753. At that time, he had been sent as an envoy by Governor Dinwiddie of Virginia to talk with the French Commandant at Fort LeBoeuf and to warn the French away from the Pennsylvania border. Washington encamped there a second time with his army from May 18 to 24, 1754, when on a military expedition to the Ohio River and from that point explored the Youghiogheny River.

General Braddock, with his army, also crossed there on June 24, 1755 on his march against Fort Duquesne. A bronze plaque describing this is located along the highway at the eastern end of the U.S. 40 Bridge, which spans the reservoir.

7.2.7.9 National Road (U.S. Rt 40)

Undoubtedly, one of the most influential contributions to the development of the United States in its early history was roads. The National Road was authorized by President Thomas Jefferson in 1806 to be constructed from Cumberland, Maryland to Ohio. It reached Wheeling, West Virginia on the banks of the Ohio River in 1818 and immediately became an important link between eastern seaports and population centers inland.

In the 1920s, the National Road became U.S. Route 40. When the Youghiogheny River Lake was built, this highway was widened and relocated in the area and a new bridge was built to span the reservoir. A 2-mile-long section of the original Route 40, located about 3 miles east of the bridge, passes through the town of Addison. Petersburg Tollhouse, is the only original tollhouse still standing on this section of highway in Addison.

7.2.7.10 Mason-Dixon Line

The boundary between Pennsylvania and Maryland, the Mason-Dixon Line was surveyed between 1763 and 1767 to end a bitter colonial land dispute. During the Civil War, this line became the symbolic division between northern and southern states. The line, which crosses the reservoir, is identified at several locations in the area.

For the region to thrive in the tourism arena, the historical resources must be preserved as much as possible. The cultural and historical entities of the Middle Youghiogheny River Corridor deserve as much consideration as the water, land and biological resources. The Corridor has a complex and storied history, which deserves to be upgraded and preserved.

8.0 MANAGEMENT OPTIONS

Many factors contribute to the establishment of a healthy ecosystem. Stream systems by nature are dynamic. Many forces act together and all aspects of these forces must be studied in order to develop a management plan for the Middle Youghiogheny River Corridor.

The Middle Youghiogheny River watershed area is immense. Events many miles away from the River can effect it's water quality, flora and fauna. Understanding the watershed is important for any restoration effort undertaken. Based on input from the Chestnut Ridge Chapter of Trout Unlimited (CRTU) and the Steering Committee and upon a review and analysis of the resources of the Corridor, the following major management points are reviewed and recommended.

8.1 WATER RESOURCES

8.1.1 Water Quality Monitoring

A standardized scientific water quality monitoring program is lacking for the Corridor. Monitoring of the tributaries will give CRTU and other entities strong indicators as to what methods and projects should be undertaken on the Middle Youghiogheny River and its tributaries. Long term water quality monitoring will provide necessary data for remediation analysis. Scientific monitoring provides information as to the pollution sources in tributaries. Specific remediation techniques need to be designed based on the scientific data collected over the long term. For instance, it may be known that a tributary is being polluted by AMD, nutrients, fecal coliform, etc., but scientific water quality data will provide data as to the severity of the problem, where the stream is being degraded the most, and the basis for remediation projects.

CRTU understands and is committed to providing scientific Water Quality data for tributaries of the Corridor. The following tributaries have had an initial run of sampling: Dunbar Creek, AMD Discharge to Dunbar Creek, Meadow Run, Bruner Run, and Ramcat Run. The results can be viewed in ***Appendix K***. In addition, the following

tributaries have been identified by CRTU and the Steering Committee as high priority tributaries:

- Cucumber Run;
- Ramcat Run;
- Drake Run;
- Meadow Run;
- Laurel Run;
- Beaver Run;
- Limestone Run;
- Bear Run;
- Jonathan Run;
- Red Stone Creek;
- Bruner Run;
- Blackberry Run;
- Glade Run;
- Morgan Run; and
- Dunbar Creek.

It must be noted, that all tributaries existing in the Corridor are in need of sampling and analysis. The water that flows through the Middle Youghiogheny River Corridor is a major component to the quality of life for the individuals who live or visit the Corridor. The waters in the Corridor support terrestrial and aquatic life, including plants, animals, and people. Though often taken for granted, water is a precious resource that should be protected. Good quality water is an essential component of recreational, educational, and industrial opportunities, and the well being of those who live and play in the Corridor. Monitoring the quality of the waters in the Corridor is essential to preserving and protecting them from future degradation.

8.1.1.1 Public Education

Local schools, organizations, and government agencies can benefit from the water quality monitoring process by learning about the dynamics of the water resources of the Corridor. Hands-on water quality monitoring can provide an excellent way to learn about aquatic ecosystems. CRTU can use water quality monitoring to educate younger students through simple stream walks to observe a stream and its riparian habitat and older students through use of a high school or college laboratory analysis. A water quality monitoring program lends itself to providing learning opportunities to citizens in the Corridor.

8.1.1.2 Citizen Awareness

Collecting stream data can effectively make a community aware of water quality problems or issues and build support for a program or course of action. CRTU can successfully generate community awareness and support by providing clear, un-biased, scientific water quality data.

8.1.1.3 Scientific Water Quality Data

Scientifically collected, recorded and stored information provided by CRTU can provide valuable information that many resource agencies can utilize in management decisions. This data can be used by CRTU, local groups, and governmental agencies in the design and implementation of specific watershed remedial projects.

8.1.1.4 Water Quality Degradation Issues

CRTU can use the data obtained by monitoring streams to determine if there are any water quality problems. Some watershed detective work can narrow down the possibilities when a pollutant is suspected. If a problem is detected, CRTU can focus on identifying, characterizing, and documenting the problem.

8.1.1.5 Stream Assessment

CRTU can adapt a monitoring program to address a specific concern, such as AMD discharges, land use activities, non-point discharges, runoff and other impacts along the stream.

8.1.1.6 Project Goal Assessment

CRTU is prepared to undertake specific restoration projects aimed at specific physical or chemical improvements in the Corridor. CRTU can use the data obtained from monitoring to document the effectiveness of specific projects.

8.1.1.7 Community Discharge Compliance

CRTU and other local groups can act as “watchdogs” for permit violations or illegal discharges. In addition, the presence of strategically placed water quality monitoring points can provide added pressure for municipalities to construct sewage and storm water runoff systems.

8.1.1.8 Legal Issues

Data collected by non-professionals is not normally acceptable in court cases or legal actions. For data to be legally valid, scientific methods and strict QA/QC protocol as set forth by DEP or EPA must be followed. Legal criteria include standard field and laboratory methodologies, chain-of-custody records, and statistically valid data. In most instances, even data collected under the strictest criteria by citizens groups can be used only as supporting background information, and can be valuable as such. However, a few watershed associations in Pennsylvania do collect and maintain legally and statistically valid data.

Methods of monitoring water quality are as diverse as the reasons for monitoring. Equipment can be as simple as a camera or a seine net and bucket, or more sophisticated, such as a portable chemical analysis field kit or analytical meters coupled with laboratory analyses.

Information collected during water quality monitoring provides a foundation for describing the state of a stream and the quality of the resource. That foundation can lead to various conclusions and actions. It is important to remember that the results from water quality monitoring should be realistic and unbiased and provide a clear picture to those not familiar with the stream or watershed.

Many streams in the Middle Youghiogheny River Corridor have never been sampled in a water quality monitoring program due to a general lack of resources. A scientific water monitoring program based on a generally accepted or high quality methodology will fill

in gaps in background or historical information and will provide a foundation for future remediation projects and objectives in the Corridor.

8.1.1.9 Physical Characteristics

Monitoring generally falls into three main categories: physical, biological, or chemical. Monitoring the physical characteristics of a stream is one of the easiest activities to undertake. These data will provide valuable information on the condition of the stream Corridor, habitat, or streambank erosion. Data on width, depth, velocity, volume, clarity, color, bottom material, streambank conditions, riparian land uses, and habitat quality can be measured and documented.

8.1.1.10 Chemical

Sampling a stream for chemical elements will give CRTU a snapshot of water quality at the time of sampling. The more frequent and representative the samples taken, the more accurate the picture of the stream. The volume of water in the stream influences the concentrations of the elements measured. Pollutants may wash downstream during heavy rainfall, dissipate or become diluted.

8.1.1.11 Biological

A comprehensive macroinvertebrate study to be completed on the entire Middle Youghiogheny River. Furthermore, macroinvertebrate studies need to be undertaken on all of the tributaries in the Corridor. Biological monitoring will provide CRTU valuable information about the long-term health of a stream. The relative stability of aquatic communities can indicate short or long-term pollution events that otherwise cannot be directly observed by water chemistry sampling. Aquatic species are used as water quality indicators based on their relative tolerance to pollutants. Stream classifications based on an inventory and scoring of aquatic invertebrates have been developed. Identification of aquatic organisms, however, requires training and practice.

The recommended parameters to be sampled and the estimated cost for the water quality monitoring (based on an initial round of sampling by CRTU) are as follows:

Total Alkalinity	$10.00/sample
Total Acidity	$10.00/sample
Sulfate	$15.00/sample
pH	$10.00/sample
Total Iron	$12.00/sample
Dissolved Oxygen	$10.00/sample
Total	$67.00/sample location

* In most cases the cost per sample will be discounted when a larger number of samples are prepared.

In comparison, the cost for a fully automated sampler can range anywhere from $4,000 - $10,000+. These prices do not include maintenance. Depending on how extensive CRTU intends the sampling to be, the long term cost of each method (manual or automated) will need to be examined.

8.1.2 Acid Mine Drainage Remediation

Acid Mine Drainage (AMD) is a leading cause of degradation to the Middle Youghiogheny River water quality. To understand the Acid Mine drainage problem in the Corridor, first the source of the discharges must be identified. In addition to identifying the sources, a current and complete inventory of the known permitted mines in the area must be made, along with the identification of the un-reclaimed mines in the area. These surveys will take a significant amount of time and effort to complete for the entire Corridor. It is recommended that CRTU concentrate their efforts on one or two priority tributaries.

The following assessments and identifications are recommended to CRTU to be accomplished during an assessment of the AMD discharges in the Corridor:

- Low flow/high flow water quality of all tributaries;
- All mine permitted areas;
- Known mine discharges;
- Chemistry and flow rates of individual mine discharges;
- Known discharges being treated perpetually;

- Un-reclaimed areas (abandoned mines);
- Potential of mine drainage impacted streams segments for passive treatment;
- Geologic Assessment of streams impacted by AMD;
- Highest quality streams or stream segments for protection;
- Dirt and gravel roads adjacent to all streams;
- GIS coverages of all above mentioned items; and
- Prioritization scheme for stream restoration/enhancement based on gathered data.

The following are descriptions of AMD treatment systems that could be considered for the Corridor:

- Wetland Treatment Systems – Wetlands have been widely used as a passive treatment of mine drainage. Basically two general types exist, surface flow and subsurface flow. They are relatively simple, low maintenance systems that work by reducing iron, manganese and other constituents. The process works not by filtration alone, but from the biological interactions of bacteria on the root systems of the plants, breaking down the constituents to less harmful compound/byproducts. In this area, we have had the most success with two species of plants, *Scirpus validus* (softstem bulrush) and *Typha spp.* (cattails). The rigorous growth rate of these species seems to enhance the bacteriological activities and the overall treatment. These species are also less sensitive to the acidic conditions.

- Alkaline Producing Systems - These systems consist of basins that collect mine drainage. The basins are filled with limestone, capped with organic material such as mushroom compost with an overlying water layer, and an underlying drain system. Bacterial activity plays a role and the limestone breaks down to neutralize the acidity. Typically, the first basin is the reactor, followed by settling basins and a wetland polishing unit. In theory the systems work and the success of the ones built over the past few years is good. Long term effect and potential maintenance issues have yet to be

determined. Very few have been on-line for long periods.

- Limestone Drains - These are simple, yet effective trenches or basins filled with limestone rock to neutralize the acid. Some are underground like a French drain and others are open ditches.

- Lime Feeders - Lime feeding hoppers can be installed in any small stream impregnated with AMD. They require more maintenance than the other methods, but they can be very effective.

The cost for each system is extremely variable (ranging from thousands to millions) and is based on specific site conditions, construction equipment needed, access considerations, and design work. As an example, A project to remediate eight average basins in Loyalhanna Creek ran nearly $55,000. Once a majority of the AMD discharges are identified, and the necessary data are obtained for each, a more realistic price can be developed.

An AMD discharge has been identified on the Youghiogheny River Trail. This discharge flows into Dunbar Creek. An effective treatment for this discharge would be to construct a wetland system on Dunbar Creek near Wheeler Bottom. Efforts should be made to purchase the land around that area, and convert it into a natural wetland area. In addition to constructing a wetland in that area, a public nature park would be a great improvement to that area. A park would provide citizens controlled access to the River and an opportunity to become familiar with the resources of the Corridor.

A new technology has been developed to aid in the identification of AMD discharges. This technology uses imaging devices mounted on a helicopter flying at low altitudes over a designated area. This technology is very effective, but is extremely costly. At present, the cost for using this technology for the Middle Youghiogheny River Corridor would be approximately $150,000. This technique has recently been used on the Youghiogheny River from Indian Creek to the mouth at McKeesport, Pennsylvania. This technology is very effective for identifying discharges that may not be readily visible, such as those emanating from under the River. The type of geologic formations that exist

in the Corridor makes visibly identifying discharges difficult. Due to the high cost of this approach it is recommended that a consortium of interested groups and agencies in the area ban together to increase the size of the fly over and thus defray the cost to any one group.

Another, more cost effective approach would be a visual assessment of the tributaries. Although all the discharges may not be identified during a visual assessment, this type of assessment will allow for the identification of major AMD discharges.

8.1.3 Low Alkalinity

A concern to many is the lack of a consistent alkalinity source in the Youghiogheny River. It is documented that the Middle Youghiogheny River is being degraded by low pH Acid Mine Drainage. Alkalinity would buffer this low pH by providing a source of high pH, thus balancing the impacts. This lack of alkalinity hinders the capacity of the Middle Youghiogheny River to buffer impacts from AMD. Methods and technologies are being developed to effectively supply waterways with alkalinity. One such method would be to dump large amounts of limestone into tributaries. Large amounts of limestone will raise the pH of the tributary discharging into the Middle Youghiogheny River. This technique is being used on Glade Run, a tributary to Dunbar Creek. Dunbar Creek, which is a tributary to the Middle Youghiogheny River, is listed as a High Quality Cold Water Fishery (HQ-CWF). Alkaline sands are being introduced into Glade Run, a low pH stream, in attempts to raise the pH to acceptable levels. This project has had a positive effect on Glade Run and downstream on Dunbar Creek. A constraint to the ultimate success of this project is acquiring funding to offset the cost of the alkaline materials. It is key to the success of Dunbar Creek that this project continues to provided a sources of alkalinity. A similar method would be to build impoundments in or near the Middle Youghiogheny River itself. The impoundment would then be filled with limestone and water from the River would be diverted through the impoundment raising the pH levels.

8.1.4 Safety

Issues have been raised regarding the unsafe nature of the Middle Youghiogheny River, especially near Connellsville and South Connellsville. There is a need for an organized

effort to eradicate hazardous and unsafe structures in the Middle Youghiogheny River, such as large boulders and sink holes. For the Middle Youghiogheny River to be used to its fullest, it must be as safe as possible. Removing unsafe structures from the River will take considerable coordination of efforts. It is recommended that an interactive dialogue be started with the PA Fish and Boat Commission in order to establish a plan to elevate the dangerous structures.

8.1.5 Runoff

Stormwater and sewage overflows from municipalities along the Middle Youghiogheny River have been identified has a major pollutant source. Many of the municipalities do not have proper stormwater systems in place to handle the flow during heavy rain events. The development and management of these systems generally falls under the control of each individual municipality. However, it is the responsibility of each citizen in the Corridor to become educated about the conditions of these systems in their respective municipality. Furthermore, through education, individuals living in the Corridor must become aware of the degradation these systems are having on the Corridor. Citizens must become involved in their municipalities to improve these systems.

A major constraint associated with upgrading these types of systems is the cost involved. Sewage treatment plants can cost millions of dollars to build and maintain. Regardless of the cost of constructing these types of systems, a higher priority must be given to upgrading and constructing new sewage treatment plants and storm water runoff systems in the municipalities in the Corridor.

8.1.6 Loans Available for Undertaking Stormwater Projects

Municipalities are eligible to obtain low interest loans from the Pennsylvania Infrastructure Investment Authority (PENNVEST) to resolve drainage problems. The loan is available for the construction, improvement or rehabilitation of stormwater systems and installation of best management practices to address point or nonpoint source pollution associated with stormwater. Examples of stormwater projects eligible for funding include:

- New or updated storm sewer systems to eliminate stormwater flooding or to separate stormwater from sanitary sewer systems;
- Detention basins to control stormwater runoff; and
- Stormwater facilities to implement best management practices to reduce nonpoint source pollution.

The loan program is administered by the PENNVEST staff with technical services from the DEP. DEP engineers provide technical guidance to the loan applicants. The scope of their guidance includes:

- Conducting planning consultation meetings with loan applicants and their engineers;
- Reviewing project plans and specifications;
- Rating the projects under established criteria;
- Recommending projects for funding;
- Participating in and representing PENNVEST at preconstruction conferences;
- Conducting interim and final construction inspections; and
- Assisting PENNVEST in conducting educational programs.

8.1.7 Information from DEP

- The Storm Water Management Act (No. 167) of 1978;
- Storm Water Management Guidelines and Model Ordinances;
- Chapter 111. Storm Water Management > Grants and Reimbursement; and
- PENNVEST regulations and application form

8.1.8 Guide to Those Affected by Runoff

Individuals and property owners affected by runoff due to development need to know who is responsible for management of stormwater runoff in their particular situation. The following guide can assist in making that determination.

- Municipalities: Historically, municipalities have been responsible for enacting ordinances to regulate

stormwater as they review subdivision and land development plans (Pennsylvania Municipalities Planning Code).

- Developers: Developers are required to follow local drainage regulations. In watersheds having a completed Act 167 plan, developers, by following local ordinances, would be following the standards and criteria of the approved watershed plan.

- Department of Environmental Protection: The department is responsible for management of the stormwater planning program but has no regulatory authority for individual activities. Section 10 and 12 of the act provide the DEP with authority to compel county planning and municipal implementation in studied watersheds. The department also provides technical guidance to counties, municipalities and individuals and training.

- County Conservation Districts: The districts investigate runoff complaints resulting from earthmoving activities. Stormwater may be controlled during construction activities through temporary erosion and sedimentation control devices such as sedimentation basins. Upon stabilization of work sites, temporary erosion and sedimentation structures are often converted to permanent stormwater facilities under the jurisdiction of municipalities.

8.2 LAND RESOURCES

8.2.1 Erosion and Sedimentation

Due to the steep sided valleys that make up the Corridor, erosion is a major concern. Management of high-risk areas such as logging and construction/development must be done properly to ensure minimal sediment runoff from erosion. Along the Middle Youghiogheny River exist many locations producing siltation. These areas include un-paved parking lots, access trials to the River that are not properly covered, and various dirt roads and paths. These areas are prime sources for erosion and sedimentation

processes especially where boaters take out and put in. Steps need to be taken to eliminate these problem areas.

8.2.2 Launch Areas

Boat put-in and take-out locations are a potential source of erosion and increased sediment discharge into the Middle Youghiogheny River. It has been identified that the launch areas and the paths that connect these areas to parking lots, the Youghiogheny River Trail, etc., need to be improved and stabilized via standard and proven methods. Further investigation of each area would need to be done in order to identify the exact method for improving these areas. It is recommended that materials such as paving stones, rip-rap, reno mattress, or organic stabilizing materials be used to accomplish this improvement.

With increased general use of the Middle Youghiogheny River, erosion problems will continue to be a problem. As with the launch areas, riprap structures can help stabilize the shoreline.

Besides rip-rap, riparian buffer zones are being used in various applications to cut down the negative impacts that over use will have on river and lake shorelines. Riparian buffer zones can be as simple as re-vegetating narrow strips of land near the shoreline or can be as in depth as newly vegetating larger zones around tributary valleys and access areas. Riparian buffer zones also act as natural filters that diminishes the amount of nutrients and other sediments that pollute the water resources in the Corridor.

The shorelines and banks of streams and rivers are extremely important to the biological integrity of aquatic and riparian ecosystems. The quality of the shorelines and banks will be reflected in the quality of the aquatic ecosystem. For instance, if severe erosion is occurring on the banks, siltation can smother aquatic organisms, impacting the entire aquatic community. Increased turbidity due to suspended matter can also affect beds of submerged aquatic vegetation, an important link in the food chain.

Many proven bioengineering techniques are available for use in improving the overall quality of habitat. It is recommended that CRTU use the most natural methods. In areas

of severe erosion, other less natural methods may need to be implemented such as gabions, reno mattresses or riprap. However, these less natural techniques can usually be avoided thanks to the knowledge we have gained over years of experimenting with natural bioengineering.

In reality, stream systems are always changing. Erosion is a natural process and some ecosystems have adapted to these changes enabling quick recovery. However, human interaction has caused erosion to occur more often or more severely than it normally would.

Prior to the design of shoreline and bank improvements, data will need to be collected including, but not limited to the following:

- A habitat evaluation in all areas considered for improvement. The evaluation should include a complete evaluation of the predominant plant species present. Invasive, non-native plants should be well documented as well as the existence of any species of special concern (rare, threatened, endangered, etc.)

- A comparison of undisturbed (background) bank and shoreline habitats from streams. This will aid in the design of the improved habitat.

- Thoroughly document all tributaries in the study area and their potential need for improvement, especially at their confluence with the Youghiogheny.

Once the data are reviewed, appropriate project design can be completed. In an ideal situation the streambank improvements should be part of a larger plan to manage the entire riparian Corridor (forested buffer, wetland areas, steam banks and stream channel).

Streambanks must contain a network of plants to absorb the stream's energy during flood events. The streambank will also provide significant wildlife habitat and is critical for transitional (amphibious) organisms. Woody species are generally dominant on streambanks in this area. The most common species include *Acer saccharinum* (silver

maple), *Platanus occidentalis* (sycamore), *Tsuga canadensis* (hemlock), *Rhododendron spp*. (rhododendron), *Alnus spp.* (alders), *Viburnum spp.* (viburnums), *Cornus spp.* (dogwoods) and various *Salix* (willow) species. Care should be taken to avoid non-indigenous species such as bankers dwarf willow and "streamco" purple osier willow. Though previously used extensively for streambank stabilization, their use is now thought to be detrimental and inhibits the establishment of the native vegetation.

Native herbaceous plants should also be considered in streambank stabilization. The selection of the herbaceous plants will depend on conditions. Some of the more common species used include *Iris versicolor* (blue iris), *Elymus spp*. (wildrye), *Panicum virgatum* (swith grass), *Dichanthelium clandestinum* (deer tongue grass), *Glyceria spp.* (manna grass) and *Lobelia cardinalis* (cardinal flower). These species are all tolerant to some degree of shade, flooding and drought. These and other suitable native species are available from at least one local nursery.

Some of the more common, less expensive and proven streambank stabilization techniques that are probably suitable for the Middle Youghiogheny River Corridor include the following:

- Live Cribwalls – Used for areas where banks are severely undercut and eroding. These structures consist of log layering to hold fill material and are capped with live cuttings.

- Live Branch Layering – Used to reestablish the slope of a streambank, layers of brush root and hold the bank together.

- Coir Fiber Logs and Blankets – These products are widely used in streambank restoration. Coir is the trade name for coconut hull products. Coconut hulls are said to last up to 7 years before degrading, even if wet. They are formed into logs and used at the water/land interface laid in the direction of flow or as blankets on the banks. Plants or cuttings can be installed through the coir material. The coir will help to keep the plant

materials in place until they take root. Seed can also be sown prior to laying the blankets.

- Wattles – These are bundles of live cuttings, buried along with the direction of stream flow. They will sprout and form a dense stand of the desired species, helping to hold the bank in place while providing wildlife cover.

- Rooted Cuttings/Seedlings – Any native streambank plant can be installed as a seedling. Most streambank shrubs and some trees can be installed as rooted cuttings. It is best to use a combination.

- Live Stakes/Cuttings (unrooted) – Many species of streambank trees and shrubs can be installed as unrooted cuttings or stakes. The advantage to using stakes is that they can be driven into the ground and will stay in place better during flooding than a seedling or rooted cutting. They can also be used to hold down coir logs or driven between rocks where it would not be able to dig with a shovel. Cuttings are useful because they are easily attainable and can be installed as individuals or in bunches.

Estimated Costs for Streambank and Shoreline Stabilization Structures

Description of Structure	Cost per Unit Installed
Live Cribwalls	$100/lineal foot
Live Brush Layering	$100/lineal foot
Coir Fiber Logs	$20/lineal foot
Coir Blankets	$0.75/square foot
Wattles	$35 each
Rooted Cuttings	$2.25 each
Seedlings	$2.75 each
Live Stakes	$2.75 each

Live Unrooted Cuttings	$1.25 each

*All costs are for estimating purposes only and subject to site conditions, material costs, time of year installed, volume discounts, etc.

CRTU has indicated interest in re-paving and improving existing parking lots at Jockey Hollow, Tub Run, Ramcat Run Corridor to reduce polluted run off. It is estimated that the cost for paving the lots will be approximately $12.00 per square foot (Includes all necessary provisions). A concern over paving lots would be that paving would increase runoff volume and flow velocities. An alternative recommendation to paving over parking lots would be to replace the surface of the existing lots with porous materials such as gravel and rocks. The Fayette County Conservation District should be contacted before any parking lot pavement projects are planned.

8.2.3 Agriculture and Livestock

A tremendous amount of research is currently being undertaken to develop methods and techniques to aid in managing farm and crop lands in order to reduce the amount of pollution coming from these areas.

These pollution sources must not be overlooked in the Corridor. Runoff from these sources can cause impacts to the water resources in the Corridor. Management practices applied to combating pollution from these sources can range from simply fencing off areas surrounding streams flowing through fields to developing a crop/pasture land rotation schedule. Rotating crop/pasture lands can serve to reduce the overall impacts and stress placed on each area.

The following practices are recommended for controlling the amount of pollution emanating from Agricultural/farm lands in the Corridor:

- Filtering Strips: Strips of vegetation laid next to each other (15-25 strips). These strips remove sediment, organic matter and other pollutants from runoff. A key advantage to the use of filtering strips is that they can be used on croplands next to streams to reduce sediment loads.

- Water and Sediment Catch Basins: These basins can be made out of earthen materials and should be laid across slopes and minor drainageways. This system is effective for trapping sediments.

- Diversions: The diversion structure can be a channel or ridge that diverts excess runoff for use or safe disposal in other areas.

- Livestock Watering Facilities: These facilities are troughs or tanks installed to provide livestock water supplies from a spring, pond or well. This keeps livestock out of areas with a high potential for erosion.

8.2.4 Forestry Management

Throughout history, timber harvesting has taken place in the Corridor. Because there are few legal restrictions on logging practices in Pennsylvania, it is essential that Best Management Practices (BMPs) are observed by loggers in the Corridor. Furthermore, the forestlands surrounding the Corridor must be safeguarded from activities such as development and other construction projects. The following BMPs are the minimum acceptable standards of good forest management to protect water quality.

- First and foremost, all activities should be in compliance with the PA DEP Chapters 102 and 105 regulations.
- All new road construction should be designed to shed water quickly.
- All road and landing areas should be designed to prevent or divert surface water flow.
- New roads should avoid on seasonally wet areas associated with wetlands.
- Roads should be laid out to follow the existing contours as much as possible.
- Provide adequate riparian buffers between disturbed areas, such as roads and streams.
- Wherever possible, use bridges and culverts to cross streams.

- When fords are used for crossing, stabilize the streambeds with clean rock.
- If logging requires moving heavy equipment, do so during the driest times of the year or when the ground is frozen.
- Avoid skidding through water courses or open springs.
- Avoid contaminating water bodies and soil with forest management chemicals, fertilizers and pesticides.
- Return site-specific roads to their natural conditions once their purpose is served.

8.3 BIOLOGICAL RESOURCES

8.3.1 Fish Habitat

The Middle Youghiogheny River and tributaries provide quality habitat for several aquatic species. The construction of in-river/stream fish habitat structures is a method for keeping healthy fish populations. Fish habitat structures can be one of the best ways to reestablish fish populations in the stream system. However, regardless of the habitat, other conditions are extremely important. Water chemistry and food sources are driving factors for reestablishment of fish populations. Without proper water chemistry, the entire food chain will be subject to the sustainability of any given link to the condition of the stream. Each link will affect the next. For instance, if acidity limits the growth of aquatic vegetation (many species of submerged aquatic vegetation prefer calcareous, slightly alkaline conditions), herbivorous insects will be limited as well as the carnivorous fish that eat these insects. Establishment of the lower food chain organisms will be the key to successful fisheries.

Prior to the design of fish habitat structures, substantial data will need to be compiled or collected. This data must include, but not be limited to:

- A complete characterization of the water chemistry throughout the proposed improvement areas;
- A detailed habitat evaluation;
- A point source pollution evaluation/survey;
- Existing biota survey (benthic macroinvertebrates and fish);

- Comparison of undisturbed (background) stream areas with proposed improvement areas; and
- Research on the habitat requirements of desired fish species.

Once the data are obtained and reviewed, appropriate project design can be completed. Many different types of habitat structures can be constructed. It is recommended that CRTU use structures that are 100 percent natural. Studies conducted in the Youghiogheny, Clarion and other streams/rivers of similar size have shown that large boulders provide superb fish habitat. They can be arranged in any fashion such as shutes, jetties, deflectors and other features.

Undercut banks, overhangs and submerged or emergent vegetation also provide excellent habitat. Gravel spawning beds are another option, but may be temporary as they can wash away or become silted over time. Creation of riffle areas, if needed, is an excellent way to oxygenate the water and create benthic macroinvertebrate habitat.

To summarize, It is recommended that the following techniques be used to improve the fish habitat in the Corridor:

- Submerged/emerged large boulders;
- Creation of bank habitat;
- Establishment of submergent and emergent vegetative beds;
- Creation of riffle areas; and
- Creation of gravel spawning beds.

The above fish habitat rehabilitation suggestions were chosen due to their ease of construction, simplicity in design (no need for detailed engineering), availability of materials and relatively low cost. Regardless of the recommendation chosen, a specialized contractor with specialized equipment will be needed to implement these improvements. Accessibility to the sites will need to be evaluated, but will probably not be a problem with the right equipment. Local sandstone boulders can be purchased. Bioengineering materials for the bank habitat and vegetation for the submergent and emergent beds are also available locally. Sandstone pebbles (dredged from local rivers

and sold by the ton) can be used in the spawning beds. Riffle areas can be constructed using limestone riprap with some river sandstone (rounded) blended-in. This will give a nice contrast of high and low spots, creating more of a riffle affect.

With submerged aquatic vegetation, species selection will depend on the water chemistry and substrate type. Suggested species include *Justica maritima* (water willow), *Spartina pectinata* (freshwater cordgrass), *Saururus cernuus* (lizard tail), *Scirpus americana* (three square), *Vallisneria americana* (tapegrass), *Scirpus validus* (softstem bulrush). Planting centers, in a stream channel, are generally one foot off-center.

Estimated Costs for Fish Habitat Structures

Description of Structure	Cost per Unit Installed
Boulders – approximately 3-4 foot diameter	$800.00
Bank Habitat Restoration – General	$100/lineal foot/side
Vegetative Beds	$3.00/square foot
Riffle Area	$3.00/square foot
Gravel Spawning Beds	$1.75/square foot

*All costs are approximate and subject to conditions at site, material costs, time of year installed, volume discounts, etc.

8.3.2 Biological Monitoring Program

There is a noted lack of biological monitoring of the water resources in the Corridor. It is recommended that a complete macroinvertebrate study be completed on the resources. Preliminary studies indicate that there may be several species of mayfly on the Youghiogheny River that are unidentified species and are new to science. Biological monitoring will provide CRTU valuable information about the long-term health of the streams in the Corridor. The relative stability aquatic communities can indicate short or long-term pollution events that cannot be directly observed by water chemistry sampling. Aquatic species are used as water quality indicators based on their relative tolerance to pollutants. Stream classifications based on an inventory and scoring of aquatic

invertebrates have been developed. Identification of aquatic organisms, however, requires training and practice.

Standard practice for benthic macroinvertebrate and fish monitoring programs are to sample a particular stream point as a transect. In other words, samples will be taken on the left bank, right bank, and stream center. An estimated price for conducting this type of sampling is $250 - $500/per sample ($750 - $1,500 per sample transect). This price includes all field, laboratory, and report documentation.

8.4 RECREATIONAL RESOURCES

8.4.1 Upgrade Facilities

With increased popularity of the recreational opportunities in the Corridor, such as whitewater rafting, fishing, hiking, and camping comes significant concerns and constraints. Specifically, Ohiopyle State Park, which is one the most visited state parks in Pennsylvania, and the Youghiogheny River Hike/Bike Trail draw thousands of visitor each year to the recreational facilities provided. The Youghiogheny River Hike/Bike Trail connects many cities, boroughs and townships in the Corridor. Between these populated areas, there is a lack of adequate restroom facilities for the rafters and others who use the Youghiogheny River Trail. CRTU has expressed interest in converting existing restroom facilities at locations along the Trail to fully functional modern pump facilities. The cost to upgrade these restrooms is approximately Forty to Fifty thousand dollars per facility. This includes all necessary structural upgrades necessary sewage considerations.

Another area of constraint is the lack of comfort stations, equipped with restrooms and drinking water, along the trail. Discussions have been initiated by CRTU and the Steering Committee about installing comfort stations along the Youghiogheny River Trail. These stations would be equipped with proper restroom facilities and drinking water access. There are several locations sited along the Trail that would be ideal for such structures. It is recommended that these stations be constructed every five-eight miles along the Trail. An estimate for constructing such structures will vary depending upon the scale and features of the comfort station and also whether the labor and

materials are donated. A rough estimate would be fifty-five to sixty-five thousand per station. Although the price is high, comfort stations are vital to the recreational viability of the Trail and Corridor.

Subsequent to constructing the actual comfort station structures comes the need to install the infrastructure to support these comfort stations. Specifically, an ambitious and aggressive plan to install sewage, water, and electric lines under the Youghiogheny River Trail is being discussed by CRTU and the Steering Committee. These parties understand that a project of this magnitude requires much planning and cooperation of many agencies and groups involved with the Trail. CRTU and the Steering Committee is committed to making this plan a reality, in order for the Corridor to progress as a recreational destination. A necessary next step for promoting the Trail as a high quality recreational area that provides amenities and facilities to accommodate a wide spectrum of potential users, is to install sewage, water, and electric lines under the Trail. An estimated cost for providing such pipelines is below:

Sewage	$34.00 p.l.f.
Water	$15.00 p.l.f
Electric	$12.00 p.l.f.

8.5 EDUCATION RESOURCES

The natural resources of the Corridor provide an excellent opportunity to educate citizens and bring to light issues concerning the degradation of the Middle Youghiogheny River Corridor. To this end, there are several locations where observational blinds, which can serve as places where the public can view and learn about plants and animals of the Corridor, can be built. Nature trails, that provide opportunities for the public to become familiar with the assets of the region and learn why protection and management stewardship practices are important in the region, can be built in the Corridor. An excellent location for a nature trail is near the Youghiogheny River Lake. The USACE has singled out a site near the Dam.

A key to improving and protecting the resources of the Corridor is educating the public about what effects their actions are having on the resources. In addition, the Corridor's natural assets provide a major source of information dealing specifically with the natural vegetation in the Corridor.

It is imperative that CRTU defines the problems of the Corridor to the Public through the following recommended educational directives:

- Envirothons;
- Nature tours;
- Brochure on the effects from dumping;
- Brochure on the effects of pollution in the Youghiogheny River; and
- Environmental education – for public schools to use the watershed as a tool for learning; Environmental clubs; use the resources of the Corridor to educate the public.

8.6 INDIVIDUAL WATERSHED ASSESSMENTS

To grasp the complex issues facing each individual watershed, a full watershed assessment and the development of a watershed restoration protection plan is recommended.

Due to the extent of the Corridor (39 miles), it is recommended that for assessment and water quality improvements, a small number of high priority watersheds be assessed initially (Meadow Run, Jonathan Run, etc.). Once a single watershed is identified for assessment, then all available information pertaining to that watershed must be determined, such as location extent and impacts of all point nonpoint source (NPS) pollution. A watershed assessment plan will help to design a strategy plan specific for the conditions and parameters of the watershed.

The following steps should be covered in the assessment:

- Gather and review all data pertaining to the watershed;
- Location;
- Discharges;

- High/low flow rates;
- Ground water information;
- Water quality information;
- Land use delineations;
- Geology;
- Soils;
- Slop;
- Precipitation;
- Wildlife information;
- Identify all data gaps;
- Determine the discharge source of all the pollution sources for the watershed (were applicable); and
- Conduct a scientific water quality-monitoring program. The specific water quality-monitoring program for the watershed will depend on types of problems, layout of the watershed and the available funding. Watershed sampling may include chemical, biological, and/or physical water quality parameters.

Based on the data and information obtained from the watershed assessment, a restoration and protection plan can be developed. The main goal of the plan will be to delineate the type and costs of best management practices needed to remediate the nonpoint source pollution in the watershed. The plan must address and respond to the Chapter 93 designation (if applicable).

The following key elements should be addressed in a watershed restoration and protection plan:

- Identify all water quality problems or threats on a detailed level;
- Specify pollution sources and relative contributions to watershed impairment;
- Identify a schedule for implementation;
- Identify relative costs for remediation on a specific watershed level; and
- Set specific remediation goals.

Based on the severity of the identified pollution sources, the pollution sources should be prioritized based on the Chapter 93 designations (where applicable);

8.7 YOUGHIOGHENY LAKE

The following summaries and recommendations are based on input by the USACE and deals specifically with the Youghiogheny River Lake:

8.7.1 Water Resources

8.7.1.1 Maintaining Water Quality

The current water quality at the Lake is adequate for water-contact sports, such as fishing, swimming, boating, and water-skiing. The quality of the water can quickly be degraded. Good water quality is essential to the viability of the Recreation Resources at the Lake. Actions must be taken to ensure that the water quality be improved.

Monitoring of water quality indicates very low nutrient levels, indicating problems from sources such as septic systems, which can cause potential for contamination with disease organisms. The particularly low nutrient levels are somewhat counter-productive for fisheries, resulting in only a moderate sport fish population. This can be improved by stocking and other habitat improvement methods.

8.7.1.2 Improvement Projects

- Initiate limestone sand projects in selected tributaries of the lake, including Tub and Hall Runs, to reduce the impact of episodic acid flow into these streams. Implement a water quality and biological monitoring program to evaluate the impacts of tributary limestone sand additions;

- Construct sedimentation ponds and/or catches on tributaries to reduce sediment load;

- Fund a study to investigate/evaluate ways to eliminate or reduce the seasonal nitrogen supersaturation problem in the tailrace;

- Develop and initiate appropriate solutions (e.g. installation of aeration devices to oxygenate the hypolimnion upstream of the Lake's outlet works);

- Construct a stone pier upstream of Trout Unlimited's trout rearing cages to deflect flow and release dissolved gases (including nitrogen);

- Install nitrogen filters in the hydroelectric plant to remove nitrogen gases being released into the Youghiogheny River;

- Fund a study to investigate/evaluate the Pennsylvania Fish and Boat Commission's proposal to initiate a lake fertilization program at the Youghiogheny Lake below the dam;

- Assuming a fertilization program is appropriate, initiate fertilization, in cooperation with the USACE and the Pennsylvania Fish and Boat Commission;

- Implement a water quality and biological monitoring program to evaluate impacts of the fertilization program; and

- Establish no wake zones.

8.7.2 Land Resources

8.7.2.1 Shoreline Erosion

As the Lake water level fluctuates it creates erosion along the shoreline, which degrades the shoreline environment and adversely affects recreational facilities, vegetation, and cultural resources. The continued fluctuations can have a negative effect on the visual quality of the shoreline. Erosion of the shoreline can affect beaches and boat ramps, requiring additional maintenance and costs. The accumulation of sediment in the reservoir can shorten the life span of the reservoir if a regular maintenance program is not established.

8.7.2.2 Erosion Control Projects

- Shoreline stabilization at the Spillway Recreation Area and Tub Run Campground;

- Stabilize eroded riparian habitat at selected sites on tributary streams, along the shoreline, and at access areas including the Spillway Recreation Area and Tub Run Campground; and

- Fund the development and implementation of a shoreline stabilization program for the Youghiogheny River Lake.

8.7.3 Habitat

8.7.3.1 Wildlife

Common habitat for Federally listed threatened and endangered species can be found around the Lake. An inventory of these areas is needed to determine if threatened and endangered species or other rare species are present at any of the identified locations. Until the project lands are inventoried, all project lands have a potential to support rare species.

It is recommended that accessibility to the known habitats should not be improved to avoid unnecessary impacts from collectors. Other potential habitats for these and other rare species that have historically been recorded on or near project lands should be investigated, inventoried, and managed as appropriate.

The natural setting of the Lake shoreline is currently a very important quality that draws visitors to the project. The shoreline is generally not developed and consists primarily of wooded slopes, which in some cases are quite steep. While there has been some development along and near the shore from neighboring landowners, maintenance of the natural state of the Lake's shoreline will provide benefits to future visitors.

The nongame wildlife inhabitants of the Lake have not been inventoried but include a substantial number of birds, small mammals, reptiles, and amphibians. Nongame species are an important element to ecological stability and aesthetic appreciation of the project lands. Species richness and diversity are linked to the diversity of habitats available. Within the requirements for flood management and flow augmentation, the goal of management should be to provide the greatest diversity of upland and aquatic habitats to support the greatest diversity of species.

The habitats at the Youghiogheny River Lake lands are strongly dominated by steep woodland habitats. Much of the habitat is mature or maturing forest with dense canopies and moderate understory development. Continuous forest habitat is critical to the survival of some nongame species such as forest interior dwelling birds. Maintenance of the forest is also integrated with the visual scenic quality of the reservoir. Much of the forested habitats near the Youghiogheny have been fragmented by agriculture.

8.7.3.2 Fisheries

Sport fishing is an integral part of the recreation opportunities at the Lake. Actions to improve the habitat for game fish species should be considered in coordination with other objectives particularly flood control, boating, and water quality maintenance. The most important improvements that can be made are provision of greater cover and improved forage base for the piscivorous sport fishes.

8.7.3.3 Waterfowl

The waterfowl population at the Youghiogheny River Lake is moderate. Wood duck populations have been supported through the establishment of ponds and the provision of boxes in floodplain woods. However, the large fluctuations in water levels and the steep sides of the reservoir reduce the potential for the development of the marsh habitats preferred for nesting by most other waterfowl. Small sub-impoundments can be created at the mouths of several tributaries to retain water. These impoundments would support the marsh vegetation, which would be used for waterfowl nesting. Additionally, shallow ponds can be created in the flats, which would remain during low water. These ponds would be especially important during migration.

8.7.3.4 Improvement Projects

The following projects are recommended to improve the Biological Resources at the Lake.

- Install submerged fish habitat around the Lake to improve fish spawning and increase sport fish populations. This would involve the use of various materials and techniques, including stone and gravel reefs to create submerged walleye spawning beds, the installation of shoreline rip-rap in the access areas to provide habitat for young-of-year bass, the installation of submerged rock reefs in selected bays to create fish habitat (creating rock piles ranging up to 3 feet high), and the installation of deep water fish habitat using porcupine cribs and other structures.

- Dredge and/or place boulders in the southwest corner of the slack water area of the tailrace to provide refuge for fish.

- Construct Rock Jetties 2-3 feet high extending out into deep water, perpendicular to the shoreline, to provide fish habitat.

- Install stream improvement structures in tributaries in which there are established trout populations.

- Conduct biological and habitat surveys at the Lake to document threatened or endangered species, and species of special concern which may occur at the Lake (and identify critical habitats), evaluate fish and wildlife management programs currently conducted, and monitor changes in water quality. Also assist in conducting periodic surveys such as adult aquatic insect light trapping, gypsy moth egg mass counts and zebra mussel monitoring.

- Conduct an inventory of lands to identify existing or possible wetlands and identify potential wetlands development or restoration projects.

- Develop permanent ponds and subimpoundments to support migratory waterfowl during low-water periods.

Cost estimates for fish habitat structures can be found in Section 8.3.1.

8.7.4 Recreation Resources

8.7.4.1 Existing Facilities

The Youghiogheny River Lake offers clean waters, mountains and steep-sided valleys that encompass the area and provide an unsurpassed setting for outdoor recreation opportunities. The Lake is a popular location for recreation, with boating, fishing, camping and many other outdoor activities being available for the public's convenience and enjoyed by visitors.

The Youghiogheny River Lake and the tributaries that flow into it represent a major scenic and recreational resource in the region. Visitation has been tracked at the Lake from 1954 to the present. The average yearly visitations at the Lake, between 1992 and 1996, has been estimated to be approximately 500,000 persons. It has been projected that the number of visitations will increase by 2 percent annually.

According to the Pennsylvania State Comprehensive Outdoor Recreation Plan (SCORP), improving and increasing recreational opportunities at the Youghiogheny River Lake is a high priority. Individuals surveyed in the region surrounding the Lake indicated the need for improved or expanded swimming facilities. Swimming facilities were identified in the same survey as a priority for those who are physically challenged. For people who are elderly, restrooms and bathhouses were the highest priority. There are four swimming areas on the 2,840-acre (summer pool) Lake – located at Tub Run, Mill Run, and Somerfield North Recreation Areas and the Youghiogheny Recreation Area (spillway). Camping areas complement two of these areas, Mill Run and Tub Run. About 9 percent of the Lake's visitors participate in swimming.

The 2,840 acres at Youghiogheny River Lake offer some of the best waters for fishing in southwestern Pennsylvania. Fishing is the second most popular activity at the Lake - 18

percent of the Lake's visitors participate in this activity. Fishing areas were identified by survey respondents as an opportunity that needs to be expanded. Providing and improving facilities for hunting and fishing the elderly and mentally or physically challenged were identified as an important priority

Bicycling and hiking are popular activities within the Middle Youghiogheny River Corridor and increasing the number and expanses of hike/bike trails is needed.

The campground facilities at the Youghiogheny River Lake serve as an important camping resource for the entire Laurel Highland region. About 5 percent of the Lake's visitors participate in camping and Mill Run, Tub Run, and the Outflow Camping Area are unique because they provide the camper with close access to other recreational opportunities, such as fishing, boating, canoeing, and swimming. For this reason, visitors from the surrounding region commonly use the Lake's campgrounds. It has been noted that campground rehabilitation is a high priority. Poor maintenance was classified as a possible constraint to camping opportunities.

The provision and expansion of campgrounds is identified as an important priority; 19 percent of existing facilities are overused, and an inventory determined that 175 additional trailer sites are needed. Surveys stated that overcrowding of existing facilities is a chronic problem.

Picnicking is a popular activity in the region surrounding the Lake and SCORP identified the need for improved, expanded, and rehabilitated picnic facilities.

It is important for all visitors, including people who are physically challenged, to be given the opportunity to enjoy the recreation facilities at the Youghiogheny River Lake. The Americans with Disabilities Act (ADA) requires that public facilities be upgraded to accommodate people who are physically challenged. Information regarding ADA guidelines can be found in ***Appendix L***. Incorporating improvements at the facilities will allow all visitors to enjoy the full recreation experience.

8.7.4.2 Improvement Projects

The following projects are targeted at improving the recreational opportunities and facilities at the Youghiogheny River Lake:

- Install lights at Jockey Hollow Boat Launching Area;
- Install Courtesy docks at boat launches, as needed and place larger courtesy docks at Somerfield North, the Spillway Launch areas, and Tub Run Campground. These docks should be constructed of low maintenance materials, such as plastic;
- Pave existing boat launch parking lots at Somerfield North and Jockey Hollow Boat Launching Area;
- Provide universally accessible restroom facility at the Spillway Launch Area;
- Install and maintain benches, as appropriate, around the Lake, including the Jockey Hollow Launch Area;
- Install fishing piers so non boaters can reach deeper waters;
- Construct trails in the Outflow Recreation Area, the Klondike Ridge Natural Area and the Youghiogheny River Lake Wildlife Area, as proposed in the Youghiogheny River Lake Master Plan Update;
- Add additional lanes to boat launches, and/or extend them further into deeper water;
- Construct and sign angler access trails along reservoir shoreline (utilizing existing parking areas), and link these trails to areas of the Lake which have been improved for angling by the installation of fish attractors. Wherever possible along these trails, provide universally accessible fishing stations large enough to accommodate a wheelchair;
- Mark fish attractor locations with buoys, and identify major bays around the Lake with shoreline signs;
- Construct and maintain a fish cleaning station at the Outflow recreation Area, as proposed in the Master Plan Update;
- Install Fish cleaning stations at the outflow area, Somerfiled North, and Jockey Hollow Launch Area;
- Provide universal access wherever possible; and

- Provide restroom facilities and trash receptacles at Jockey Hollow.

8.7.4.3 Recommendations

The Youghiogheny River Lake is drawing more visitors each year due to the quality of the recreation. To balance this increased draw, and still maintain the quality of the Lake, the following:

Recommendations originally developed by the National Recreation Lakes Study Commission report "Reservoirs of Opportunities" (1999) are adopted. The CRTU and the Steering Committee strongly support these recommendations and encourage the USACE to modify their management of the Lake to incorporate these recommendations:

- **RECREATION MUST BE A HIGHER PRIORITY**

  There is a growing demand for increased recreation at federal lakes. There exists a need for the USACE to integrate recreation with other authorized projects to optimize all public benefits at federal lakes. At lakes where recreation is not the primary use of the waters, difficult management and funding issues need to be resolved. These issues will require lake management innovation, partnership investment from state, local, tribal, and private sources, better research, data collection and analysis, and integrated management to achieve optimization of water use. It is the opinion of the National Recreation Lakes Study Commission that the federal government has a valid stewardship responsibility to protect the investment and value of public recreation at Federal Lakes.

- **FORMATION OF AN INTERAGENCY FEDERAL LAKES RECREATION LEADERSHIP COUNCIL**

  The Council will be responsible for creating a method of funding the implementation of recreational guided projects at federal lakes. The Council would be the overseer of data collection, scientific assessments of watershed and natural resources, and assessments of facility and infrastructure needs at federal lakes. The Council should be made up of representatives from federal lake managing agencies.

- **INITIATE PROGRAMS TO COMMUNICATE THE MISSION AND FACILITIES OF THE LAKES TO PUBLIC USERS OF FEDERAL LAKES**

  These programs should be designed to help people appreciate their role as stewards of public lands and lakes. The communication program would serve to promote lake recreation, educate the public about lake stewardship, involve the public in lake development and services, and win public support for lake management policies.

- **IMPLEMENTATION OF THE NATIONAL RECREATIONAL FISHERIES CONSERVATION PLAN**

  The goals of the National Recreation Fisheries Conservation Plan are to improve habitat for fish, increase opportunities for the angler, educate the public about recreational fisheries programs, and develop partnerships to achieve these goals. The end product is enhancing recreation and conserving the environment. Many interest groups support this initiative. It has received Congressional support in the form of $36 million added to the FY 1999 budget to be spent over the next five years to develop a public outreach plan to promote sport-fishing and boating.

- **IMPROVE LAKE WATER QUALITY THROUGH A WATERSHED MANAGEMENT APPROACH**

  Lake managers should support the total watershed approach to clean water. Through scientific measures, public education and enforcement, they should strive to deal directly with lake-level problems that impair recreational fishery resources, lake habitat, water quality, sediment buildup, and invasion by non-indigenous aquatic plants and animals.

  It is also recommended that the USACE manage the pool levels to increase summer pool by 2-4 ft. and winter pool by 5-10 ft. It is understood that a few areas, such as Tub run and Jockey Hollow, may become partially flooded as a result of this increased pool. CRTU is prepared to provide necessary funding to raise the parking lots and boat launches to accommodate the increased pool. It will be necessary to investigate what impacts increasing the pool levels will have on the Dam structure. CRTU understands this and encourages the USACE to undertake this investigation. Raising the pool levels will increase recreational opportunities and attractiveness of the Lake.

8.7.5 Cultural Resources

The Lake is located in a region of the country where many significant historical events occurred. A significant aspect of the region's history is tied to transportation. In prehistoric times, the Youghiogheny River Valley was an important travel route. The significance of this river valley continued through the 1700s and 1800s. In the early 1800s through the mid 1900s, transportation continued to be a significant component of the growth of the region as is evident with the construction of the Great Crossings Bridge and the National Road (US Rt. 40). There are several known significant historic properties located within the Lake boundaries that may be eligible for listing on the National Register of Historic Places. These properties need protection and management to ensure compliance with federal laws and regulations.

Several archeological sites may be affected by the changes in the pool level. Pool level changes may be causing erosion of the sites, which adversely affects the resources. Inundation of the Great Crossings Bridge has caused damage to the structure, and when the bridge was exposed during an extremely low pool level, vandalism caused additional damage. To comply with Section 110 of the National Historic Preservation Act, a Historic Property Management Plan should be funded and completed to provide guidance on the protection and management of cultural resources on project lands.

The following address the cultural resources at the Lake:

- Fund project-wide archeological/Cultural resource survey at the Youghiogheny River Lake, and identify potential candidates for nomination to the National Register of Historic Places.
- Fund development of a complete historic property management plan for the Youghiogheny River Lake.
- Fund activities to mitigate the effects of erosion on archeological sites in the lake’s drawndown zone.

8.7.6 Education

There is an ongoing environmental education program at Youghiogheny River Lake that focuses on increasing public knowledge of the USACE role as a Federal water resource management agency in this region. Themes or subjects include the USACE missions in fish, wildlife, and cultural resources management, and management concerns such as fire, vandalism, water safety, and regional and project recreational opportunities.

To facilitate public understanding of the role the USACE plays, bulletin boards should be displayed at each of the recreation management units, brochures should be available at the project office, and informational signs should be installed throughout the project.

Increasing the opportunities for educating the public about the project's natural and cultural resources, as well as the National Road Heritage Park, will be an important focus for project managers. It is anticipated that in the future there will be an increase in the number of visitors who want to learn more about the Lake's and the Corridor's history.

8.7.6.1 Unique Natural Areas

Natural areas are places where human influences are relatively inconspicuous and where the plant and animal communities or geological features are in some way rare or outstanding. The feature that makes a place a natural area may be exceptional maturity of trees, presence of phenomenon, unusual abundance of a particularly striking plant or animal species, or scarcity of ecologically similar sites elsewhere.

A natural area also must be large enough to exhibit wilderness character (which means that works of humans and severely altered or managed vegetative types should not be visible from its interior), to enable protection of its natural qualities from alteration by artificial influences, and to provide worthwhile educational and research opportunities.

A forest inventory of project lands, conducted by personnel at the Lake, shows that Klondike Ridge, Mill Run, and Bear Creek Natural Areas each support forest habitats that are unusual by virtue of their vegetation composition or age. With improved access, these areas could provide unique opportunities for public enjoyment and education.

Specific projects designed to meet the educational needs for the Lake:

- Install and maintain informational bulletin boards at various access sites around the Lake (developing exhibits for these), and initiate an adopt a bulletin board program to assist the USACE in informing the public;

- Install interpretative facilities that would educate the public about water and safety issues; and

- Develop Wildlife observation blinds and other viewing facilities (e.g. trails, observation towers, feeders) in appropriate areas around the lake, including the Klondike Ridge Natural Area, Mill Run and Tub Run, consistent with the USACE Watchable Wildlife program.

8.7.6.2 Educational Projects

There are many ways that the Middle Youghiogheny River Corridor can be improved. Prior to any improvements, involved parties must compile all possible information and collect additional information where data are lacking. The information should be given to an expert in stream/riparian restoration for evaluation of possible methods to be used, etc. The appropriate steps should be taken or a great deal of money will be wasted. For instance, if the water quality is too poor to ever support a breeding population of walleye, then why build walleye spawning beds. Start with restoring the water quality, then when acceptable, move on to other projects.

The possibility of restoring wetland areas within the Corridor must be explored. In the event that degraded, filled or impacted wetland or former wetland areas exist within the study area, they should be thoroughly evaluated for their potential to be restored. Any wetland areas that can be restored within the Corridor will have a positive effect on the River's condition.

A management options matrix was prepared as part of this plan. The matrix can be found in the accompanying Executive Summary.

8.8 PROJECT-SPECIFIC DESIGN CRITERIA

The following criteria were provided by the USACE (1999).

8.8.1 Design Philosophy

The following information addresses the concern for functional use, creative design, environmental harmony, and economical construction and operation. The following design parameters provide for the health, safety, security, and comfort of visitors in all aspects of development.

8.8.2 Project Design Parameters

8.8.2.1 Site Selection

All proposed and future facilities at Youghiogheny River Lake should be compatible with existing natural and constructed features, and a detailed analysis should be completed before any design is implemented. Development of areas around the lake should be sited in a manner to minimize disturbance of the natural site features. However, certain site features, such as soils, can present serious constraints to optimum facility development. Before preparation of detailed facility designs, a preliminary analysis should be made of site-specific natural conditions.

Permanent structures and major developments must be located above the five-year flood elevation of 1,452 feet. The exceptions to this are areas below the dam and facilities such as boat-launching ramps, docks, and swimming areas, or, in special cases, where it is not physically or economically feasible to locate facilities such as roads or parking above elevation 1,452.

Slopes in excess of 8 percent are considered too steep for intensive development, such as major campgrounds. Slopes greater than 15 percent are considered too steep for low-density recreation, such as dispersed picnicking or primitive camping.

Recreation sites have been located and proposed for development so that grading, clearing, and grubbing will be kept to a minimum. All grading and earthwork will be in accordance with established erosion control practices and will meet all state and local regulations. Appropriate action must be taken during construction to ensure protection of vegetation and other site features. Designs for new facilities, structures, and road and trail alignments should be remain preliminary and flexible until such time when a USACE project designer and field supervisor approve the plans.

8.8.2.2 Architecture

New buildings and structures in existing recreation areas will, to the extent feasible, match architectural building styles already in use for the same types of buildings, assuming the existing buildings will be retained. In areas where existing development is minimal or where a structure will be replaced, the proposed buildings and structures must reflect the architectural styles and character appropriate to the natural setting. Building materials will be compatible with the colors and textures in the environment. Clerestory windows will be provided to maximize use of natural lighting.

8.8.2.3 Roads

Roads have been located so that they follow natural ground form and topography as much as possible in order to minimize disturbance. Areas where excessive cuts, fills, or grading are required should be avoided if possible.

Three types of roads are proposed for the Lake area. The specific design parameters for each type are based on the soil and slope characteristics, high-water table or seasonal flooding, type and amount of traffic, and the overall desired intent of development within specified areas.

Facilities associated with road construction such as drainage structures and guiderails should be designed to be in harmony with the area by using appropriate materials and colors. Selective clearing and landscaping to create viewing opportunities should be used to enhance the overall scenic qualities of the roads.

8.8.2.4 Paved Road

This type of road will be used in major camping and day-use areas, boat-launching areas, major access roads within the project, and other major-use areas where two-way traffic is necessary. These roads will consist of a 20-foot-wide, 2-inch asphalt concrete surface on a 5-inch asphalt concrete base and compacted sub grade. Shoulders will be 4 feet wide, stabilized, and seeded.

8.8.2.5 Crushed-Stone Road, 18-Foot Width

This type of road will be used in low-use campgrounds, boat-launching areas, and day-use areas where two-way traffic is desired. These roads will consist of an 18-foot-wide, 6-inch deep crushed-stone surface, compacted sub grade, and 4-foot stabilized and seeded shoulders. At intersections where paved roads convert to gravel roads, the first ten feet of the gravel roads will be paved to minimize traffic problems and provide safer turning conditions. Minimum radius for these roads will be 150 feet.

8.8.2.6 Crushed-Stone Road, 12-Foot Width

This type of road will be used in low-use camping areas where one-way traffic is necessary. It will consist of a 12-foot-wide, 6-inch deep crushed-stone surface and compacted sub grade. Shoulders will be 2 feet wide, stabilized, and seeded. Minimum radius for these roads will be 100 feet.

8.8.2.7 Parking

Parking for picnic and camping areas will be provided at a 1:1 ratio (one parking space or spur for each picnic unit or campsite). In boat-launching areas, 25 car/trailer spaces per ramp will be provided where possible.

Paved parking will be provided at all picnic areas, boat-launching areas having over 40 launchings per normal weekend day, and other major use areas. Typical sizes for various spaces are 10 feet by 20 feet for cars and 10 feet by 40 feet for 45-degree angle parking for cars/trailers. Five percent of parking spaces will be designed for people who are

physically challenged. These spaces will be 12'-6" wide and conveniently located in relation to buildings, walkways, and other facilities. Surfacing, base, and other construction details are the same as for paved roads. All paved parking stalls will be striped for efficient use and will have parking stops and barriers where appropriate.

Crushed-stone parking will be provided at areas of low use such as lake access points and boat-launching areas having less than 40 launchings per normal weekend day and will be used for vehicle camp spurs. Construction details for this type of parking are the same as for crushed-stone roads.

8.8.2.8 Picnic Areas

Picnic areas will contain a minimum of eight tables with necessary support facilities. The density of picnic areas will generally not exceed 10 to 12 picnic sites (units) per acre. Where group picnicking is appropriate and desired, at least one shelter will be provided in each major day-use area. Play equipment will be provided at major picnic areas. Water supply will be provided at each picnic area with spacing of hydrants not to exceed 400 feet. Restrooms will be provided at each area and will not be placed more than 600 feet from the farthest picnic sites. Ten percent of the picnic sites will be designed to accommodate people who are physically challenged.

Each picnic site (unit) will contain a table and bench combination, one charcoal grill per two picnic tables, one trash receptacle for each three to five tables and, where appropriate, landscaping.

8.8.2.9 Boat-Launching Areas

Major boat-launching areas will contain multiple ramps, and, where feasible, these will have an upper limit at elevation 1,452 (five-year flood frequency pool) and a lower limit at elevation 1,387 (4 feet below the average pool at the end of the boating season, 31 October). Turnarounds will have a minimum 75-foot diameter radius where possible.

Paved boat-launching ramps will consist of a 6-inch reinforced concrete surface over a crushed-stone base. If the ramp exceeds 75 feet in length, lanes will be 16 feet in width.

Multiple lane ramps will have a width in multiples of 16 feet. Each ramp will have turnarounds at 150-foot intervals on a continuously sloping ramp. Turnarounds should permit vehicles to drive headfirst down the ramp, turn around, and back their trailers into the water. The finished surface will be scored and ramp shoulders will be stabilized (Design Parameters Apply to the Various Recreation Facilities Such As Those at Tub Run) with riprap where necessary to prevent erosion caused by wave action. Low-use boat-launching ramps will consist of an asphalt or crushed-stone surface. Boat ramps should be designed with slopes ranging from 12 to 16 percent, with 14 percent being the optimum.

8.8.2.10 Courtesy Docks

A courtesy dock should be provided at each major launching area. These will be of wood, or wood and metal construction, with encased polystyrene or an equal flotation device. Courtesy piers will be 5 feet in width and 30 feet in length. Guidelines for private docking facilities are set forth in the Shoreline Management Plan.

8.8.2.11 Swimming Areas

Swimming areas will be designed to conform with the standards set forth in EM 1110-1-400 and follow guidelines set forth in "Planning, Design, Operation and Maintenance of Inland Water Swimming Beaches" by the National Water Safety Congress. Priorities in the design of a beach will be the safety of the user, the effects that the physical features of the site will have on the beach, and future operation and maintenance considerations.

Beaches, including turf sunbathing areas, should be separated from parking areas with an adequate grass buffer where possible. Trees should be left, as practicable, in the turf areas adjacent to sand beaches. If surface runoff is anticipated to be heavy, diversion contouring or ditches should be designed to carry runoff water away from the beach turf area and swimming area. Swimming areas and boat launching facilities should also be separated.

A concrete-filled cellular confinement should be used for the swimming area surface. This method uses a polyethylene webbing to form open cells. The cells should be filled with 5 inches of concrete to produce a semi-flexible surface that can conform to subsurface changes. The webbing serves as both reinforcement for the concrete and as control for cracking. The webbing is placed over a non-woven geotextile and does not require a base or sub base layer. The concrete should be finished using standard techniques, which make the surface suitable for pedestrian and wheelchair access.

8.8.2.12 Recreational Trails

These trails will consist of wood chips or existing earth surface. Tread width will vary generally between 2 and 4 feet in width. Horizontal clearing width will be 4 to 6 feet and vertical clearance will be a minimum of 7 feet. Trails will be marked in accordance with Access Board guidelines, once published, to alert visitors to the types of challenges they may expect in terms of gradient, width, surfacing, etc. This type of information is particularly useful to those with disabilities. A trail with maximum accessibility would be similar to the access route described below.

8.8.2.13 Outdoor Recreation Access Routes

Outdoor recreation access routes provide access to a site's primary developed recreation elements. As such, they should be made as accessible for those individuals with disabilities as possible. They will be designed and constructed to ensure a firm, stable surface. Concrete, asphalt, pavers, and finely crushed stone are examples of suitable material.

For maximum accessibility, the following guidelines should be used:

- The minimum tread width to allow a person in a wheelchair and a pedestrian to pass is 4 feet;

- A 5-foot width is recommended to allow two wheelchairs to pass. If a 5-foot width cannot be provided due to topography or existing obstacles, passing spaces should be provided every 200 feet;

- Rest areas, out of the travel way, should be placed at intervals of 200 to 300 feet and provided with a bench;

- Rest stops should be planned to take advantage of natural level spaces with interesting features, such as vistas, interpretative opportunities, shorelines, and so on; and

- Longitudinal slopes should be less than 5 percent.

8.8.2.14 Bicycle Trails

Bicycle trails will consist of a 2-inch surface of limestone screenings over a 4-inch crushed-stone base and will be 5 feet in width. Horizontal clearing will be 10 feet and vertical clearing will be a minimum of 7 feet.

8.8.2.15 Signs

Signs will be provided to inform, direct, and protect visitors. All signs will be designed and located in accordance with EP 310-1-6a, the USACE, *Sign Standards Manual.*

8.8.2.16 Water System

Water system requirements to serve the increased demands at each recreational area are based on peak-day water demands for the various types of use areas.

8.8.2.17 Wastewater System

Wastewater collection system requirements at each recreational area have been determined. The capacities of existing collection and treatment systems have been analyzed and needed improvements identified.

8.8.2.18 Electrical Distribution

Several electric utility companies currently serve the project area. Electric service to South Selbysport, Mill Run, and Wilkins Hollow Recreation Areas is provided by Somerset Rural Electric Cooperative distribution lines at the project boundaries. Electric service to the south unit of the Somerfield Recreation Area is provided by GPU Energy distribution lines at the area boundary. Electric services at the Youghiogheny Recreation is provided by Somerset Rural Electric Cooperative or GPU Energy, depending on the location of each electric load center.

Underground electric distribution facilities are proposed for electric distribution systems, but alternate overhead line constriction may be desirable. Transformers, pad-mounted and screened from view, are located at most major structures including the administrative offices, concession buildings, maintenance areas, wells and pumping stations.

8.8.2.19 Carrying Capacity

The units within Youghiogheny River Lake should be improved or developed using the design carrying capacity of the entire project, project units, or individual activities within the units. The techniques for determining carrying capacity are outlined in IR R-80-1. Carrying capacity formulas have been developed for many of the activities at the Youghiogheny River Lake, including picnicking, swimming, sunbathing, boat launching, and camping.

9.0 SUMMARY

The focus of this report is the identification of significant natural, recreational and cultural resources as they exist in the Corridor. Additionally, the goal of this plan is the identification of issues, concerns, constraints, and opportunities to the Middle Youghiogheny River Corridor. Input for this report was received from representatives from Ohiopyle State Park, USACE – Pittsburgh District, various state and local governmental agencies, and from the citizens of the Corridor via public meetings and public comment sheets. An inventory of important Resources and Contacts can be found in ***Appendix M***. Furthermore, ***Appendix N*** provides a look at the Public Comment Sheets returned.

As a result of the directed and concentrated efforts of all the parties involved with the completion of this Plan, the Plan is in position to be placed on the Pennsylvania River Registry. The Registry serves to recognize efforts of local river conservation groups, like Trout Unlimited. The River Registry also serves to promote river conservation and recognize rivers or river segments in communities who have completed river conservation plans. The registry is also an avenue to endorse local initiatives by binding them together in a statewide recognition program. As a result of this Plan obtaining Registry status, the Chestnut Ridge Chapter of Trout Unlimited is qualified for implementation, development and acquisition grants. Significant amounts of grant money is available to organizations that have completed and accepted River Conservation Plans. This money is made available to carry out assessments, programs, and specific projects as recommended in the Plan.

This report is presented by Paul C. Rizzo Associates to assist the Chestnut Ridge Chapter of Trout Unlimited, a local Trout Unlimited chapter dedicated to the improvement, preservation, and conservation of waterways and water resources throughout southwestern Pennsylvania, and the citizens of the Middle Youghiogheny River Corridor in protecting, promoting and improving the very valuable environmental and economic resources found within the Corridor.

Respectfully submitted,
Paul C. Rizzo Associates

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MWL/PCR/dha

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TABLE 2-1
SELECTED TRIBUTARY DATA [(A)]

Meadow Run	
Tributary To	Youghiogheny River
County	Fayette
Source	Washington Springs, PA
Mouth	Ohiopyle, PA
Course	SE 7 miles; NE 8 miles
Drainage Area	41.2 square miles
Length	15.0 miles
Meander Ratio (Stream length/Valley length)	1.14
Relief Ratio (Elevation/Stream length)	98.5
Channel Slop	56.7
Province	Appalachian Plateaus
Rock Units	Sandstone, shale, limestone, coal
Drainage Pattern	Dendritic
Channel Pattern	Irregular
Main Channel	Steep to moderate slopes
Impoundments	Lakes – Deer, Oak, Alanconnie
Indian Creek	
Tributary To	Youghiogheny River
County	Fayette
Source	Stahlstown, Pa
Mouth	Indian Creek, Pa
Course	W 4 miles; SW 26 miles
Drainage Area	125 square miles
Length	30.0 miles
Meander Ratio (Stream length/Valley length)	1.17
Relief Ratio (Elevation/Stream length)	34.9
Channel Slop	30.7
Province	Appalachian Plateaus
Rock Units	Sandstone, shale, limestone, coal
Drainage pattern	Trellised
Channel Pattern	Tortous
Main Channel	Steep Slopes
Impoundments	Mill Run Reservoir

TABLE 2-2
ZONING INFORMATION [(A)]

a. Fayette County Governs Zoning, Land Development, and Subdivisions

	Zoning
Dunbar Township	A-1, C-1
Springfield Township	A-1
South Connellsville Borough	R-2, M-1
Connellsville City	R-2

b. Municipalities That Govern Their Own Zoning, Land Development, and Subdivisions

Connellsville Township
Ohiopyle Borough
Henry Clay Township
Wharton Township
Stewart Township

c. Municipalities That Have or Are Updating Their Comprehensive Master Plans

Henry Clay Township
Ohiopyle Borough

Fayette County Is In The Process of Updating Its Comprehensive Land Use Plan

Description of Zoning

1. A-1 Agricultural-Rural

Permitted Uses
Accessory Use
Beauty-Barber Shop, Residential
Deep Coal Mining and Surface Facility
Essential Services
Forestry
Grange
Mobile Home
Oil and Gas Wells

TABLE 2-3
ECONOMIC DATA [(A)]

a. Largest Employment Centers

	Number of Sites	Estimated Employment
South Connellsville Borough	3	1,109
Connellsville City	14	347
Dunbar Township	10	223

b. Major Employers of the Corridor By Municipality

Connellsville City		Employed
	Artisand, Inc	7
	Baker's Machine & Welding	10
	Bradely Paint Co.	27
	Connellsville Corp.	10
	CSX Transportation	200
	NuKote International	200
	Oglevee Ltd.	95
	The Daily Courier	66
	A. L. Herman Lumber	7
	Honisek Tool Co., Inc.	17
	Rack Engineering Co.	100
	Stone & Co.	53
	Summit Products Co.	18
	Traft Construction Co., Inc.	25
Connellsville Township		
	Commercial Stone Co., Inc.	90
	Connellsville Engine	4
	Tedesco Manufacturing Co.	40
Dunbar Borough		
	Dunbar Machine Co., Inc.	14
	Soberdash Coal Yard	5

TABLE 4-1
YOUGHIOGHENY RIVER LAKE OWNERSHIP [(A)]

	Acres	Percent
Lands owned by the U.S. Government	3915	
The Corps of Engineers Manages	842	21.533
Maryland Dept. of Natural Resources	850.79	21.728

The remaining acres are either leased or licensed by:		
PA Fish and Boat Commission – Parks & Recreation	7.12	0.1823
Commercial marina	10.8	0.2758
Boy Scouts of America	53.38	1.3600
PA Fish and Boat Commission – Game and Fish Management	2147	54.846
Yough Hydro Authority	2.62	0.0669
National Heritage Road	1	0.0255

(a) Information Received From the U.S. Army Corps of Engineers.

TABLE 5-1
PA DEP CHAPTER 93 - TRIBUTARY DESIGNATIONS [A]

Warm Water Fisheries WWF Stream Segment	County
Buffalo Run Basin	Fayette
Hall Run Basin	Fayette
Hen Run Basin	Fayette
Reason Run Basin	Fayette
Tub Run Basin	Fayette
Unnamed Youghiogheny River Tributaries between Ram Cat Run to Connell Run	Fayette
Youghiogheny River from the PA/MD Line to the Youghiogheny River Dam	Fayette - Somerset
Braddocks Run Basin	Somerset
Casselman River from PA/MD Line to mouth	Somerset
Collier Hollow	Somerset
Cucumber Run	Somerset
Mill Run Basin	Somerset

Cold Water Fisheries CWF Stream Segment	County
Champion Creek Basin	Fayette
Crooked Run Basin	Fayette
Cucumber Run Basin	Fayette
Jim Run Basin	Fayette
Ramcat Run Basin	Fayette
Unnamed Tributaries to Indian Creek from Champion Creek to mouth	Fayette
Workman Run Basin	Fayette
Unnamed Youghiogheny River Lake Tributaries from PA/MD Line to Dam	Fayette - Somerset
Unnamed Youghiogheny River Tributaries from Dam to Ramcat Run	Fayette - Somerset

TABLE 5-2
WETLAND IDENTIFICATION [(A)]

POWZ	Palustrine Open Water Intermittently Exposed/Permanent
POWZh	Palustrine Open Water Intermittently Exposed/Permanent Diked/Impounded
PEMSA	Palustrine Emergent Temporary Tidal
POWFh	Palustrine Open Water Semipermanent Diked/Impounded
PSS1A	Palustrine Scrub/Shrub Broad Leaved Deciduous Temporary
POWZx	Palustrine Open Water Intermittently Exposed/Permanent Excavated
POWF	Palustrine Open Water Semipermanent
L1OWHh	Lacustrine Limnetic Open Water Permanent Diked/Impounded
PSS1C	Palustrine Scrub/Shrub Broad Leaved Deciduous Seasonal
PFO1A	Palustrine Forested Broad Leaved Deciduous Temporary
P FO/SS 1A	Palustrine Forested Scrub/Shrub Broad Leaved Deciduous Temporary
R3OWH	Riverine Upper Perennial Open Water Permanent
P SS1/EMS F	Palusrtine Scrub/Shrub Broad Leaved Deciduous / Emergent Temporary Tidal Semipermanent
R3OWZ	Riverine Upper Perennial Open Water Intermittently Exposed/Permanent
PSS1/EM Y	Palustrine Scrub/Shrub Broad Leaved Deciduous / Emergent Saturated/Semipermanent/Seasonal
PEM5C	Palustrine Emergent Narrow Leaved Persistent Seasonal
PEM5A	Palustrine Emergent Narrow Leaved Persistent Temporary
PSS1E	Palustrine Scrub/Shrub Broad Leaved Deciduous Seasonal Saturated

(a) Information Obtained from National Wetland Inventory Maps.

TABLE 5-3
FLOOD PRONE AREAS [(A)]

Stream(s)	Topo. Map
Youghiogheny River Limestone Run Gist Run Dunbar Creek	South Connellsville
Youghiogheny River Indian Creek Morgan Run	South Connellsville
Youghiogheny River Meadow Run Ramcat Run Tub Run Hall Run	Ohiopyle
Youghiogheny River Casselman River Laurel Hill Creek White Creek	Confluence

(a) Information Obtained From State Water Plan – Subbasin 19 – DER 1982.

TABLE 5-4
NPDES PERMITS FOUND IN THE CORRIDOR [A]

OWNER	FACILITY NAME	PERMIT NUMBER	MUNI. NAME
Allegheny Power	Connellsville Construction Services	PA0002933	Connellsville
Connellsville Municipal Authority	Connellsville Municipal Authority WWTP	PA0026905	Connellsville
CSX Transportation, Inc. c/o William Cummings	CSX Transportation	PA0000591	Connellsville
Marilungo's Disposal Service	Marilungo's Disposal Service	PA0098841	Connellsville Township
Dunbar Borough Sanitary Authority	Dunbar Borough San Auth WWTP	PA0217640	Dunbar Borough
Belden and Blake Corporation	Dawson Facility-Belden and Blake Corp	PA0217778	Dunbar Township
Connellsville Area School District	Connellsville Area Sch Dist- Junior High West	PA0096083	Dunbar Township
Connellsville Area School District	Dunbar Township Elementary School	PA0096075	Dunbar Township
Corteal, Doug	Divito Park	PA0217191	Dunbar Township
Crocetti, Emidio & Emma Jean - Greenhill MHC	Greenhill Mobile Home Court STP	PA0097420	Dunbar Township
Dunbar Township Municipal Authority	Georgetown Manor Plan of Lots	PA0093530	Dunbar Township
Dynamic Materials Corporation	Dynamic Materials - Dunbar Mine Operations	PAs206101	Dunbar Township
Indian Creek Supply Filtration Plant	Indian Creek Supply Filtration	PA0035246	Dunbar Township
Laurel Associates	Laurel Mall Shopping Center STP	PA0090824	Dunbar Township
Lowery Mobile Home Park	Lowery Mobile Home Park	PA0098868	Dunbar Township
North Fayette County Municipal Authority	Wheeler Bottom Water Treatment Plant	PA0098795	Dunbar Township
Perez, G.B.	Hillcrest Personal Care Home	PA0095991	Dunbar Township
Stanton Enterprises Inc.	Stanton Enterprises WWTP	PA0092945	Dunbar Township
Henry Clay Villa, Inc.	Henry Clay Villa	PA0097268	Henry Clay Township
Pressley Ridge Camp	Pressley Ridge Camp	PA0046116	Henry Clay Township
U.S. Army Corps of Engineers, Pgh District	Tub Run Area	PA0025003	Henry Clay Township
Uniontown Area School District	McMullen Middle School	PA0041301	Henry Clay Township
Ohiopyle Sewage & Water Company	Ohiopyle Sewage & Water	PA0028258	Ohiopyle Borough
Connellsville Area School District	Saltlick Elementary School	PA0098345	Saltlick Township
RAS Development Company - DBA Mt. Pines Resort	Mountain Pines Camping Resort STP	PA0034614	Saltlick Township
Safran, Lance L.	Pleasant View Mobile Home Park	PA0096733	Saltlick Township
Anchor Glass Container Corporation	Anchor Glass Container Corporation	PA0003107	South Connellsville Borough
Anchor Hocking Packaging	Anchor Hocking Packaging	PAs206108	South Connellsville Borough
South Connellsville Borough Sewage Authority	South Connellsville Borough Sewage Authority	PA0023876	South Connellsville Borough

TABLE 5-5
303 (D) LISTED WATERS OF THE CORRIDOR [(A)]

Listing State	ID	Waterbody	Parameter of Concern	Priority for TMDL development	Targeted for TMDL development before the year April, 2000?	Potential sources of Impairment
PA	PAAMD19D-374601998	Long Run	Metals	High	No	Abandoned Mine Drainage,
PA	PAAMD19D-375571998	Little Sewickley Creek	Metals	High	No	Abandoned Mine Drainage,
PA	PAAMD19D-377021998	Jacks Run	Metals Unknown	High	No	Abandoned Mine Drainage,
PA	PAAMD19E-384881998	Meadow Run	Metals	High	No	Abandoned Mine Drainage,
PA	PAAMD19F-385791998	Casselman River	Metals	High	No	Abandoned Mine Drainage,
PA	PAAMD19F-387781998	Whites Creek	Metals Other Organics	High	No	Abandoned Mine Drainage,
PA	PAAMD19F-389441998	Coxes Creek	Suspended Solids	High	No	Abandoned Mine Drainage,
PA	PAAMD19F-390121998	East Branch Coxes Creek	Metals	High	No	Abandoned Mine Drainage,
PA	PAAMD19F-390751998	Buffalo Creek	Metals	High	No	Abandoned Mine Drainage,
PA	PAL19D-380361998	Virgin Run Lake	Nutrients	High	No	Agriculture
WV	WV-MY-1-E-1998	Tankiln Run	Unknown	Low	No	Unknown
WV	WV-MY-2-A-1-1998	Wardwell Run	Unknown	Low	No	Unknown
WV	WV-MY-2-1998	Snowy Creek	Unknown	Low	No	Unknown
WV	WV_MY-3-A_1998	Little Laurel Run	Unknown	Low	No	Unknown
WV	WV-MY-3-1998	Laurel Run	Metals pH	Medium	No	Mine Drainage
MD	MD-0136-05020201-1998	Youghiogheny River	Nutrients Fecal Coliform Suspended Sediment Low pH	Low	No	Point Sources, Nonpoint Sources, Natural Sources,

TABLE 5-6
REAL TIME GAUGING STATIONS IN THE CORRIDOR [(A)]

Station Number	Station Name	County	Hydrologic Unit Code	Basin Name
03077500	Youghiogheny R At Youghiogheny River Dam, Pa.	Somerset	05020006	Youghiogheny
03079000	Casselman River At Markleton, Pa.	Somerset	05020006	Youghiogheny
03080000	Laurel Hill Creek At Ursina, Pa.	Somerset	05020006	Youghiogheny
03081000	Youghiogheny River Below Confluence, Pa.	Fayette	05020006	Youghiogheny
03081500	Youghiogheny River At Ohiopyle, Pa.	Fayette	05020006	Youghiogheny
03082020	Indian Cr At Jones Mills, Pa Site 3	Westmoreland	05020006	Youghiogheny
03082120	Champion Cr At Melcroft, Pa Site 6	Fayette	05020006	Youghiogheny
03082190	Poplar Run Nr Normalville, Pa Site 16	Fayette	05020006	Youghiogheny
03082200	Poplar Run Near Normalville, Pa.	Fayette	05020006	Youghiogheny
03082237	Indian Cr At White Bridge, Pa Site 23	Fayette	05020006	Youghiogheny
03082500	Youghiogheny River At Connellsville, Pa.	Fayette	05020006	Youghiogheny

(a) Information Obtained From the USGS Internet Site.

TABLE 6-1
TREE SPECIES OF THE CORRIDOR [(A)]

Common Name	***Scientific Name***
Striped Maple	*Acer pensylvanicum L.*
Red maple	*Acer rubrum L.*
Sugar Maple	*Acer saccharum Marshall.*
Juneberry	*Amelanchier arobrea*
Shadbush	*Amelanchier arobrea*
Serviceberry	*Amelanchier species*
Hercules club	*Aralia spinosa*
Yellow Birch	*Betula alleghaniensis Britt.*
Black Birch	*Betula lenta*
Cherry Birch	*Betula lenta*
Blue Beech	*Carpinus caroliniana*
Pignut Hickory	*Carya glabra (P.Mill) Sweet*
Shellbark Hickory	*Carya laciniosa (Michx.f.)Loud)*
Shagbark Hickory	*Carya ovata (P.Mill) K.Koch*
Mockernut Hickory	*Carya tomentosa (Lam.ex Poir) Nutt.*
American Chestnut	*Castanea dentata (Marshall) Borkhaussen*
Redbud	*Cercis canadensis L.*
Flowering Dogwood	*Cornus florida L.*
Hawthorn	*Crataegus sp.*
American Beech	*Fagus grandifolia Ehrh.*
White Ash	*Fraxinus americana L.*
Witch-hazel	*Hamamelis virginiana L.*
Canada mayflower	*Juglans cinerea*
Butternut	*Juglans cinerea L.*
Black Walnut	*Juglans nigra L.*
Mountain-Laurel	*Kalima latifolia*
Tamarack	*larix laricina*
American Larch	*larix laricina (Duroi) K.Koch*
Tulip Poplar	*Liriodendron tulipifera*
Tulip Tree	*Liriodendron tulipifera*
Cucumber Magnolia	*Magolia acuminata L*
Black Tupeio	*Nyssa sylvatica*
Sour Gum	*Nyssa sylvatica*
Black Gum	*Nyssa sylvatica Marshall*
American Hophornbeam	*Ostrya virginiana*
Ironwood	*Ostrya virginiana*
Spruce	*Picea sp.*

TABLE 6-2
PNDI INVENTORY [(a)]

Vegetation and Plants

Scientific Name	Common Name	State Status	Date Last Observed	Typical Habitat
Aconitum unicinatum	Blue monkshood	PT	1985	Moist woods and slopes
Antennaria solitaria	Single-headed pussy-toes	PE	1988	Woods
Asplenium pinnatifidum	Lobed spleenwort	PT	1995	Dry, shaded rock crevices
Magnolia tripetala	Umbrella magnolia	PT	1987	Rich wooded slopes, and floodplains
Marshallia grandiflora	Large-flowered marshallia	PE	1985	Sandy or rocky river banks
Orontium aquaticum	Golden club	PT	1995	Swamps, lakes, ponds, streams, ditches, and wet shores
Panicum longifolium	Long-leaf panic-grass	PE	1987	Peaty and sandy bogs, and shores
Pyrularia pubera	Buffalo-nut	PT	1985	Woods and thickets, parasitic
Saxifraga micranthidifolia	Lettuce saxifrage	PT	1985	Mossy rocks in shaded streambeds
Scutellaria saxatilis	Rock skullcap	PE	1992	Low woods, rocky river banks, and roadsides
trautvetteria caroliniensis	Carolina tassel-rue	PT	1993	Wooded slopes and stream banks
Vitis rupestris	Sand grape	PE	1994	River banks

Mammals

Neotoma magister	Allegheny Woodrat

Amphibians

Aneides aenus	Green Salamder

Invertebrates

Tachopteryx thoreyi	Thorey's Grayback Dragonfly

(a) Search Conducted by the DCNR Department of Forestry.

TABLE 6-3
SPECIES OF THE CORRIDOR [(a)]

Common Name	Scientific Name
AMPHIBIANS	**AMPHIBIANS**
FROG, BULL	*RANA CATESBEIANA*
SALAMANDER, NORTHERN DUSKY	*DESMOGNATHUS PUSCUS PUSCUS*
SALAMANDER, REDBACK	*PLETHODON CINEREUS*
TOAD, AMERICAN	*BUFO AMERICANUS AMERICANUS*
BIRDS	**BIRDS**
BLACKBIRD, RUSTY	*EUPHAGUS CAROLINUS*
BUNTING, INDIGO	*PASSERINA CYANEA*
CANVASBACK	*AYTHYA VALISINERIA*
CARDINAL, COMMON	*CARDINALIS CARDINALIS*
CATBIRD, GRAY	*DUMETELLA CAROLINENSIS*
CHICKADEE, BLACK-CAPPED	*PARUS ATRICAPILLUS*
CHICKADEE, CAROLINA	*PARUS CAROLINENSIS*
COOT, AMERICAN	*FULICA AMERICANA*
COWBIRD, BROWN-HEADED	*MOLOTHRUS ATER*
CROSSBILL, RED	*LOXIA CURVIROSTRA*
CROW, AMERICAN	*CORVUS BRACHYRHYNCHOS*
CUCKOO, BLACK-BILLED	*COCCYZUS ERYTHROPTHALMUS*
CUCKOO, YELLOW-BILLED	*COCCYZUS AMERICANUS*
DOVE, MOURNING	*ZENAIDA MACROURA*
DOVE, ROCK	*COLUMBA LIVIA*
FINCH, HOUSE	*CARPODACUS MEXICANUS*
FINCH, PURPLE	*CARPODACUS PURPURIUS*
FLICKER, COMMON	*COLAPTES AURATUS*
FLYCATCHER, LEAST	*EMPIDONAX MINIMUS*
GADWALL	*ANAS STREPERA*
GALLINULE, COMM0N	*GALLINULA CHLOROPUS*
GOLDFINCH, AMERICAN	*SPINUS TRISTIS*
GRACKLE, COMMON	*QUISCALUS QUISCULA*
GREBE, PIED-BILLED	*PODILYMBUS PODICEPS*
GROSBEAK, BLUE	*GUIRACA CAERULEA*
GROSBEAK, EVENING	*HESPERIPHONA VESPERTINA*
GROSBEAK, ROSE-BREASTED	*PHEUCTICUS LUDOVICIANUS*
GULL, BONAPARTE'S	*LARUS PHILADELPHIA*
GULL, HERRING	*LARUS ARGENTATUS*
GULL, RING-BILLED	*LAWIS DELAWARENSIS*
HUMMIINGBIRD , RUBY-THROATED	*ARCHILOCH[IS COLUBRIS*
JAY, BLUE	*CYANOCITTA CRISTATA*
JUNCO, DARKEYED	*JUNCO HYEMALIS*

TABLE 7-1
RECREATION OPPORTUNITIES
AT YOUGHIOGHENY RIVER LAKE [(A)]

Youghiogheny River Lake Recreational Facilities	Boat Rentals	Campgrounds	Drinking Water	Information Center	Launching Ramps	Marina	Picnic Areas	Picnic Shelters	Swimming Areas
Outflow Camping Area		X	X						
Youghiogheny Recreation Area			X		X		X	X	X
Somerfield North			X		X		X	X	X
Somerfield South			X		X	X			
Jockey Hollow Picnic Area			X	X			X		
Jockey Hollow Boat Launch	X				X				
Tub Run Camping Area		X	X		X				X
Mill Run Recreation Area		X	X		X				X

(a) Information Obtained From the US Army Corps of Engineers – Youghiogheny River Lake Informational Map

TABLE 7-2
LIST OF NATIONAL REGISTERED
PROPERTIES IN THE CORRIDOR [(A)]

County	Municipality	Historic Name	Address
Fayette	Saltlick Twp.	Melcroft Coal Mine Tresile	Intersection of Rts. 711 and 1007
Fayette	Wharton Twp	Braddock Inn	US Rt. 40, 1 mile East of Chalk Hill
Fayette	Wharton Twp	Downer Tavern	US Rt. 40 at Chalk Hill
Fayette	Wharton Twp	Fayette Springs Hotel	US Rt. 40, .5 miles East of Chalk Hill
Fayette	Wharton Twp	Fort Necessity National Battlefield	On US Rt. 40
Fayette	Wharton Twp	Fraser, Samuel Tavern	US Rt. 40 at Farmington
Fayette	Wharton Twp	Ft. Necessity Monument	US Rt. 40 1 mile West of Farmington
Fayette	Wharton Twp	Rush House	Corner Rt. 40 and Rt. 381, Farmington
Fayette	Wharton Twp	Rush Service Station	US Rt. 40 at Farmington
Fayette	Wharton Twp	Wharton Furnance	Wharton Furnance/Hull Rd., Sr 2003
Fayette	Henry Clay Twp.	Great Crossings Bridge	Old US RT. 40 @ Youghiogheny
Fayette	Henry Clay Twp.	Leber's Log Cottages	US Rt. 40 at Flat rock
Fayette	Henry Clay Twp.	Brown's Tavern	US Rt. 40 Near Markleysburg
Fayette	Henry Clay Twp.	Damtenders's Houses	Local Road 892
Fayette	Connellsville	Carnegie Free Library	South Pittsburgh St.
Fayette	Connellsville	Connellsville Armory	108 West Washington St.
Fayette	Connellsville	Connellsville U.S. Post Office	115 North Arch St.
Fayette	Connellsville	Fairmont, Morgantown, and Pittsburgh Railroad	

TABLE 7-2
LIST OF NATIONAL REGISTERED
PROPERTIES IN THE CORRIDOR [A]
(Continued)

County	Municipality	Historic Name	Address
Fayette	Connellsville	Pittsburgh and Lake Erie Railroad	900 West Crawford Ave.
Fayette	Connellsville	Third Ward School	301-321 Jefferson St.
Fayette	Connellsville	Troutman Building	East Crawford St.
Fayette	Dunbar	Central Bank Building	Connellsville and Railroad St.
Fayette	Dunbar Twp.	Meason, Isaac, House	US Rt. 119 North
Somerset	Addison	Old Trails Garage	Main St.
Somerset	Addison	Petersburg Toll House	Old Rt. 40
Somerset	Addison Twp.	Hanna, William House	Rt. 523, ½ Mile South of Harnedsville
Somerset	Addison Twp.	Wable/Augustine Tavern	US Rt. 40 1 Mile East of Addision
Somerset	Lower Turkey Foot Twp.	Lower Humbert Bridge	T393, North of Ursina
Somerset	Lower Turkey Foot Twp.	Methodist Church of Lower Turkeyfoot Twp.	T393

(a) Information Received From the PA Historical and Museum Commission.

TABLE 6-3
SPECIES OF THE CORRIDOR[a]
(Continued)

BIRDS (cont.)	
KESTREL, AMERICAN	*FALCO SPARVERIUS*
KINGLET, GOLDEN-CROWNED	*REGULUS SATRAPA*
KINGLET, RUBY-CROWNED	*REGULUS CALENDULA*
MARTIN, PURPLE	*PROGNE SUBIS*
MERGANSER, COMMON	*MERGUS MERGANSER*
MERGANSER HOODED	*MERGUS CUCULLATUS*
MERGANSER, RED-BREASTED	*MERGUS SERRATOR*
MOCKINGBIRD, NORTHERN	*MIMUS POLYGLOTTOS*
NIGHTHAWK, COMMON	*CHORDEILES MINOR*
NUTHATCH, RED-BREASTED	*SITTA CANADENSIS*
NUTHATCH, WHITE- BREASTED	*SITTA CAROLINENSIS*
ORIOLE, NORTHERN	*ICTERUS GALBULA*
ORIOLE, ORCHARD	*ICTERUS SPURIUS*
OSPREY	*PANDION HALIAETUS*
OWL, BARN	*TYTO ALBA*
OWL, NORTHERN SCREECH	*OTUS ASIO*
OWL, SNOWY	*NYCTEA SCANDIACA*
PEEWEE, EASTERN	*CONTOPUS VIRENS*
RAIL, VIRGINIA	*RALLUS LIMICOLA*
REDPOLL , COMM0N	*ACANTHIS FLAMMEA*
REDSTART , AMERICAN	*SETOPHAGA RUTICILLA*
ROBIN, AMERICAN	*TURDUS MIGRATORIUS*
SAPSUCKER, YELLOW-BELLIED	*SPHYRAPICUS VARIUS*
SCAUP, LESSER	*AYTHYA AFFINIS*
SISKIN, PINE	*SPINUS PINUS*
SORA	*PORZANA CAROLINA*
SPARROW, CHIPPING	*SPIZELLA PASSERINA*
SPARROW, HOUSE	*PASSER DOMESTICUS*
SPARROW, SONG	*MELOSPIZA MELODIA*
SPARROW, TREE	*SPIZELLA ARBOREA*
SPARROW, WHITE CROWNED	*ZONOTRICHIA LEUCOPHRYS*
SPARROW, WHITE-THROATED	*ZONOTRICHIA ALBICOLLIS*
STARLING, COMMON	*STURNUS VULGARIS*
SWALLOW, CLIFF	*PETROCHELIDON PYRRHONOTA*
SWAN, MUTE	*CYGNUS OLOR*
SWAN,WHISTLING	*OLOR COLUMBIANUS*
SWIFT, CHIMNEY	*CHAETURA PELAGICA*
TANAGER, SCARLET	*PIRANGA OLIVACEA*
TERN, BLACK	*CHLIDONIAS NIGER*
TERN, CASPIAN	*STERNA CASPIA*
TERN, COMMON	*STERNA HIRUNDO*
THRUSH, WOOD	*HYLOCICHLA MUSTELINA*
TITMOUSE, TUFTED	*PARUS BICOLOR*
TOWHEE, RUFOUS-SIDED	*PIPILO EHYTHROPHTHALMUS*
VIREO, RED-EYED	*VIREO OLIVACEUS*

TABLE 6-3
SPECIES OF THE CORRIDOR[(a)]
(Continued)

BIRDS (cont.)	
VIREO, SOLITARY	*VIREO SOLITARIUS*
VIREO, WARBLING	*VIREO GILVUS*
VIREO, YELLOW-THROATED	*VIREO FLAVIFRONS*
WARBLER, BLACKPOLL	*DENDROICA STRIATA*
WARBLER, BLACK-AND-WHITE	*MNIOTILTA VARIA*
WARBLER, BLACK-THROATED BLUE	*DENDROICA CAERULESCENS*
WARBLER, BLACK-THROATED GREEN	*DENDROICA VIRENS*
WARBLER, NASHVILLE	*VERMIVORA RUFICAPILLA*
WARBLER, PAIUJLA	*PARULA AMERICANA*
WARBLER, YELLOW	*DENDROICA PETECHIA*
WARBLER, YELLOW-RUMPED	*DENDROICA CORONATA*
WATERTHRUSH, LOUISIANA	*SEIURUS MOTACILLA*
WATERTHRUSH , NORTHERN	*SEIURUS NOVEBORACENSIS*
WAXWING, CEDAR	*BOMBYCILLA CEDRORUM*
WIDGEON, AMERICAN	*ANAS AMERICANA*
WOODCOCK, AMERICAN	*PHILOHELA MINOR*
WOODPECKER, DOWNY	*DENDROCOPOS PUBESCENS*
WOODPECKER, HAIRY	*DENDROCOPOS VILLOSUS*
WOODPECKER, RED-BELLIED	*CENTURUS CAROLINUS*
WOODPECKER, RED-HEADED	*MELANERPES ERYTHROCEPHALUS*
WREN, BEWICK' S	*THRYOMANES BFWICKII*
WREN, CAROLINA	*THRYOTHORUS LUDOVICIANUS*
WREN, HOUSE	*TROGLODYTES AEDON*
WREN, WINTER	*TROGLODYTES TROGLODYTES*
YELLOWLEGS , GREATER	*TRINGA MELANOLEUCA*

MAMMALS	**MAMMALS**
BAT, BIG BROWN	*EPTESICUS FUSCUS*
BAT, RED	*LASIURUS BOREALIS*
CHIPMUNK, EASTERN	*TAMIAS STRIATUS*
COTTONTAIL, EASTERN	*SYLVILAGUS FLORIDANUS*
FOX, RED	*VULPES VULPES*
MINK	*MUSTELA VISON*
MOLE, HAIRY-TAILED	*PARASCALOPS BREWERI*
MOUSE, HOUSE	*MUS MUSCULUS*
MYOTIS , LITTLE BROWN	*MYOTIS LUCIFUGUS*
RACCOON	*PROCYON LOTOR*
RAT, NORWAY	*RATTUS NORVEGICUS*
SHREW, SHORT-TAILED	*BLARINA BREVICAUDA*
SKUNK, STRIPED	*MEPHITIS MEPHITIS*
SQUIRREL, GRAY	*SCIURUS CAROLINENSIS*
WEASEL, LONG-TAILED	*MUSTELA FRENATA*
COPPERHEAD, NORTHERN	*AGKISTRODON CONTORTRIX MOKESON*
SNAKE, EASTERN GARTER	*THAMNOPHIS SIRTALIS SIRTALIS*
SNAKE, MOUNTAIN EARTH	*VIRGINIA VALERIAE PULCHRA*
SNAKE, NORTHERN BROWN	*STORERIA DEKAYI DEKAYI*
SNAKE, NORTHERN WATER	*NERODIA SIPEDON SIPEDON*

(a) Obtained From PA DOT Report.

TABLE 6-1
TREE SPECIES OF THE CORRIDOR [(A)]
(Continued)

Common Name	***Scientific Name***
Red Pine	*Pinus resinosa Ait.*
Pitch Pine	*Pinus rigida P.Mill*
Eastern White Pine	*Pinus strobus L.*
Scots Pine	*Pinus sylvestris L.*
Virgina Pine	*Pinus virginiana P.Mill*
Sycamore	*Plantanus occidentalis L.*
Trembling Aspen	*Poplus tremuloides*
Large-toothed Poplar	*Populus grandidentata*
Bigtooth Aspen	*Populus grandidentata Michx.*
Wild Plum	*prunus americana*
Pin Cherry	*Prunus pensylvanica*
Fire Cherry	*Prunus pensylvanica L.*
Wild Black Cherry	*prunus serotina*
Black Cherry	*Prunus serotina Ehrh.*
Choke Cherry	*Prunus virginiana L.*
Crabapple	*Pyrus coronaria*
Common Apple	*Pyrus malus*
White Oak	*Quercus alba L.*
Scarlet Oak	*Quercus coccinea Muenchh.*
Chestnut Oak	*Quercus montana Willd.*
Red Oak	*Quercus rubra*
Northern Red Oak	*Quercus rubra L.*
Black Oak	*Quercus velutina Lam.*
Great Laurel	*Rhododendron maxium*
Rhododendron	*Rhododendron maxium*
Staghorn Sumac	*Rhus typhina*
Black Locust	*Robinia pseudo L.*
Black Willow	*Salix nigra Marshall+B77*
Sassafras	*Sassafras albidum (Nutt.) Nees*
American Mountain-ash	*Sorbus americana*
American Linden	*Tilia americana*
White Basswood	*Tilia americana*
Eastern Hemlock	*Tsuga canadensis (L.) Carr.*
American Elm	*Ulmus americana*
Slippery Elm	*Ulmus rubra Muhl.*

(a) Information Obtained from DCNR Internet Site.

TABLE 5-5
303 (D) LISTED WATERS OF THE CORRIDOR [(A)]
(Continued)

Listing State	ID	Waterbody	Parameter of Concern	Priority for TMDL development	Targeted for TMDL development before the year April, 2000?	Potential sources of Impairment
MD	MD-0137-05020202-1998	Little Youghiogheny River	Nutrients Suspended Sediments	Low	No	Nonpoint Sources, Natural Sources
MD	MD-0138-05020203-1998	Deep Creek	Nutrients Low pH	Low	No	Nonpoint Sources, Natural Sources
MD	MD-0139_05020204-1998	Cassellman River	Nutrients Low pH	Low	No	Point Sources, Nonpoint Sources, Natural Sources,
MD	MD-980056_05020202-1998	Little Youghiogheny River Watershed Impoundment, Broadford Lake	Nutrients	Medium	No	Nonpoint Sources
MD	MD-980057_05020203-1998	Deep Creek Watershed Impoundment Deep Creek Lake	Nutrients	Medium	No	Nonpoint Sources

(a) Information Obtained From the PA DEP Internet Site.

TABLE 5-4
NPDES PERMITS FOUND IN THE CORRIDOR [A]
(Continued)

OWNER	FACILITY NAME	PERMIT NUMBER	MUNI. NAME
Connellsville Area School District	Springfield Elementary School	PA0098337	Springfield Township
DCNR - Bureau of State Parks	Ohiopyle State Park	PA0032425	Stewart Township
DCNR - Bureau of State Parks	Ohiopyle State Park	PA0096521	Stewart Township
Boy Scouts of America	Heritage Reservation - BSA	PA0091243	Wharton Township
Hickory Land Corporation of America	Hickory Land Apartments	PA0098817	Wharton Township
Hutterian Brethren of Pa Inc.	Hutterian Brethren of Pennsylvania, Inc.	PA0097560	Wharton Township
Hutterian Brethren of Pa Inc.	Spring Valley STP	PA0203700	Wharton Township
Nemacolin Woodlands	Nemacolin Woodlands	PA0098761	Wharton Township

(a) Information Received on the PA DEP Internet Site.

TABLE 5-1
PA DEP CHAPTER 93 - TRIBUTARY DESIGNATIONS [A]
(Continued)

High Quality Cold Water Fisheries HQ-CWF	
Stream Segment	County
Camp Run Basin	Fayette
Dunbar Creek	Fayette
Indian Creek	Fayette
Johnson Run	Fayette
Laurel Hill Creek from Fall creek to mouth	Fayette
Laurel Run Basin	Fayette
Lick Run Basin	Fayette
Meadow Run Basin	Fayette
Morgan Run	Fayette
Rock Spring Run Basin	Fayette
Youghiogheny River from Dam to Ramcat Run	Fayette
Youghiogheny River main stem from Ramcat Run to Connell Run	Fayette
Drake Run Basin	Somerset

Exceptional Value EV	
Stream Segment	County
Bear Run Basin	Fayette
Bruner Run Basin	Fayette
Jonathan Run Basin	Fayette
Long Run Basin	Fayette
Sheepskin Run Basin	Fayette

(a) Data Received From Chapter 93 – PA DEP.

TABLE 2-3
ECONOMIC DATA [(A)]
(Continued)

Dunbar Township		
	Artisto-Tech Metal Forms Inc.	13
	Bailey Machine Co.	18
	E.I. Dupont Denemours & Co.	13
	Unlimited Graphic Images	4
	International Communication	111
	Nu-Metrics	30
	Stefanos Printing	7
	Toby Brothers Iron & Metal	6
	Youghiogheny Opalescent Glass	15
	Yozie Mold Co., Inc.	6
Henry Clay Township		
	Dennis Concrete Co.	16
South Connellsville Borough		
	Anchor Glass Container Corp.	627
	Anchor Hocking Packaging Co.	450
	Stahl's Special Project Inc.	32
Springfield Township		
	Kern & Kern Sawmill	2
Stewart Township		
	Ohiopyle Prints	70
Wharton Township		
	Aspen Labs	10
	Community Playthings	35

(a) Information received From the Fayette County Planning Commission.

TABLE 2-2
ZONING INFORMATION [(A)]
(Continued)

Professional Activity, Limited
Professional Activity (as amended 84-30)
Public Use
Seasonal Homes
Single-Family Dwelling
Two Family Dwelling
Underground Gas Storage
Bed and Breakfast (Amendment 94-1)

Special Exceptions Requiring Zoning Board Approval
Airport
Animal Hospital
Cemetery
Commercial Recreation Facility
Farm Recreation
Home Occupation
Hospital, Clinic or Home for the Aged
Lumber Mill (as amended 90-1)
Neighborhood Business (as amended 84-30)
Noncommercial and/or Restricted
Personal Care Home (as amended 87-2)
Public Maintenance/Storage Facility
Public Service Facility
Rifle Range
Sanitary Landfill
Sand, Gravel, Topsoil and Other Mineral Extraction
School Bus Shelter with Advertising
Semipublic Use
Specialized Animal Raising and Care
Strip Mining

2. C-1 Conservation

Permitted Uses

Accessory Use
Agricultural
Essential Services

TABLE 2-2
ZONING INFORMATION [(A)]
(Continued)

Farm Recreation Enterprise
Forestry
Noncommercial Recreation Facility
Oil and Gas Wells
Park
Professional Activity, Limited
Public Use
Seasonal Homes
Single-Family Dwelling
Underground Gas Storage

Special Exceptions Requiring Zoning Board Approval
Cemetery
Home Occupation
Lumber Mill (as amended 90-1)
Restricted Commercial recreational Facility
Rifle Range
Semipublic Use
Specialized Animal Raising and Care

3. M-1 Light Industry

Permitted Uses
Accessory Use
Agriculture
Automotive Repair (as amended 84-30)
Automotive Maintenance (as amended 84-30)
Business Services
Essential Services
Food Services
Gas Station
Manufacturing, Restricted

Special Exceptions Requiring Zoning Board Approval
Airport
Lumber Mill (as amended 84-30)

TABLE 2-2
ZONING INFORMATION [A]
(Continued)

Outdoor Advertising
Public Maintenance
Research and Testing Facility
Retail Business (as amended 84-30)
Sale and Storage of Building Materials
Trucking and Other Freight Terminals
Warehousing

4. R-2 Medium Density Residential

Permitted Uses
Accessory Use
Beauty-Barber Shop, Residential
Bed and Breakfast (Amendment 94-1)
Essential Services
Mobile Home
Plant Cultivation
Single-Family Dwelling
Two Family Dwelling
Public Uses
Bed and Breakfast (Amendment 94-1)
Professional Activity, Limited

Special Exceptions Requiring Zoning Board Approval
Multiple Family dwelling
Home Occupation
Mobile Home Park
Mobile Home Subdivision
Mortuary
Multiple-Dwelling and Multiple Dwelling Use
Neighborhood Business
Noncommercial Recreational Facility
Nursery School
Personal Care Home (as amended 87-2)
Public Service Shelter
School Bus Shelter with Advertising
Semipublic Use
(a) Information Received From the Fayette County Planning Commission.

TABLE 2-1
SELECTED TRIBUTARY DATA [(A)]
(Continued)

Dunbar Creek	
Tributary To	Youghiogheny River
County	Fayette
Source	Washington Springs, PA
Mouth	Connellsville, PA
Course	N
Drainage Area	36.9 square miles
Length	13.0 miles
Meander Ratio (Stream length/Valley length)	1.06
Relief Ratio (Elevation/Stream length)	135
Channel Slop	97.9
Province	Appalachian Plateaus
Rock Units	Sandstone, shale, limestone, coal
Drainage pattern	Dendritic
Channel Pattern	Regular
Main Channel	Steep Slopes
Impoundments	-

(a) Tributary Data obtained from The Water Resources Bulletin – U.S. Geologic Survey, 1984.

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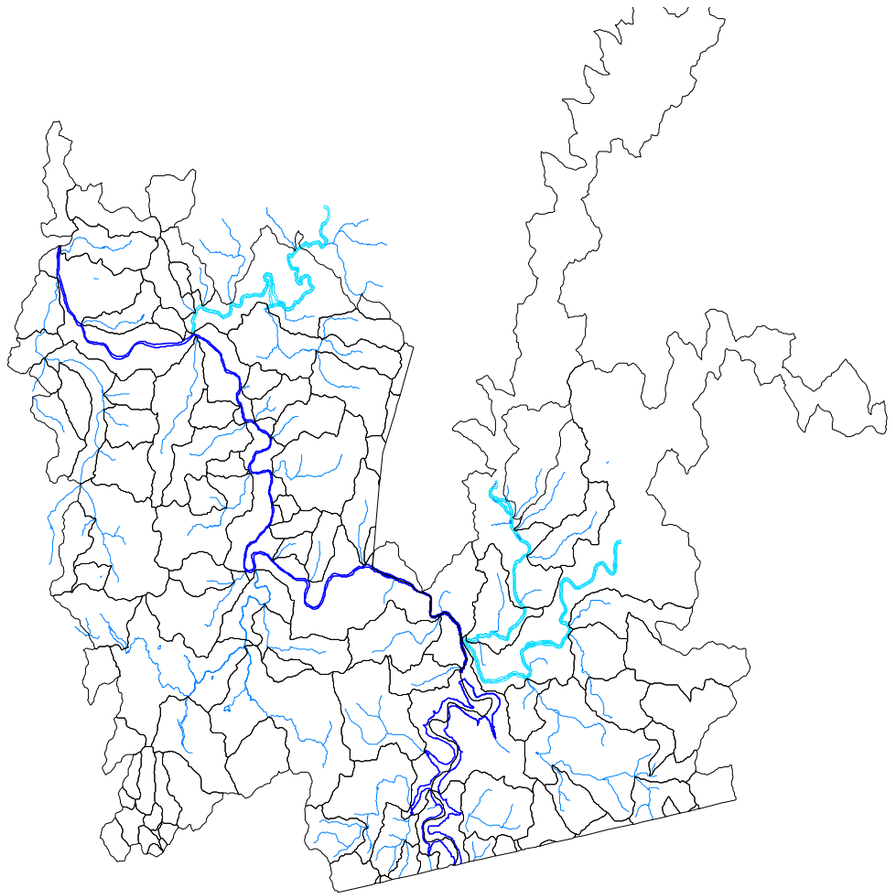

FIGURE 10

WATERSHED BOUNDARIES

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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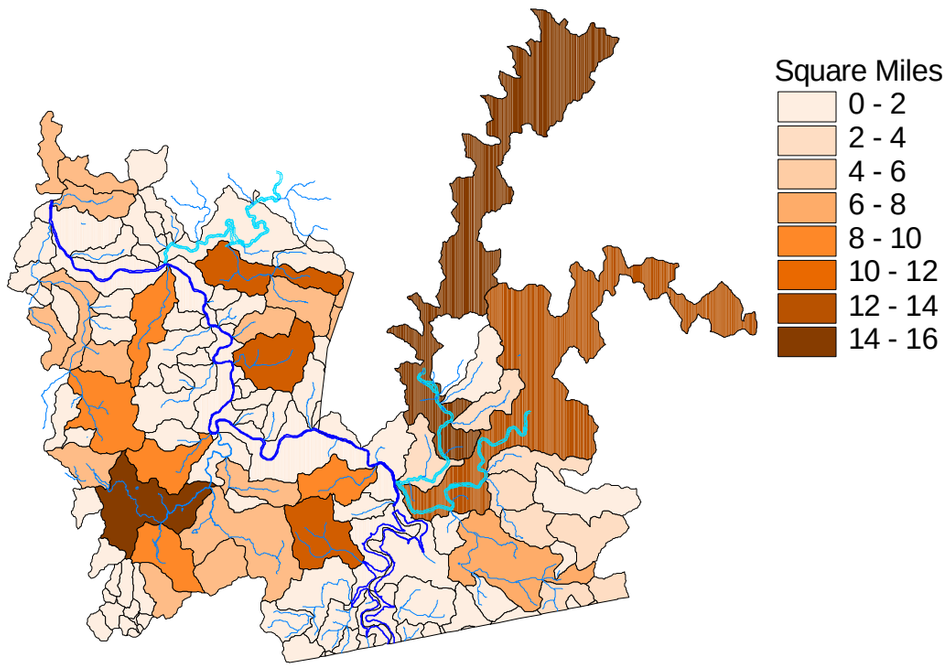

FIGURE 11

WATERSHED AREAS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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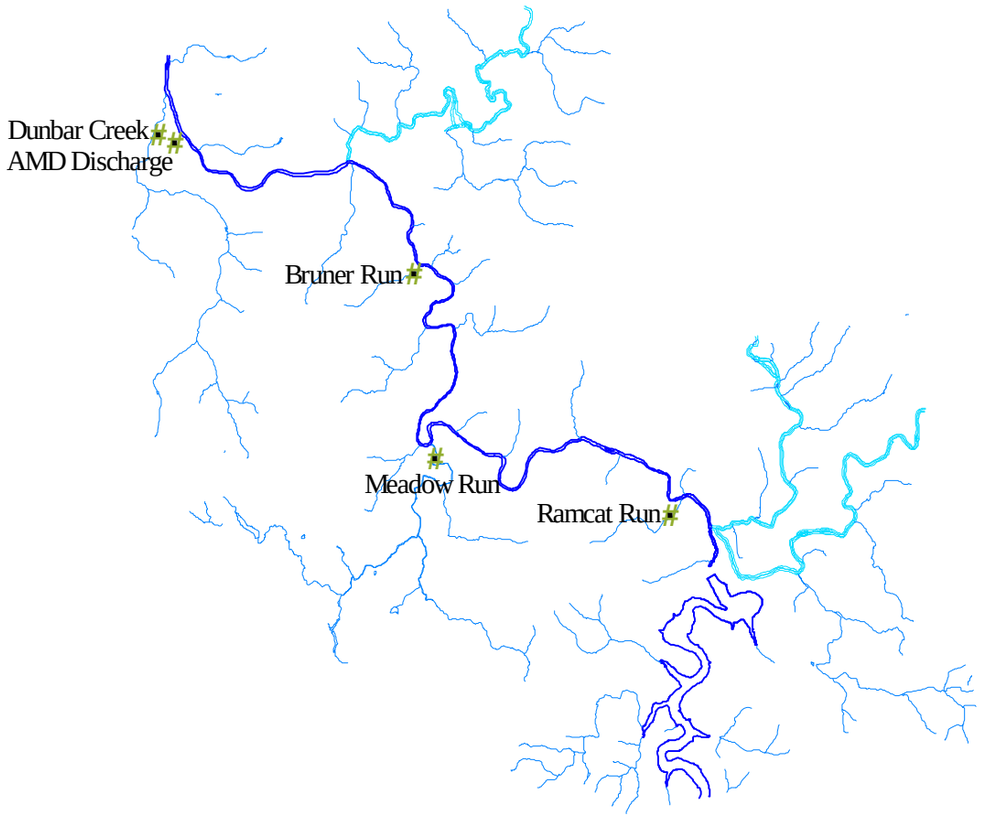

FIGURE 13

CRTU WATER QUALITY POINTS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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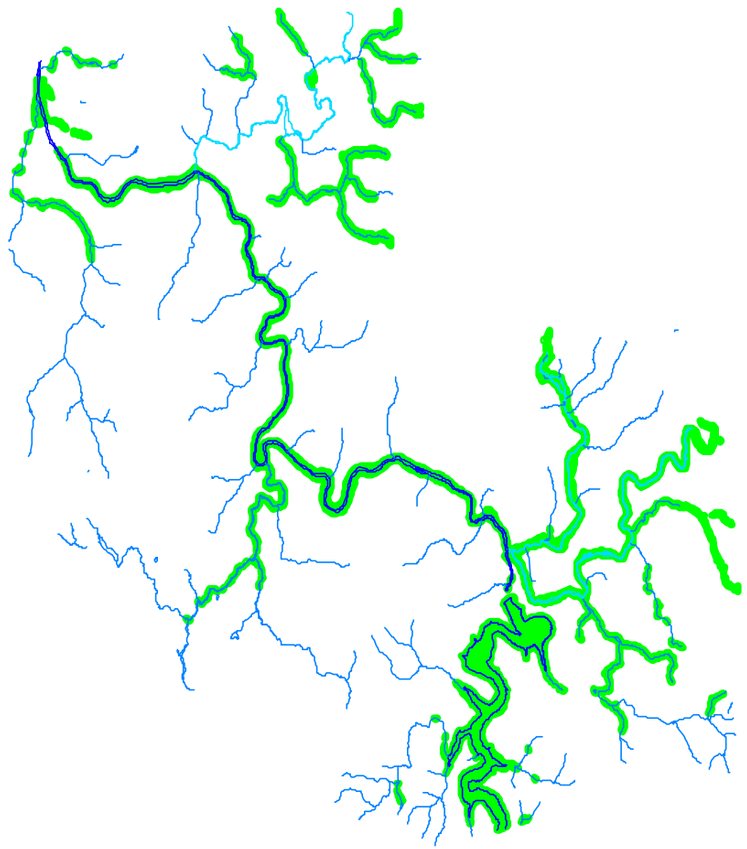

FIGURE 12

FLOODPLAINS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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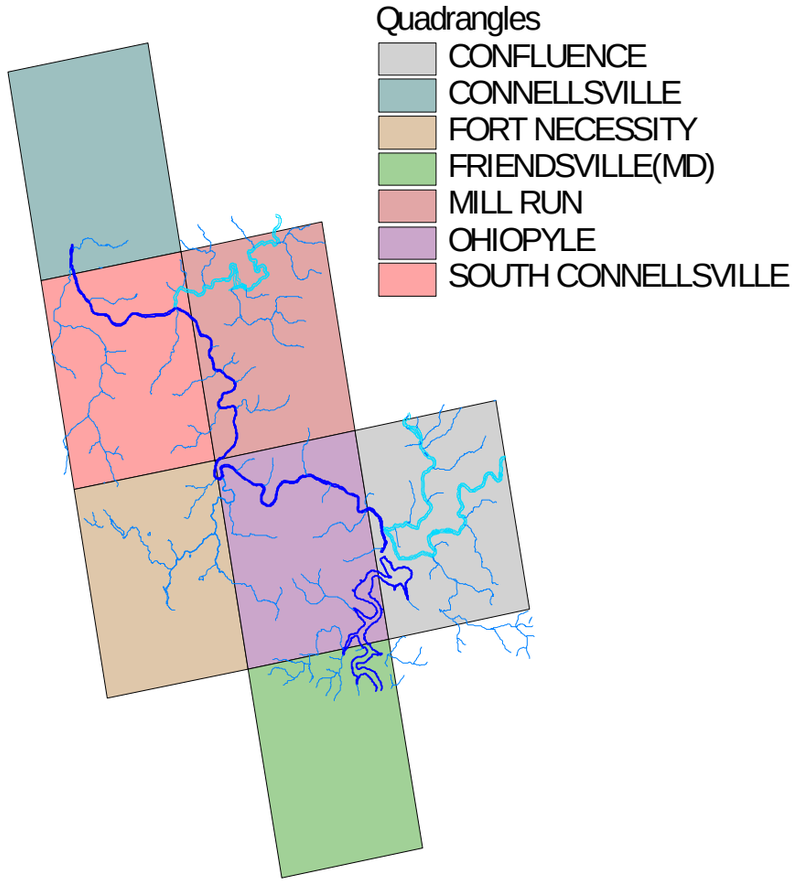

FIGURE 3

KEY MAP - USGS QUADRANGLE MAPS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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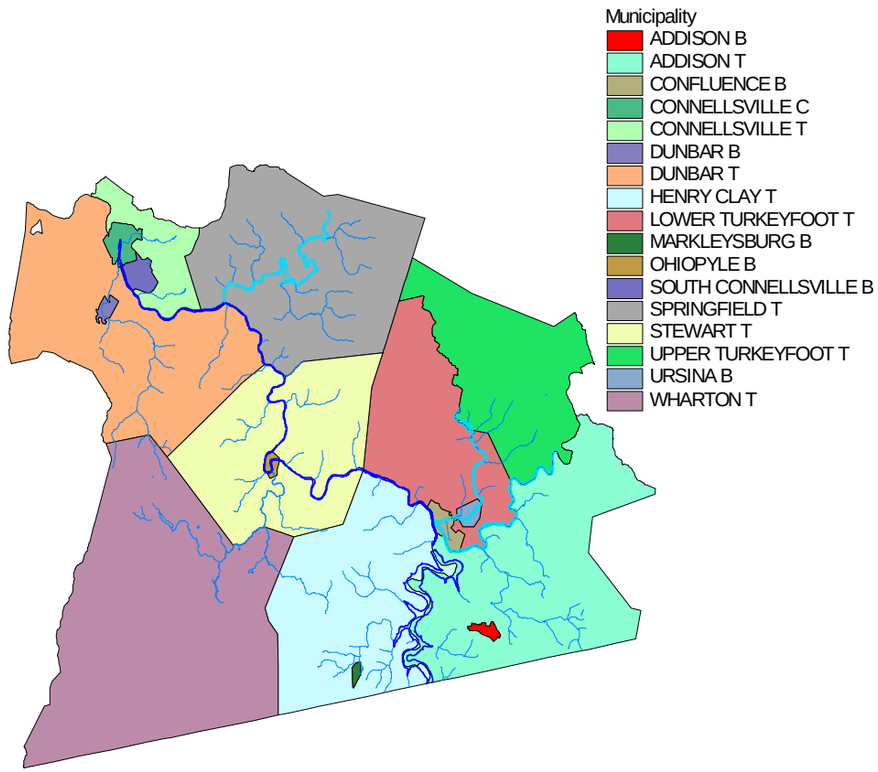

FIGURE 4

CORRIDOR MUNICIPALITIES

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Not to Scale

Paul C. Rizzo Associates, Inc.
CONSULTANTS

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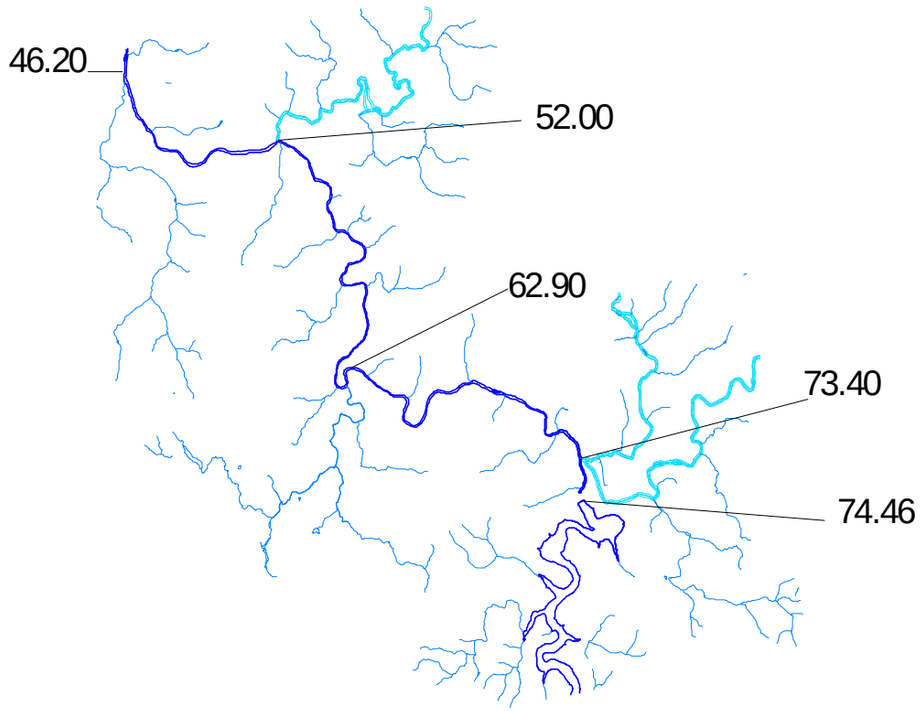

FIGURE 5

RIVER MILE BENCHMARKS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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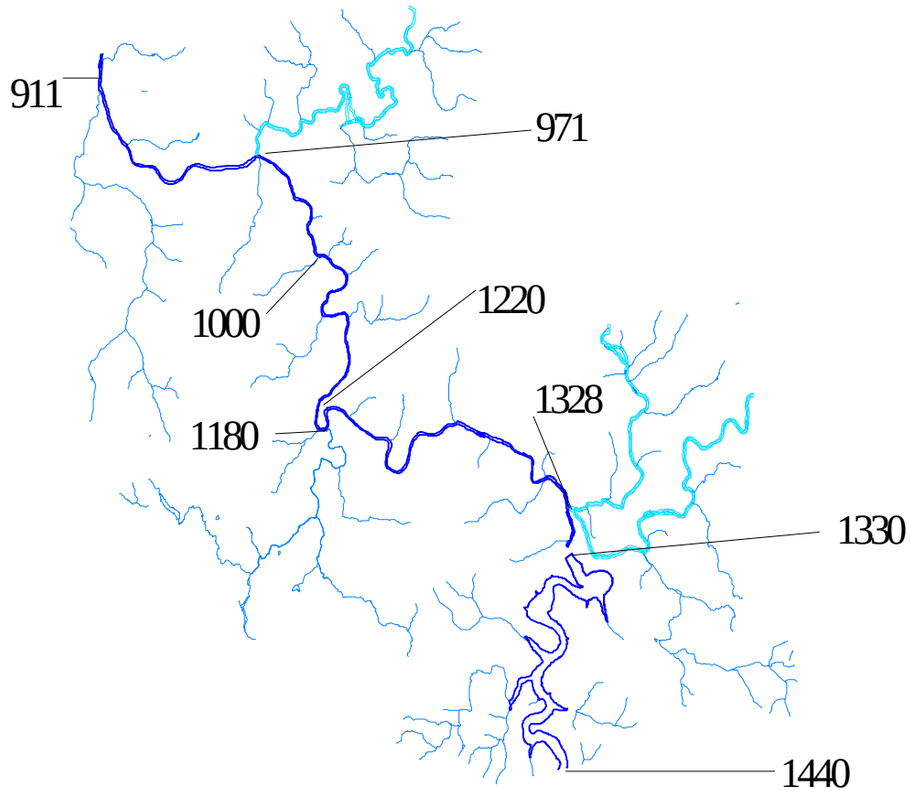

FIGURE 6

RIVER ELEVATION BENCHMARKS

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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				r1-f7-1978/00

FIGURE 7

PROVINCE SECTIONS IN PENNSYLVANIA

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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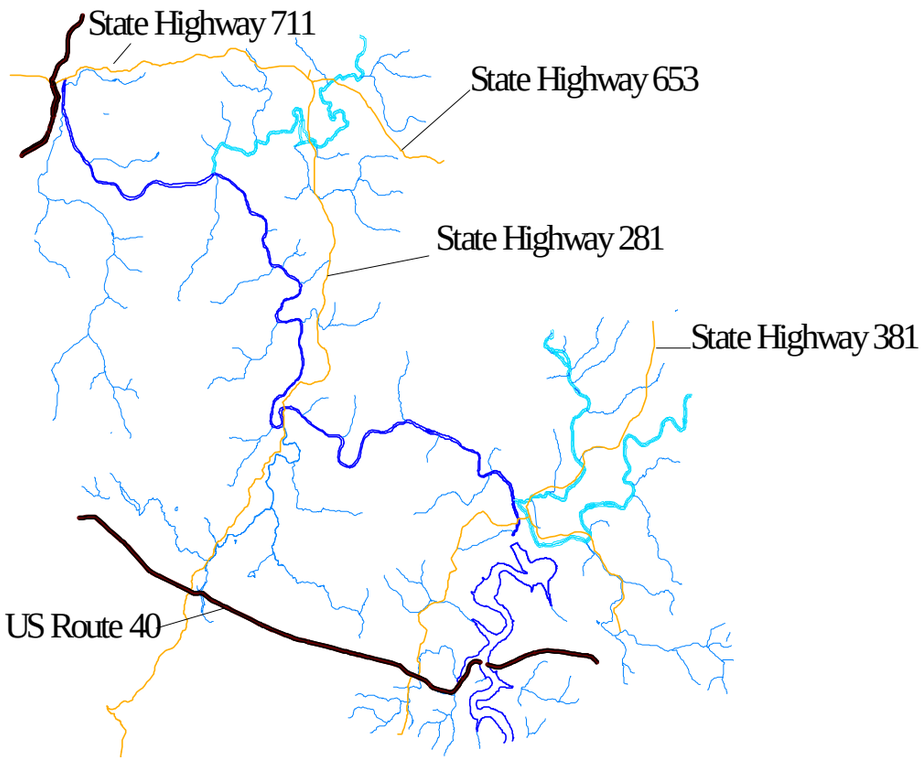

FIGURE 8

MAJOR ROADS OF THE CORRIDOR

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

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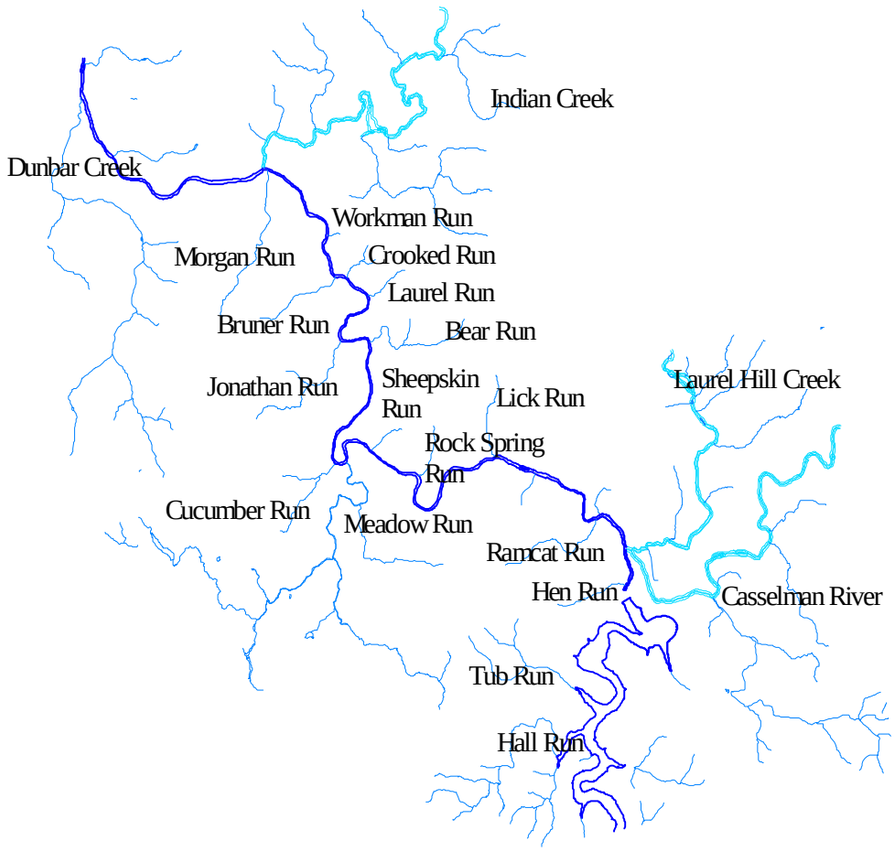

FIGURE 9

TRIBUTARIES OF THE CORRIDOR

RIVER CONSERVATION PLAN
MIDDLE YOUGHIOGHENY RIVER CORRIDOR

Paul C. Rizzo Associates, Inc.
CONSULTANTS

Not to Scale

APPENDIX A

CONSERVANCY INTRODUCTION LETTER

Dear Fayette County Natural Heritage Inventory Users,

I would like to extend our appreciation to the people of Fayette County, the Department of Conservation and Natural Resources and the McKenna Foundation for making this report possible. Since 1991, Western Pennsylvania Conservancy has conducted County Natural Heritage Inventories as a way to both gather new information and to pass along what we have learned to the people making decisions about their resources and communities.

This report represents an important assemblage of that information. The Fayette County Natural Heritage Inventory is, at its most basic level, a source of information and, as for all other county inventories completed throughout the state, unique in providing a comprehensive look at the exceptional living resources in the county. In many ways, it is also an introduction and an overview. Although areas are mapped and discussed, the details in the report do not do justice to the resources found there. It is up to the people of the county to fully explore and appreciate the resources in their communities.

Consider the inventory as an invitation for the people of the Middle Youghiogheny River Corridor to explore and discuss their natural heritage. For those who wish to learn about and participate in the conservation of the living resources of the county, use this report as a road map to some of the special places in the county. Realize that there will be more places to add to those identified here and that this document can be updated as necessary to accommodate new information. Ultimately, it will be up to the landowners and the people of the county to determine how these areas might be used and protected.

Here are some examples of how the inventory and the Natural Heritage Areas (NHA's) identified can find use among various groups and people.

Planners and Government Staff

Typically, the planning personnel in a county administer county inventory projects. Often the inventories are used in conjunction with other resource information (agricultural areas, slope and soil overlays, floodplain maps, etc.) in review for various projects and in comprehensive planning. NHA's may be included under various categories of zoning, such as conservation or forest zones, within park and greenspace areas, and even within agricultural security areas. There are many possibilities to provide for the conservation of Natural Heritage Areas within the context of public amenities, recreational opportunities and resource management.

County, State and Federal Agencies

In many counties, NHA's lie within some state or federal lands. Whether the Pennsylvania Game Commission, the Pennsylvania Bureau of Forestry, the National Park Service or numerous other agencies, those staff responsible for planning and management can use the inventory to better understand the extent of the resource, the requirements of the individual plant, animal, or community elements, and the general approach that protection could assume. County Conservation Districts may use the inventories to focus attention on resources (e,g, high diversity streams or wetlands) and as reference in encouraging good management practices.

Environmental and Development Consultants

Environmental Consultants are called upon to plan for a multitude of development projects including road construction, housing developments, commercial enterprises, and infrastructure expansion. Design of this projects requires that all resources impacted be known and understood. Decisions made with inadequate information can lead to substantial and costly delays. Natural Heritage Inventories provide a first look at biological resources that include plants and animals listed as rare, threatened or endangered in Pennsylvania and in the Nation. Consultants can therefore see potential conflicts long before establishing footprints or alignments and before applying for permits. This allows projects to change early on when flexibility is at a maximum.

Environmental Consultants are increasing also called upon to produce resource plans (e.g. Rivers Conservation Plans) that must integrate a variety of biological, physical and social information. Natural Heritage Inventories have found great utility in helping to define watershed-level resources and priorities for conservation.

Developers

Working with Environmental Consultants, developers can consider options for development that add value and protect key resources. Incorporating greenspace, wetlands, and forest buffers into various kinds of development can attract homeowners and businesses that desire natural amenities nearby. Just as parks have traditionally raised property values, so too can natural areas. Natural Heritage Inventories can suggest opportunities where development and conservation can complement one another.

Educators

Curricula in primary, secondary and even college level classes often focus on biological science from the chemical or microbiological level. Field sciences do not always receive the attention that they deserve and require. Natural areas can provide unique opportunities for students to witness first hand the organisms and communities that are so critical to biological diversity. Teachers can use Natural Heritage Inventories to show students where and why local and regional diversity occur. With proper arrangements, students could visit NHA's and establish appropriate research or monitoring projects.

Conservation Organizations

Organizations that have as part of their missions the conservation of biological diversity can turn to the inventory as a source of already prioritized places in the county. Such a reference can help guide internal planning and define the essential resources that will be the focus of protection efforts. Numerous land trusts and conservancies throughout Pennsylvania have made use of the inventories to do just this sort of planning and prioritization and are now engaged in conservation efforts on highly significant sites for individual counties and for the state.

We encourage your comments and questions. The success of the report will be measured by the use it receives and the utility it serves to those making decisions about resources and land use throughout the county. Thank you for your interest.

The following report is an except taken from the Fayette County Natural Heritage Inventory. The information provided was selected due to its relevance to the Middle Youghiogheny River Corridor.

Sincerely,

Larry J.Schweiger
President and CEO, Western Pennsylvania Conservancy
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Pittsburgh
Headquarters

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APPENDIX B

DESCRIPTIONS OF THE SOILS FOUND IN THE MIDDLE YOUGHIOGHENY RIVER CORRIDOR [(A)]

Andover Series – AnB

The Andover series consists of deep, poorly drained, loamy soils. These soils formed in material that accumulated at the base of steeper slopes. Andover soils are nearly level or gently sloping and are generally on the concave foot slopes of Chestnut Ridge and Laurel Hill. Common trees are red oak, red maple, elm, ash, and sycamore.

Andover soils are slowly permeable and have slow to medium surface runoff. During wet seasons, the water table rises to the surface or within one-half foot of the surface. Andover soils are very stony and are suited to trees.

Limitation
The limitation to use for onsite sewage disposal is severe because of the high water table and the slowly permeable fragipan.

Elkins – EK

The Elkins series consists of deep, very poorly drained, loamy soils on flood plains. These nearly level soils formed in sediments deposited by streams. They have a smooth or slightly concave surface that is covered with water during winter, spring, and some of the summer. These soils occur mostly in low areas along the Monongahela and Youghiogheny Rivers and along Jacobs Creek. Common trees are sycamore, willow, and alder. Other common plants are cattail, swampgrass, and ironweed.

Elkins soils are flooded and have a water table at or near the surface most of the time. Locating outlets for tile lines or open ditches is difficult because the soils are only slightly above the stream level. Because of flooding and a high water table, these soils are poorly suited to cultivated crops. They provide suitable sites for man-made ponds.

Limitation
The limitations for use as building sites are severe because of the flooding and wetness.

Ernest Series – ErB2, EsB, EsD, ErC

The Ernest series consists of deep, moderately well drained, loamy soils. These nearly level to moderately steep soils formed in materials that accumulated at the base of the steeper slopes. Ernest soils occupy concave foot slopes and are widely distributed throughout the county. In some places these soils are very stony. Common trees are maple, oak, beech, hickory, ash, hemlock, elm, and dogwood. Ironweed, blackberry, milkweed, elderberry, goldenrod, and plantain are common plants in open, idle fields.

Ernest soils have moderately slow permeability and a moderate available moisture capacity. A water table rises to within 1-1/2 to 3 feet of the surface when wetness is at its peak. Bedrock occurs at a depth of about 4 to 20 feet. Ernest soils are naturally strongly acidic. They have a good capacity to store plant nutrients. In some places these soils are too stony for cultivation, but where the stones have been removed, the soils are suited to farming. Heaving of alfalfa is severe in winter. Very stony areas can be used for pasture. Ernest soils have a good potential for use as pond sites.

Limitation
The limitations to use for onsite sewage disposal are severe.

Chavies Series – Ce, ChB

The Chavies series consists of deep, well-drained, loamy soils on stream terraces. These soils formed in water-deposited sediments on high bottomland along the rivers and larger creeks of the county. These soils are nearly level and have a smooth to slightly convex surface.

Chavies soils have moderately rapid permeability and a high available moisture capacity. Surface runoff is medium, internal drainage is rapid, and the erosion hazard is slight. The water table is lower than 3 feet from the surface, and bedrock normally is at a depth of 5 to 12 feet. The Chavies soils have good tilth, and are easily worked. Chavies soils are suited to general farm crops, truck crops, and alfalfa. In most places they are cultivated or in community development. These soils are poorly suited as sites for ponds.

Limitation
Limitations for most community development are none to slight.

Albrights Series– AbB2

The Albrights series consists of deep, moderately well drained to somewhat poorly drained, loamy soils of the uplands. These soils developed in material weathered from red shale and sandstone. They have a compact fragipan and contain some gravel and stones. The nearly level and gently sloping Albrights soils are in concave areas along narrow drainageways and at the base of steeper slopes. Common trees are red oak, yellow poplar, sassafras, maples, walnut, ash, and cherry.

Albrights soils are moderately slowly permeable and have a seasonal high water table that rises to within 1 to 3 feet of the surface. These soils are medium to strongly acidic and have moderate fertility.

Limitation
Limitations to use for onsite sewage disposal are severe because permeability is restricted and wetness results.

Dekalb Series– DbF, DbD, DaF

The Dekalb series consists of moderately deep, well drained, loamy soils that developed in material weathered in place from sandstone and some conglomerate and shale bedrock. These nearly level to very steep soils are in the stony, mountainous area of the eastern part of the county. Slopes normally are slightly convex. Common trees are red oak, chestnut oak, maple, dogwood, sassafras, and black birch. Mountain laurel, teaberry, groundpine, greenbrier, and moss are in the understory.

Dekalb soils have rapid permeability and internal drainage. Natural fertility and the available moisture capacity are low. The water table is deeper than 3 feet from the surface. Depth to bedrock ranges from 24 to 42 inches. Stones and boulders are one to several feet in diameter in very stony areas. These soils normally are strongly or very strongly acidic. Most areas are among trees.

Limitation
Dekalb soils are poorly suited as sites for ponds.

Philo Series– Ph

The Philo series consists of deep, moderately well drained, loamy soils on the flood plains. These soils formed in acidic sediments that were derived from nearby sandstone and shale upland areas and were deposited by streams. Philo soils are nearly level and have a uniform or slightly concave surface. These soils are on flood plains in the eastern part of the county. Common trees are sycamore, alder, willow, beech, hickory, white oak, hemlock, and soft maple. Other common plants include ironweed, thistle, plantain, swampgrass, milkweed, and goldenrod.

Philo soils are subject to flooding. They are moderately permeable and have a water table that rises to within 1½ to 3 feet of the surface when wetness is at its peak. The available moisture capacity is moderate. These soils are strongly to extremely acidic. In many areas, Philo soils receive sediments and are affected by erosion only along stream banks.

These soils have limitations to use for crops because of flooding and wetness. They are mostly among trees. The potential for use as pond sites is limited because of the pervious underlying material and flooding.

Limitation
Limitations to use for onsite sewage disposal are severe because of flooding.

Gilpin Series– GnF, GnF, GrF

The Gilpin series consists of moderately deep, well drained, loamy soils of the uplands. These nearly level to very steep soils formed in materials weathered from bedrock of sandstone, siltstone, and shale. In some places these soils are very stony. All Gilpin soils contain many shale and sandstone fragments. Gilpin soils occupy the convex areas of hilltops and rolling slopes of hills. They are mostly in the eastern part of Fayette County. Common trees are red oak, black oak, sassafras, dogwood, soft maple, and some chokecherry.

Gilpin soils are moderately permeable and have rapid internal drainage. The water table is below 3 feet from the surface, and bedrock lies within 2 to 3½ feet of the surface. Gilpin soils have low available moisture capacity. They are strongly or very strongly acidic and have moderate natural fertility. Their capacity to hold and to release plant nutrients is good. The very stony areas have stones or boulders one to several feet in diameter. Where stones have been removed, these soils are easily worked and early tillage is possible.

Gilpin soils are suited to alfalfa and other farm crops. They have a limited potential for use as sites for farm ponds.

Limitation
The limitations to use for onsite sewage disposal are severe.

Upshur Series– UpF

The Upshur series consists of well-drained, reddish, loamy soils that have a clayey subsoil and occur on the uplands. These soils developed in materials weathered in place from red calcareous shale, limestone, and sandstone. Most of these gently sloping to very steep soils are in the mountainous areas in the eastern part of Fayette County. Upshur soils occupy smooth to slightly convex upper slopes and drainage divides of mountains. They are mostly stony. Common trees are red oak, black oak, black locust, ash, yellow poplar, soft maple, black walnut, and redbud.

Upshur soils have slow permeability and medium internal drainage. They have moderate natural fertility and are commonly neutral to medium acidic. The available moisture capacity is moderate. In most places the stony Upshur soils have stones and boulders, one to several feet in diameter, on the surface and in the surface layer. These areas are among trees. Winter heaving is not a hazard on these soils. Upshur soils have limited potential for use as pond sites.

Limitation
Limitation to use for onsite disposal is severe.

Wharton Series– WhB

The Wharton series consists of deep, moderately well drained soils of the uplands that formed in material weathered in place from shale, siltstone, and some sandstone. These soils have a loamy surface layer and dominantly clayey subsoil. They are mainly in the western part of Fayette County between Chestnut Ridge and Laurel Hill. These nearly level to steep soils occupy hilltops, upland benches, and lower slopes. Common trees are elm, cucumber tree, hickory, ash, red oak, black oak, red maple, and yellow poplar.

Wharton soils have slow permeability and moderate available moisture capacity. The water table is within 1 ½ to 3 feet of the surface when wetness is at its peak. Bedrock is within 4 to 6 feet of the surface. Where these soils are not limed, the surface layer is strongly acidic. Natural fertility is low. If the steeper soils are cultivated, the erosion hazard is severe. Where tilled when wet, these soils become cloddy and compact. Wharton soils are not easily leached. Heaving is severe in winter.

These soils are suited to general farming. They have limitations for pond sites.

Limitation
The limitations to use for onsite sewage disposal are severe.

Mine Dumps– Md

Mine dumps (Md), a miscellaneous land type, are refuse piles of intermixed slate, shale, and coal from coal mining and piles of coke ashes from coking operations. These dumps are mostly in the western part of the county.

Mine dumps generally are steep or very steep and are void of vegetation. The waste materials that make up the dumps are very acidic. All areas of these dumps are highly susceptible to erosion. The materials eroded from the dumps tend to clog stream channels and contribute to the pollution of streams.

All of the piles from coal mining have caught fire as a result of spontaneous combustion, and some are still burning.

Limitation
Mine dumps are not suited to farming or to forestry use.

Hazleton Series– HzF, HzD, HbF

The Hazleton series consists of deep, well-drained, loamy soils of the uplands. These soils developed in materials weathered in place from sandstone and shale bedrock. These nearly level to moderately steep soils occur on the top and upper and middle side slopes of hills and mountains. Most areas of the Hazleton soils are in the eastern part of the county. A few are associated with the Westmoreland soils in the western part. Common trees are red oak, scarlet oak, maple, ash, aspen, black birch, dogwood, sassafras, and

some yellow poplar. The Hazleton soils in the western part of Fayette County also support black locust and chokeberry. Mountain laurel, greenbrier, groundpine, teaberry, and moss are in the understory.

Hazleton soils have moderately rapid permeability and rapid internal drainage. Natural fertility and available moisture capacity are moderate to low. The water table is within 3 feet of the surface. These soils generally are medium to very strongly acidic in the lower part of the subsoil. Hazleton soils are suited to farming and are cultivated or wooded. During periods of low rainfall, these soils are droughty.

Limitation
They are poorly suited as sites for ponds.

Buchanan Series– BuD

The Buchanan series consists of deep, moderately well drained, loamy soils that formed in colluvial material weathered from sandstone and shale. These soils are stony and have a compact fragipan in the lower part of the subsoil. They generally occupy the slightly concave base slopes of Chestnut Ridge and Laurel Hill. Buchanan soils are nearly level to moderately steep. Common trees are maple, red oak, beech, and yellow poplar.

Buchanan soils have a thick, slowly permeable fragipan that begins at a depth of about 18 to 34 inches. A seasonal high water table rises to within 1½ feet of the surface when wetness is at its peak. The available moisture capacity is moderate. Stones on and in the surface layer make the farming of inter-tilled crops impractical.

Buchanan soils are mostly among trees. The main limitation to farm use and management is stoniness.

Limitation
The uses of Buchanan soils for onsite sewage disposal is severely limited by the slowly permeable fragipan.

Allegheny Series – AlC2, AhB

The Allegheny series consists of deep, well-drained, loamy soils that formed in old sediments deposited by streams. These gently sloping and sloping soils are on high bottoms and terraces along rivers. Some of the terraces are several hundred feet above the streams. The surface of these soils is smooth and convex. Common trees are oak, maple, ash, yellow poplar, and sassafras.

Allegheny soils have moderate permeability and moderate available moisture capacity. Surface runoff is medium, and the erosion hazard is slight to moderate. The water table is deeper than 3 feet from the surface. Bedrock normally is at a depth between 5 and 12 feet. These soils are generally very strongly acidic. They are well suited to all general

farm crops grown in the county. Allegheny soils are easily tilled and can be intensively cropped. Alfalfa, orchards, and truck crops are suitable for these soils.

Limitation
Limitations to use for most community development and engineering work are slight.

Rayne Series – RgF, RgD

The Rayne series consists of fine-loamy, mixed, mesic Typic Hapludults. These deep, well drained soils are on hills, knobs, and broad areas on uplands. They formed in materials weathered from shale and siltstone.
Rayne soils are in close association on the landscape with the Wharton, Cookport, Ernest, Cavode, Armagh, Blairton, Gilpin, Hazleton, and Berks soils. Rayne soils are better drained than the Wharton, Cookport, Ernest, Cavode, Armagh, and Blairton soils. They are deeper to bedrock than the Berks and Gilpin soils. Rayne soils have a silty texture, and Hazleton soils have a sandy texture.

Udorthents – UoA

Udorthents are deep, well drained soils on uplands. The regolith is a mixture of soil and unconsolidated fragments of shale, sandstone, and coal.

Udorthents are in close association on the landscape with the Dekalb, Hazleton, Cookport, Gilpin, and Rayne soils. They do not have distinct horizon development such as the associated soils.

Fluvaquents– Fu

Fluvaquents consists of deep, poorly drained to moderately well drained soils on flood plains and in drainage ways. They formed in material ranging from stratified sand to clayey alluvial sediment.

Fluvaquents are in close association on the landscape with the Atkins, Pope, Philo, and Brinkerton soils. They do not have the distinct horizon development of the Atkins, Pope, Philo, and Brinkerton soils.

Strip Mine Soil

Areas of this land type have mostly been back-filled to the original grade and contour. They commonly are moderately steep and occur on hillsides. The material normally consists of mixed soil and overburden that is high in compounds of sulfur and iron.

This land is suited to trees, especially pines. In many places it is impractical and costly to build up physical and chemical properties favorable for farming.

Limitation
Planting or seeding extremely acidic areas high in pyrites and other acidic material is seldom successful until these minerals have decomposed and have been leached from the soil.

(a) Information Obtained From Fayette and Somerset County Soil Surveys – USDA 1983

APPENDIX C
TRIBUTARY INFORMATION

Code	Stream Name	Location	County			Lat			Lon		Stream Name	Quad Name	Drainage Area	RM	Trib. To	Level	Side
39372	Caney Valley Run	near Markleysburg	Fayette		39	44	10	79	25	18	Caney Valley Run	Friendsville MD	1.54	2.02	"Stuck Hollow"	06	R
37946	Green Lick Run	at Hammondville	Fayette		40	06	51	79	32	24	Green Lick Run	Connellsville	7.21	18.1	37868	05	L
39394	"Collier Hollow"	near Addison	Somerset		39	42	56	79	23	03	"Collier Hollow"	Friendsville MD	0.68	0.32	39393	05	R
38499	Noahs Glade	near Farmington	Fayette		39	48	04	79	30	04	Noahs Glade	Ft. Necessity	3.18	2.74	Beaver Creek	06	L
38817	Cucumber Run	near Harnedsville	Somerset		39	48	26	79	17	38	Cucumber Run	Confluence	6.19	5.92	Casselman River	05	L
38580	Laurel Hill Creek	at Confluence	Somerset		39	48	53	79	21	43	Laurel Hill Creek	Confluence	125	0.17	Casselman River	05	R
38824	McClintock Run	near Harnedsville	Somerset		39	48	41	79	17	35	McClintock Run	Confluence	12.6	6.2	Casselman River	05	L
38778	Whites Creek	at Harnedsville	Somerset		39	47	34	79	19	33	Whites Creek	Confluence	33.7	3.08	Casselman River	05	L
38479	North Branch	at Stonerville	Fayette		39	51	39	79	30	36	North Branch	Ft. Necessity	1.84	0.55	Cucumber Run	05	L
38563	Little Glade Run	at Draketown	Somerset		39	51	36	79	21	45	Little Glade Run	Confluence	4.69	2.85	Drake Run	05	R
38189	Elk Rock Run	near Irishtown	Fayette		39	57	04	79	34	41	Elk Rock Run	South Connellsville	1.53	5.78	Dunbar Creek	05	R
38167	Gist Run	at Dunbar	Fayette		39	58	21	79	36	52	Gist Run	South Connellsville	8.02	2.98	Dunbar Creek	05	L
38205	Glade Run	near Irishtown	Fayette		39	54	57	79	36	09	Glade Run	South Connellsville	10.5	8.98	Dunbar Creek	05	R
38184	Irishtown Run	near Factory Hill	Fayette		39	58	08	79	36	13	Irishtown Run	South Connellsville	1.65	3.63	Dunbar Creek	05	L
38199	Limestone Run	near Irishtown	Fayette		39	55	44	79	35	12	Limestone Run	South Connellsville	2.76	7.64	Dunbar Creek	05	R
38191	Tucker Run	near Irishtown	Fayette		39	56	42	79	34	46	Tucker Run	South Connellsville	1.94	6.26	Dunbar Creek	05	R
38218	Flat Rock Run	near Deer Lake	Fayette		39	52	47	79	35	20	Flat Rock Run	South Connellsville	0.79	2.78	Glade Run	06	L
38207	Rock Run	near Irishtown	Fayette		39	54	01	79	35	45	Rock Run	South Connellsville	2.09	1.22	Glade Run	06	L
37949	Latta Run	at Hammondsville	Fayette		40	06	51	79	31	10	Latta Run	Connellsville	2.4	1.44	Green Lick Run	06	R
39370	"Stuck Hollow"	near Markleysburg	Fayette		39	44	42	79	25	10	"Stuck Hollow"	Friendsville MD	3.6	0.88	Hall Run	05	R
39381	Pinkham Run	at Markleysburg	Fayette		39	44	42	79	26	43	Pinkham Run	Ohiopyle	2.41	4.57	Hall Run	05	R
38285	Laurel Run	at Rogers Mill	Fayette		39	59	35	79	24	56	Laurel Run	Mill Run	12.1	10.88	Indian Creek	05	L
38256	Mill Run	at Killarny Park	Fayette		39	58	24	79	27	19	Mill Run	Mill Run	12.6	5.46	Indian Creek	05	L
38241	Rasler Run	near Killarney Park	Fayette		39	58	39	79	29	04	Rasler Run	Mill Run	7	2.4	Indian Creek	05	R
38239	Richter Run	at Indian Creek	Fayette		39	58	43	79	30	14	Richter Run	South Connellsville	1.56	1.02	Indian Creek	05	R
38279	Stony Run	at Whites Bridge	Fayette		39	59	36	79	26	08	Stony Run	Mill Run	2.04	9.58	Indian Creek	05	R
38236	Tates Run	at Indian Creek	Fayette		39	58	38	79	30	34	Tates Run	South Connellsville	2.33	0.67	Indian Creek	05	R
38445	Blackberry Run	near Kaufmann	Fayette		39	53	32	79	30	28	Blackberry Run	South Connellsville	1.13	1.6	Jonathon Run	05	L
38605	"Coke Oven Hollow"	at Humbert	Somerset		39	51	40	79	19	01	"Coke Oven Hollow"	Confluence	1.68	6.24	Laurel Hill Creek	06	L
38590	"Paddytown Hollow"	at Humbert	Somerset		39	50	38	79	18	45	"Paddytown Hollow"	Confluence	3.33	4.79	Laurel Hill Creek	06	L
38598	"Smith Hollow"	at Humbert	Somerset		39	51	23	79	18	58	"Smith Hollow"	Confluence	3.98	5.82	Laurel Hill Creek	06	L
38608	May Run	near Ursina	Somerset		39	52	09	79	19	16	May Run	Confluence	1.12	6.74	Laurel Hill Creek	06	L

38492	Peck Run	near Victoria	Fayette		39	49	49	79	29	42	Peck Run	Ohiopyle	0.89	1.3	Laurel Run	06	L
38565	Alex Run	at Draketown	Somerset		39	52	12	79	22	15	Alex Run	Confluence	1.19	0.95	Little Glade Run	06	R
38826	Glade Run	near Fort Hill	Somerset		39	48	38	79	15	07	Glade Run	Confluence	5.16	2.66	McClintock Run	06	L
38493	Beaver Creek	near Stonerville	Fayette		39	49	58	79	30	36	Beaver Creek	Ft. Necessity	14.8	4.08	Meadow Run	05	R
38513	Deadman Run	at Farmington	Fayette		39	49	02	79	33	06	Deadman Run	Ft. Necessity	4.67	7	Meadow Run	05	R
38491	Laurel Run	near Ohiopyle	Fayette		39	50	56	79	29	32	Laurel Run	Ohiopyle	4.28	1.7	Meadow Run	05	R
38271	Clay Run	near Fairmont	Fayette		39	57	12	79	25	38	Clay Run	Mill Run	2.11	3.43	Mill Run	06	R
38266	Fulton Run	at Fairmont	Fayette		39	57	00	79	25	57	Fulton Run	Mill Run	3.98	3	Mill Run	06	L
38115	Irish Run	at Moyer	Fayette		40	02	29	79	34	36	Irish Run	Connellsville	2.82	4.66	Mounts Creek	05	R
38126	Spruce Run	at Pennsville	Fayette		40	04	25	79	32	33	Spruce Run	Connellsville	5.51	6.84	Mounts Creek	05	L
38097	Whites Run	at Coldbrook	Fayette		40	02	29	79	34	36	Whites Run	Connellsville	9.55	3.42	Mounts Creek	05	L
38793	Laurel Run	at Listonburg	Somerset		39	45	14	79	19	05	Laurel Run	Confluence	2.06	3.9	Whites Creek	06	L
38100	Breakneck Run	at Connellsville	Fayette		40	01	56	79	33	44	Breakneck Run	Connellsville	6.99	1.36	Whites Run	06	R
38284	Buck Run	at Rogers Mill	Fayette		39	59	36	79	24	37	Buck Run	Mill Run	4.9	0.3	Whites Run	06	L
38286	Middle Fork	at Rogers Mill	Fayette		39	59	49	79	24	16	Middle Fork	Mill Run	2.54	0.76	Whites Run	06	L
38455	Bear Run	at Kaufmann	Fayette		39	54	11	79	28	29	Bear Run	Mill Run	6.39	59.06	Yough	04	R
39388	Braddocks Run	near Addison	Somerset		39	44	33	79	22	58	Braddocks Run	Friendsville MD	4.2	83.04	Yough	04	R
38429	Bruner Run	at Bruner	Fayette		39	55	33	79	28	10	Bruner Run	Mill Run	3.44	55.78	Yough	04	L
38554	Camp Run	at Bidwell	Fayette		39	51	20	79	25	11	Camp Run	Ohiopyle	0.53	68.9	Yough	04	R
38579	Casselman River	at Confluence	Somerset		39	48	52	79	21	52	Casselman River	Confluence	590	73.6	Yough	04	R
38156	Connell Run	at Connellsville	Fayette		40	00	55	79	35	35	Connell Run	Connellsville	3.13	44.88	Yough	04	R
38435	Crooked Run	at Stewarton	Fayette		39	55	32	79	28	50	Crooked Run	Mill Run	1.62	56.08	Yough	04	R
38478	Cucumber Run	at Stonerville	Fayette		39	51	50	79	30	05	Cucumber Run	Ft. Necessity	6.41	62.37	Yough	04	L
38557	Drake Run	at Huston	Somerset		39	50	19	79	23	08	Drake Run	Ohiopyle	9.94	71.12	Yough	04	R
38164	Dunbar Creek	at Connellsville	Fayette		40	00	16	79	35	52	Dunbar Creek	Connellsville	36.9	45.66	Yough	04	L
38083	Galley Run	at Broad Ford	Fayette		40	02	49	79	36	43	Galley Run	Connellsville	3.27	41.8	Yough	04	R
39369	Hall Run	at Somerfield	Fayette		39	45	00	79	24	49	Hall Run	Ohiopyle	12.1	82.14	Yough	04	L
39351	Hen Run	at Confluence	Fayette		39	48	11	79	22	07	Hen Run	Confluence	1.67	74.59	Yough	04	L
38235	Indian Creek	at Indian Creek	Fayette		39	58	05	79	30	47	Indian Creek	South Connellsville	125	52.08	Yough	04	R
38473	Jim Run	at Ohiopyle	Fayette		39	52	50	79	28	52	Jim Run	Mill Run	0.98	60.64	Yough	04	R
38428	Johnson Run	at Bruner Run	Fayette		39	56	01	79	29	19	Johnson Run	Mill Run	1.21	55.26	Yough	04	L
38444	Jonathan Run	at Kaufmann	Fayette		39	54	17	79	29	21	Jonathan Run	Mill Run	6.1	58.28	Yough	04	L
38231	Laurel Run	at So. Connellsville	Fayette		39	58	57	79	35	08	Laurel Run	South Connellsville	1.82	47.32	Yough	04	R
38439	Laurel Run	at Stewarton	Fayette		39	55	05	79	28	19	Laurel Run	Mill Run	2.55	56.79	Yough	04	R
38551	Lick Run	at Bidwell	Fayette		39	51	19	79	25	14	Lick Run	Ohiopyle	2.68	68.85	Yough	04	R
38547	Long Run	at Victoria	Fayette		39	50	43	79	27	54	Long Run	Ohiopyle	0.58	65.98	Yough	04	L
38488	Meadow Run	at Ohiopyle	Fayette		39	51	50	79	29	45	Meadow Run	Ohiopyle	41.2	62.64	Yough	04	L

38419	Morgan Run	at Indian Creek	Fayette		39	58	00	79	30	43	Morgan Run	South Connellsville	5.03	52.2	Yough	04	L
38093	Mounts Creek	at Connellsville	Fayette		40	01	46	79	36	09	Mounts Creek	Connellsville	31.3	43.52	Yough	04	R
38142	Opossum Run	at Connellsville	Fayette		40	01	18	79	36	11	Opossum Run	Connellsville	7.16	44.06	Yough	04	L
38570	Ramcat Run	at Huston	Fayette		39	49	38	79	22	34	Ramcat Run	Ohiopyle	3.86	72.34	Yough	04	L
39392	Reason Run	near Markleysburg	Fayette		39	43	40	79	24	29	Reason Run	Friendsville MD	1.24	84.46	Yough	04	L
38545	Rock Spring Run	at Victoria	Fayette		39	51	15	79	27	37	Rock Spring Run	Ohiopyle	1.76	65.34	Yough	04	R
38544	Sheepskin Run	at Ohiopyle	Fayette		39	51	58	79	28	56	Sheepskin Run	Ohiopyle	1.05	63.88	Yough	04	R
38443	Sugar Run	at Kaufmann	Fayette		39	54	21	79	29	21	Sugar Run	Mill Run	1.08	58.2	Yough	04	L
39361	Tub Run	at Somerfield	Fayette		39	46	17	79	23	58	Tub Run	Ohiopyle	6.95	81.56	Yough	04	L
38424	Workman Run	near Bruner Run	Fayette		39	56	28	79	29	12	Workman Run	Mill Run	0.94	54.65	Yough	04	R

APPENDIX D

CURRENT AND HISTORIC MONITORING LOCATIONS

Current

Affiliation	Station / Location	Parameters
Corps of Engineers	1002 / 74.7 - River Mile	Water Quality
	1003 / 77.1	Water Quality
	1004 / 79.4	Water Quality
	1005 / 81.1	Water Quality
	1006 / 83.8	Water Quality
	1007 / 86.0	Water Quality
	1201 / 73.7	Water Quality
	2104 / Hall Run / 0.39	Water Quality
	2110 / Tub Run / 1.13	Water Quality
	3045 / 44.7	Water Quality
	3062 / 63.0	Water Quality
	3072 / 72.0	Water Quality
	3073 / 72.8	Water Quality
	3074 / 73.96	Water Quality
	3872 / 72.04	Water Quality
Mountain Watershed	Indian Creek-12+ stations from Headwaters to Yough	Water Quality
USGS	Yough at Dam	Stream Flow
	Yough at Confluence	Stream Flow
	Yough at Ohiopyle	Stream Flow
	Champion Creek at Melcroft	Stream Flow
	Poplar Run in Normalville	Stream Flow
	Indian Creek at White Bridge	Stream Flow
	Flume Discharge to Charles Run	Stream Flow
	Yough at Connellsville	Stream Flow
	Case by Case Basis	Water Quality
PA Fish and Boat	Selected on Year by Year basis	WQ/C17FISH/INV
D/R Hydro	Discharge Area	Temp/DO
Chestnut Ridge Trout Unlimited	Dunbar Creek, AMD Discharge into Dunbar Creek, Bruner Run, Meadow Run, Ramcat Run	Water Quality

Historic

Affiliation	Station / Location	Parameters	Year
Corps of Engineers	1002 / 74.7 - River Mile	Water Quality (WQ)	1969-present
	1003 / 77.1	Water Quality	1969-present
	1004 / 79.4	Water Quality	1969-present
	1005 / 81.1	Water Quality	1969-present
	1006 / 83.8	Water Quality	1969-present
	1007 / 86.0	Water Quality	1969-present
	1201 / 73.7	Water Quality	1969-present
	2104 / Hall Run / 0.39	Water Quality	1969-present
	2110 / Tub Run / 1.3	Water Quality	1969-present
	3045 / 44.7	Water Quality	1969-present
	3062 / 63.0	Water Quality	1969-present
	3072 / 72.0	Water Quality	1969-present
	3073 / 72.8	Water Quality	1969-present
	3074 / 73.96	Water Quality	1969-present
	3872 / 72.04	Water Quality	1969-present
	Hall Run-Summary Characteristics	WQ/Fish	1998-1999
	Tub Run-Summary Characteristics	WQ/Fish	1998-1999
	Youghiogheny River Lake-Summary Characteristics	WQ/Fish/Phyto	1973-1975
	Youghiogheny River Lake-Summary Characteristics	Temp/DO	1997
USGS	Yough at Dam	Stream Flow	1950-present
	Yough at Confluence	Stream Flow	1950-present
	Yough at Ohiopyle	Stream Flow	1950-present
	Champion Creek at Melcroft	Stream Flow	1950-present
	Poplar Run in Normalville	Stream Flow	1950-present
	Indian Creek at White Bridge	Stream Flow	1950-present
	Flume Discharge to Charles Run	Stream Flow	1950-present
	Yough at Connellsville	Stream Flow	1950-present
	Youghiogheny-Confluence	Water Quality	65, 68, 81
	Youghiogheny-Ohiopyle	Water Quality	25, 80, 81, 98
	Meadow Run-Farmington	Water Quality	79, 80, 81, 98
	Indian Creek-Nebo	Water Quality	65-69 & 85-87
	Indian Creek-Coffman	Water Quality	85-87
	Champion Creek-Melcroft	Water Quality	85-87
	Deep Mine Discharge-White	Water Quality	85-87
	Little Champion Creek-Melcroft	Water Quality	85-87
	#3 Mine Poll-Melcroft	Water Quality	85-87
	Champion Creek-Rt 381/711 Bridge	Water Quality	85-87
	Back Creek-Indian Creek	Water Quality	85-87
	Indian Creek-Indian Head	Water Quality	85-87
	Poplar Run-Clinton	Water Quality	87-89
	Galentine Mine Discharge-Indian Head	Water Quality	85-87
	Trib Poplar Run-Clinton	Water Quality	87-89
	Poplar Run-Newmyer Run	Water Quality	85-89
	Newmyer Run-Above Poplar	Water Quality	85-89

	Poplar Run-Normalville	Water Quality	85-90
	Poplar Run Mouth-Normalville	Water Quality	85-87
	Laurel Run-Rogers Mill	Water Quality	85-87
	Buck Run-Laurel Run	Water Quality	85-87
	Indian Creek-White Bridge	Water Quality	85-87
	Flume Discharge-Charles Run	Water Quality	85-87
	Indian Creek-Mill Run	Water Quality	85-87
	Youghiogheny-Connellsville	Water Quality	53, 54, 61-64, 67-72, 75, 76, 80
	Indian Creek-White Bridge	Water Quality	79-81
	Beaver Creek-Flat Rock	Water Quality	87, 88
	Noahs Glad-Farmington	Water Quality	87, 88
	Beaver Creek-Farmington	Water Quality	87, 88
	Fayette County OBS Well	Water Quality	68, 92
	Deadman Run-Farmington	Water Quality	87, 88
	Meadow Run-Deadman Run	Water Quality	87, 88
	Trib Meadow Run-Farmington	Water Quality	87, 88
	Laurel Run-Headwaters	Water Quality	87, 88
	Beaver Creek-Meadow Run	Water Quality	87, 88
	Meadow Run-Meadow Run Valley Church	Water Quality	87, 88
	Meadow Run-Deer Lake Outlet	Water Quality	87, 88
	Lauerel Run-Ohiopyle Park Office	Water Quality	87, 88
	Big Meadow Run-Ohiopyle	Water Quality	87, 88
	Youghiogheny-Youghiogheny Dam	Water Quality	60, 65, 68, 75, 76
	Tub Mill-W Salisbury	Water Quality	79-81
	Tub Run-Beachdale	Water Quality	79-81
	Whites Creek-Harnesville	Water Quality	79-81
	Drake Run-Confluence	Water Quality	60, 66-69, 80
	Wells Creek	Water Quality	93
DEP	EPA STORET System-Crawford bridge in Connellsville	WQ/metals	up tp 1988
Mountain Watershed	Indian Creek-100+ stations from Headwaters to Mill Run Reservoir	Water Quality	1994 &1995
PA Fish and Boat	Indian Creek-(Sec.1) 3 Stations-Headwaters west of laurel Hill Tunnel downstream to Pa Rt. 31 Bridge	Fish Data	1984
	Indian Creek-(Sec.2) 2 Stations-Rt. 31 Bridge downstream to Champion Creek	Fish Data	1978 & 1994
	Indian Creek-(Sec.3) Champion Creek downstream to Mill Run	Various/Fish Data	1994
	Indian Creek-(Sec.4) Mill Run Resevoir downstream to Mouth	Various/Fish Data	1994
	Indian Creek-T 339 Bridge	Various/Fish Data	1994
	Indian Creek-150m downstream from T916 Bridge	Various/Fish Data	1994
	Indian Creek-1.3km downstream of T-729 Bridge	Various/Fish Data	1994
	Indian Creek-34m downstream of T-653 Bridge	Various/Fish Data	1994
	Indian Creek-976m downstram of Rasler Run	Various/Fish Data	1994
	Indian Creek-Summary of Characteristics of Section 1 - with recommendations		1982
	Indian Creek-Summary of Characteristics of Sections 1-4 - with recommendations		1994
	Indian Creek-Summary of Characteristics of Sections 1-2 - with recommendations		1996

	Meadow Run-40m dws from Rt. 381 bridge at Isaac Walton Park	Fish/Phyto/Chem	1979
	Meadow Run-100m dws from T-415 bridge	Fish/Phyto/Chem	1979
	Meadow Run-LR26063 bridge	Fish/Phyto/Chem	1979
	Meadow Run-Summary from Rt 381 bridge to Laurel Run		1979
	Meadow Run-Summary - Section 3-from Rt 381 to Laurel run - Section 4-from Laurel Run to Yough		1996
	Meadow Run-Summary - Section 4-from Laurel Run to Yough		1997
	Youghiogheny River-Summary Section 1-4 - Sect.1- Reservoir outflow to Confluence (74.46-73.40) Sect.2-Confluence to Ohiopyle Falls (73.40-62.90) - Sect. 3-Ohiopyle Falls to Indian Creek (62.90-52.00) Sect.4-Indian Creek to Connellsville Dam (52.00-46.20)		1997
	Youghiogheny River-Summary - Sect. 2-4		1989
	Youghiogheny River-Summary - Sect. 2		1979 & 1994
	Youghiogheny River - Sect.1-200yds dws Reservoir - Sect.2-Confluence - Sect. 3-3/4 mile ups Ohiopyle Sect. 3-3/4 mile ups Ohiopyle - Sect.4- 2 miles ups Connellsville	Bio/Chem/WQ	1970
	Youghiogheny Reservoir-near dam	Chem/Bio/Phys	1973
	Youghiogheny-Ramcat Access	Chem/Fish/Phys	1989
	Youghiogheny-Middle Yough Access - RM 63.37	Chem/Fish/Phys	1989
	Youghiogheny-Bruner Run Access	Chem/Fish/Phys	1989
	Drake Run - 8 stations	Bio/Chem/Phys	1963
D/R Hydro	Discharge Area	Temp/DO	1989-Present

APPENDIX E

WATER QUALITY SURVEY

Table 1. Characteristics of Youghiogheny River (819E) [(a)]

Land Ownership

	RM 63.37 – 72.11
Public	84%
Private	16%

Road Accessibility

	RM 63.37 – 72.11
within 100m	18%
within 300m	20%

Substrate	Boulder, rubble, gravel
Gradient (m/km)	1.9

Water Quality

	River Mile		
	72.11	67.74	63.37
pH Specific Conductance (pmhos)	6.7	6.9	7.1
Alkalinity (mg/1)	11	13	12
Total Hardness (mg/1)	26	48	47
Water Temperature (^{o}c)	18.0	17.5	19.0

(a) River Mile 63.37-72.11 sampled September 19-20, 1989 (RM 72.11, 67.74, 63.37)

Table 2. Characteristics of Youghiogheny River (819E) [(a)]

Land Ownership

	RM 55.61	RM 52.00
Public	84%	50%
Private	16%	50%

Road Accessibility

	RM 55.61	RM 52.00
within 100m	5%	11%
within 300m	11%	24%

Substrate	boulder, rubble, gravel,
Gradient (m/km)	3.9

Water Quality

	River Mile	
	55.61	52.00
pH Specific Conductance (pmhos)	7.1	7.1
Alkalinity (mg/1)	12	12
Water Temperature (^{o}c)	20.5	21.5

(a) RM 55.61 sampled September 21, 1989 / RM 52.00 sampled March, 1990. Obtained from the PA Fish and Boat Commission

Table 3. Characteristics of Indian Creek – Section 01 RM 29.68 – 22.70 [(a)]

Land Ownership

	RM 29.68 – 22.70
Public	91% (water authority)
Private	9%

Road Accessibility

	RM 29.68 – 22.70
within 100m	20%
within 300m	40%

Water Quality

	River Mile 29.68 – 22.70		
pH	7.2	7.2	7.3
Specific Conductance (umhos)	475	410	310
Total Alkalinity (mg/1)	20	10	26
Total Hardness (mg/1)	61	62	58
Water Temperature (C)	15.8	17.0	17.4

(a) Section 01, examined on July 19, 1982. Obtained From the PA Fish and Boat Commission.

Table 4. Characteristics of Indian Creek – Section 02 RM 16.75 [(a)]

Land Ownership

	RM 16.75
Public	91
Private	9

Road Accessibility

within 100 m	20%
within 300 m	44%

Water Quality

	River Mile 16.75			
	0101		0102	
	7/82	6/94	7/82	6/94
pH	7.2	7.3	7.2	7.5
Specific Conduc. (umhos)	475	748	410	682
Total Alkalinity (mg/1)	20	32	10	32
Total Hardness (mg/1)	61	58	62	62
Water Temperature (°C)	15.8	18.0	17.0	19.5
Relative Flow	Norm	Low	Norm	Low

(a) Samples Taken in Westmoreland County; July 1982 and June 1994. Obtained from the PA Fish and Boat Commission.

Table 5. Characteristics of Indian Creek – Section 03 [(a)]

Road Accessibility

	RM 5.89
within 100 m	30%
within 300 m	59%

Creek Gradient(m/km) 2.7

Water Quality

River Mile 5.89

pH	6.9	7.1
Specific Conduc. (umhos)	354	316
Total Alkalinity (mg/1)	18	19
Total Hardness (mg/1)	78	72
Water Temperature (^{o}C)	20.5	19.0
Relative Flow	Norm	Norm

(a) Samples in June and July 1994. Obtained From the PA Fish and Boat Commission.

Table 6. Characteristics of Indian Creek – Section 04 [(a)].

Road Accessibility

	RM - mouth
within 100 m	23%
within 300 m	45%

Creek Gradient(m/km) 11.7

Water Quality

River Mile - mouth

pH	7.3
Specific Conduc. (umhos)	298
Total Alkalinity (mg/1)	18
Total Hardness (mg/1)	71
Water Temperature (°C)	23.0
Relative Flow	Norm

(a) Samples on July 1994. Obtained From the PA Fish and Boat Commission.

Table 7. Mean Monthly Discharge (Cfs) For the Middle Youghiogheny River (819E) [(a)]

Month	Mean discharge (cfs)	
	1989	1940 - 1989
January	1465	972
February	1358	1006
March	1343	1187
April	829	1096
May	1908	987
June	1187	738
July	1156	649
August	426	698
September	574	749
October	937	734
November	1086	738
December	1301	1001
Mean	1131	880

(a) Measured At The Army Corps of Engineers Gauging Station Located At The Youghiogheny River Dam, Confluence, Pennsylvania

APPENDIX F

AQUATIC INVENTORIES [(A)]

TABLE 1
HALL RUN SURVEY

Hall Run - Station 2104 - Fish Data Summary - July 11, 1997		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brown Trout	2	10
Smallmouth Bass	1	29
Bluegill	1	7
Rock Bass	1	4
White Sucker	1	400
Hog Sucker	1	57
		57
MINNOWS		
Blacknose dace	1	4
Creek chub	4	78
DARTERS		
Johnny Darter	1	3
SCULPINS		
Mottled sculpin	12	43
Stream Temperature	60 deg F	
Time	1000 - 1041	
* Missed approximately 50% of total number of fish		

Hall Run - Station 2104 - Fish Summary - October 1, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brown Trout	8	933
Rainbow Trout	1	21
Brown bullhead	9	45
Yellow bullhead	1	35
Smallmouth Bass	4	66
Rock Bass	3	173
MINNOWS		
Bluntnose minnow	147	357
Spotfin shiner	62	144
River chub	22	84
Creek chub	5	15
SCULPINS		
Mottled sculpin	27	168
Stream Temp	15 deg C	
Time	1000 - 1026	

Hall Run - Station 2120 - Fish Data Summary - October 1, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brown Trout	9	567
SUCKERS		
White suckers	1	42
MINNOWS		
Blacknose dace	27	78
Spotfin shiner	1	3
Creek chub	2	26
Longnose dace	1	4
SCULPINS		
Mottled sculpin	130	503
Stream Temp	15 C	
Time	1230 - 1300	

TABLE 2
TUB RUN SURVEY

Middle Tub Run - Station 2113 - Fish Summary Data September 30, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brook Trout	10	473

Middle Fork Tub Run - Station 2115 - Fish Summary Data October 20, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brook Trout	2	18

Tub Run - Station 2116 - Fish Summary Data October 20, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brook Trout	10	117

Lower Tub Run - Station 2110 - Fish Summary Data September 30, 1998		
Sport Fish	**Total Number**	**Total Weight (grams)**
Brook trout	20	130
Brown trout	2	252
Rainbow trout	1	37
MINNOWS		
Golden shiner	3	29
Creek chub	2	18
Stoneroller	1	4
DARTERS		
Johhn darter	2	2
SCULPINS		
Mottled sculpin	27	115
Stream Temp	15 Deg C	
Time	1030 - 1057	

TABLE 3
YOUGHIOGHENY RIVER LAKE
FISHERIES INFORMATION

Species of Fish That Have Been Collected or Stocked in the Reservoir During the Past Twenty Years	
COMMON NAME	**STATUS**
Brook Trout	Unknown
Brown Trout	Present
Northern Pike	Present and Reproducing
Tiger Muskellunge	Stocked 1974
Largemouth bass	Present-Scarce
Smallmouth bass	Very Abundant and Reproducing
Walleye	Abundant and Reproducing
Yellow perch	Present
Rock bass	Present
Bluegill	Present-scarce
Black Crappie	Present
Pumpkinseed	Present
Brown bullhead	Present
Channel catfish	Stocked 1974
Carp	Scarce
White sucker	Present-Abundant
Northern hog sucker	Rare
Golden shiner	Present
American smelt	Stocked

(a) Information Obtained From USACE Tub and Hall Run Survey Report

TABLE 4
TOTAL GAMEFISH

Total gamefish catch (N) collected with and electro-raft during Youghiogheny River (819E) survey of sites 0201 (R.M. 67.74), 0202 (R.M. 63.37), and 0301 (R.M. 55.61) in Somerset and Fayette counties sampled September 19-21, 1989 [(a)].

Size	201				202				301		
	BT	RT	SMB	WE	BT	RT	SMB	WE	BT	RT	SMB
100							1				
125											
150			1			4					
175		3	1			3	3				4
2OO		1	4		2	13	2				2
225	1	4			3	5			1		2
250	2	4		1	1						3
275	1	4	1			2		2		1	1
3OO	3							1			2
325	3			1							
350											1
375											
400							1	1			
425											
45O				1							
Total	10	16	7	3	6	27	7	4	1	1	15

(a) Species abbreviations:
BT - Brown Trout, SMB - Smallmouth Bass, WE – Walleye, RT - Rainbow Trout,

TABLE 5
DISTRIBUTION AND RATE
OF FINGERLING TROUT

Stocked in Youghiogheny River, (819E), sections 01-04 in Somerset and Fayette counties.

Section	Species	Month-Year	Number/plant	N/mi	N/km
*	Brown Trout	08-73	160,000		
02-04	Rainbow Trout	09-76	26,000	925	574
01-02	Brown Trout	04-77	11,000	948	585
*	Brown Trout	09-77	48,000		
01-02	Rainbow Trout	02-77	34,000	3207	1808
*	Rainbow Trout	09-77	32,000		
02	Rainbow Trout	10-77	16,000	1524	941
03	Brown Trout	10-79	20,000	1852	1149
03		07-80	40,000	3704	2299
03		06-80	80,000	7407	4598
01-02	Rainbow Trout	04-81	102,000	8793	5425
01-02	Rainbow Trout	08-81	30,000	2830	1596
*	Rainbow Trout	08-81	45,900		
*	Brown Trout	07-82	30,000		
*	Rainbow Trout	07-82	67,000		
01	Brown Trout	01-83	3,000	2727	1667
03	Brown Trout	08-83	32,500	3009	1868
04	Brown Trout	08-83	16,500	2426	1514
02	Brown Trout	07-84	15,000	1429	882
03	Brown Trout	07-84	7,500	694	431
04	Brown Trout	07-84	7,500	1103	688
02	Rainbow Trout	07-84	20,000	1905	1176
03	Rainbow Trout	07-84	10,000	926	575
04	Rainbow Trout	07-84	10,000	1470	917
01-02	Brown Trout	02-85	600,000	51,724	31,915
03	Brown Trout	08-85	50,000	4,630	2,874
04	Brown Trout	08-85	50,000	7,353	4,587
02	Rainbow Trout	11-85	30,000	2,857	1,765
01-02	Rainbow Trout	02-86	150,000	12,931	7,979
01	Brown Trout	02-87	100,000	90,909	55,556
02	Brown Trout	10-87	25,000	2,381	1,471
03	Brown Trout	10-87	10,000	926	575
04	Brown Trout	10-87	10,000	1,470	917

Section	Species	Month-Year	Number/plant	N/mi	N/km
02	Rainbow Trout	10-87	5,000	476	294
03	Rainbow Trout	10-87	5,000	463	287
04	Rainbow Trout	10-87	5,000	735	456
02	Brown Trout	08-88	21,500	2,048	1,265
03	Brown Trout	08-88	21,500	1,991	1,236
02	Rainbow Trout	08-88	18,500	1,762	1,088
03	Rainbow Trout	08-88	18,500	1,713	1,063
02	Brown Trout	04-89	29,500	2,809	1,735
02	Brown Trout	11-89	7,500	714	441
03	Brown Trout	04-89	29,000	2,685	1,667
03	Brown Trout	11-89	7,500	694	431
04	Brown Trout	04-89	29,000	4,265	2,661
04	Brown Trout	11-89	7,000	1,029	642
02	Rainbow Trout	04-89	29,500	2,809	1,735
02	Rainbow Trout	11-89	3,700	352	218
03	Rainbow Trout	04-89	29,000	2,685	1,667
03	Rainbow Trout	11-89	7,500	694	431
04	Rainbow Trout	04-89	29,000	4,265	2,661
04	Rainbow Trout	11-89	3,600	529	330

***** Section unknown.

TABLE 6
FISH SPECIES

Collected From Youghiogheny River (819E), Section 02, During 1989 And 1994.

Common Name
Rainbow Trout
Smallmouth Bass
Rock Bass
Walleye
Northern Hog Sucker
White Sucker
Logperch
River Chub
Mottled Sculpin
Greenside Darter
Longnose Dace
Bluegill
Pumpkinseed
Bluntnose Minnow
Rosyface Shiner
Common Carp

TABLE 7
TOTAL GAMEFISH CATCH

From the Youghiogheny River (819E), Section 02, from 1989 and 1994 Site 01 (upper--near Ramcat Run) [(a)].

	1989	1994	1989	1994	1989	1994	1989	1994
Size	**BT**	**BT**	**RT**	**RT**	**SMB**	**SMB**	**WE**	**WE**
50						4		
75								
100								
125						4		
150					1			
175			3		1	3		
200				1		4	1	
225	1		4					
250	2		4					
275	1		4		1			
300	3			1		1		
325	3					1	1	
350						1		
375								
400								
425								
450							1	
TOTAL	**10**	**0**	**16**	**1**	**7**	**15**	**3**	**0**

(a) Species Abbreviations:
BT = Brown Trout, RT = Rainbow Trout, SMB = Smallmouth Bass, WE = Walleye.

TABLE 8
TOTAL GAMEFISH CATCH

From the Youghiogheny River (819E), Section 02, from 1989 and 1994 Site 02 (lower--below Bidwell Sta).

	1989	1994	1989	1994	1989	1994	1989	1994
Size	**WE**	**WE**	**BT**	**BT**	**RT**	**RT**	**SMB**	**SMB**
100					1			
125				1		1		
150			4			2		
175			4	3	3	1		
200	2		13	1	2	1		
225	3		5	1				
250	1					2		
275	2				2	2		
300		1					1	
325		1						
350								
375								
400					1		1	
TOTAL	**8**	**2**	**25**	**6**	**9**	**9**	**2**	**0**

Species Abbreviations: BT = Brown Trout, RT = Rainbow Trout, SMB = Smallmouth Bass, WE = Walleye.

TABLE 9
DISTRIBUTION AND RATE
OF FINGERLING TROUT

Stocked in the Youghiogheny River (819E), Sections 01-04, in Somerset and Fayette counties, 1990-1994.

Section	Species	Month/year	Number/plant	N/mi.	N/km
02	Brown	4/90	33,250	3,338	1,967
03	Brown	4/90	33,250	3,137	1,956
04	Brown	4/90	21,000	3,231	1,944
02	Rainbow	4/90	33,250	3,338	1,967
03	Rainbow	4/90	33,250	3,137	1,956
04	Rainbow	4/90	21,000	3,231	1,944
02	Brown	4/91	37,500	3,765	2,219
03	Brown	4/91	37,500	3,538	2,206
04	Brown	4/91	12,500	1,923	1,157
02	Rainbow	4/91	53,500	3,765	2,219
03	Rainbow	4/91	37,500	3,538	2,206
04	Rainbow	4/91	12,500	1,923	1,157
02	Brown	4/92	10,000	1,004	592
03	Brown	4/92	10,000	943	588
04	Brown	4/92	4,000	615	370
02	Rainbow	4/92	76,000	6,526	3,846
03	Rainbow	4/92	65,000	6,132	3,824
04	Rainbow	4/92	21,000	3,231	1,944
02	Brown	5/92	30,500	2,008	1,183
03	Brown	5/92	20,000	1,887	1,177
02	Brown	2/93	37,500	3,765	2,219
03	Brown	2/93	37,500	3,538	2,206

Section	Species	Month/Year	Number/Plant	N/mi.	N/km
04-02	Brown	2/93	12,500	1,923	1,157
	Rainbow	4/93	54,335	3,765	2,219
03	Rainbow	4/93	37,500	3,538	2,206
04-02	Rainbow	4/93	12,500	1,923	1,157
	Brown	3/94	37,500	3,765	2,219
03	Brown	3/94	37,500	3,538	2,206
04	Brown	3/94	12,500	1,923	1,157
02	Rainbow	3/94	83,500	3,765	2,219
03	Rainbow	3/94	83,500	3,538	2,206
04	Rainbow	3/94	12,500	1,923	1,157

TABLE 10
FISH SPECIES

Collected in Indian Creek, Section 01, on July 19, 1982.

Common Name
Brook Trout
Brown Trout
Creek Chub
Mottled Sculpin
Blacknose Dace
Longnose Dace
Hog Sucker
Pumpkinseed
Largemouth Bass
Johnny Darter
White Sucker

TABLE 11
SIZE GROUPS AND POPULATION DENSITY
OF GAMEFISH IN INDIAN CREEK

Section 01, examined on July 19, 1982.

Population Density estimated by

Species	Size Groups (mm)	Number/km	Number/ha	Kilograms/ha
Brook Trout				
	.6 < 150	57	132	
	150 - 224	11	26	1.6
	225 - 299	1*	3*	.3*
Brown Trout				
	150 - 224	5	11	1.1
	225- 299	7	8	1.4
	300 - 549	1*	1*	.3*

*based upon one fish handled

TABLE 12
WATER: INDIAN CREEK (819E)
BROOK TROUT STATION: 0101 DIRECT PROPORTION
DATE: JULY 19, 1982

Cohort	Age Group	No. Fish	Wt(g) Xlgth At Capture		Back Calculated Total Length (mm) at Annuli							
					1	2	3	4	5	6	7	8
1978	IV	2	83	206	94	127	162	188				
1979	III	1	67	182	91	129	159					
1980	II	2	50	168	92	139						
1981	I	1	21	131	87							
1982	0	8	3	74								
Number of fish...					6	5	3	2				
Grand average calculated total length (mm)...					92	133	161 154-170	188 183-194				
Range...						115-147	28	27				
Annual increment of total length (mm)...						41						
					81-101							

Regression Equations:

Scale radius (mm) vs. fish length (mm) at 48 X magnification
Using0+fish: y=-9.8233+8.7908X
No 0+ fish: y=67.5877+5.3128X

G.M. functional regression of fish length (mm) vs. seight (g)—$\log_{10} W=5.6080+3.2732 \log_{10} L$

g.M. functional regression for between age-groups

TABLE 13
WATER: INDIAN CREEK (819E)
STATION:0101 DIRECT PROPORTION
DATE:

Cohort	Age Group	No. Fish	Wt(g) Xlgth At Capture		Back Calculated Total Length (mm) at Annuli							
					1	2	3	4	5	6	7	8
1974	III	2	102	215	98	174	195					
Number of fish...					2	2	2					
Grand average calculated total length (mm)...					98	174	195					
Range...					92-103	166-183	189-202					
Annual increment of total length (mm)...						76	21					

Regression Equations:

Scale radius (mm) vs. fish length (mm) at 48 X magnification—$Y=67.5877+5.3128X$

G.M. functional regression of fish length (mm) vs. height (g)—$\log_{10} W=-3.2787+2.2676 \text{ Log}_{10} L$

g.M. functional regression for between age-groups

TABLE 14
WATER: INDIAN CREEK (819E)
STATION:0101 FRASER LEE
DATE:

Cohort	Age Group	No. Fish	Wt(g) Xlgth At Capture		Back Calculated Total Length (mm) at Annuli							
					1	2	3	4	5	6	7	8
1978	IV	2	83	206	131	153	176	191				
1979	III	1	67	182	125	149	168					
1980	II	2	50	168	123	139						
1981	I	1	21	131	110							
Number of fish...					6	5	3	2				
Grand average calculated total length (mm)...					124	151	174	191				
Range...						144-162	168-183	189-192				
Annual increment of total length (mm)...					110-101	27	23	17				

Regression Equations:

Scale radius (mm) vs. fish length (mm) at 48 X magnification—Y=67.5877+5.3128X

G.M. functional regression of fish length (mm) vs. weight (g)—log W=5.6080+3.2732 Log 1

g.M. functional regression for between age-groups

TABLE 15
WATER: INDIAN CREEK
STATION:0101 FRASER LEE
DATE:

Cohort	Age Group	No. Fish	Wt(g) Xlgth At Capture		Back Calculated Total Length (mm) at Annuli							
					1	2	3	4	5	6	7	8
1979	III	2	102	215	115	180	198					
Number of fish...					2	2	2					
Grand average calculated total length (mm)...												
Range...					115	180	198					
Annual increment of total length (mm)...					111-120	172-189	192-205					
						65	18					

Regression Equations:

Scale radius (mm) vs. fish length (mm) at 48 X magnification—Y=32.5+3.25X

G.M. functional regression of fish length (mm) vs. height (g)—log W=-3.2787+2.2676 Log 1

g.M. functional regression for between age-groups

TABLE 16
SPECIES OCCURRENCE

For Section 01 of Indian Creek (819E), Westmoreland County; July 1982 and June 1994.

Common Name	**0101**		**0102**	
	1982	**1994**	**1982**	**1994**
Brook Trout	X	X		X
Brown Trout	X	X		X
Rainbow Trout		X		X
Mottled Sculpin	X	X	X	X
Creek Chub	X	X	X	X
River Chub				
Blacknose Dace			X	X
Longnose Dace				
Johnny Darter			X	X
White Sucker			X	X
Northern Hog Sucker			X	X
TOTAL	**4**	**5**	**6**	**9**

TABLE 17
SPECIES OCCURRENCE

For Section 02 of Indian Creek (819E), Westmoreland County; July 1976, June 1977 and June 1994.

Common Name	**0201**		**0202**	
	1982	**1994**	**1982**	**1994**
Brook Trout	X	X	X	X
Brown Trout		X	X	X
Rainbow Trout		X		
Pumpkinseed		X		X
Mottled Sculpin	X	X	X	X
Creek Chub	X	X	X	X
Blacknose Dace	X	X	X	X
Longnose Dace	X	X	X	X
Johnny Darter	X	X	X	
Greenside Darter	X			
Fantail Darter	X			X
Central Stoneroller	X	X	X	X
Bluntnose Minnow		X		X
White Sucker	X	X	X	X
Northern Hog Sucker	X	X	X	X
Common Shiner	X			
Rock Bass	X		X	
Golden Redhorse			X	
Green Sunfish Smallmouth			X	
Bass			X	
TOTAL	**14**	**12**	**14**	**12**

TABLE 18
PENNSYLVANIA FISH COMMISSION
DIVISION OF FISHERIES

LAKE SURVEY REPORT
Biological Data

Lake Name: Youghiogheny Reservoir **Township:** Addison, Henry Clay
County: Somerset, Fayette

Species Name	Total No.	% of Catch	Catch Per Hour	Growth Rate		
				Poor	Ave	Fast
Walleye	62	32.98	0.310		X	
Smallmouth Bass	70	37.23	0.350			X
Largemouth Bass	1	0.53	0.005	X		
Brown Trout	3	1.60	0.015			
Yellow Perch	9	4.79	0.045			X
Rock Bass	12	6.38	0.060			X
Black Crappie	1	0.53	0.005			X
Pumpkinseed Sunfish	1	0.53	0.005			X
Bluegill	1	0.53	0.005			X
Brown Bullhead	2	1.06	0.010			
Golden Shiner	1	0.53	0.005			
White Sucker	21	11.70	0.105			
Hog Sucker	1	0.53	0.005			
Carp	3	1.60	0.015			

(a) Information received from the PA Fish and Boat Commission and the USACE.

APPENDIX G

PHYTOPLANKTON SURVEY [A]

TABLE 1
PHYTOPLANKTON TAXA IDENTIFIED FROM YOUGHIOGHENY RIVER RESERVOIR FROM 1973 TO 1975

	Location		
	Reservoir	**Outflow**	**Inflow**
CYANOPHYTA			
Anabaena sp.	**X**		**X**
Aphanizomenon flos-aquae		**X**	**X**
Oscillatoria sp.	**X**	**X**	**X**
Schizothrix sp.	**X**	**X**	**X**
CHLOROPHYTA			
Chlorophyta g. sp.	**X**		
Ankistrodesmus convolutus	**X**		
Ankistrodesmus falcatus	**X**	**X**	**X**
Aktinastrum Hantzschii			**X**
Chlamydomonas sp.	**X**	**X**	**X**
Chlorogonium sp.	**X**		
Closterium gracile	**X**	**X**	**X**
Closterium moniliferum			**X**
Closterium turgidum			**X**
Closterium sp.			**X**
Coelastrum cambricum	**X**		**X**
Cosmarium sp.	**X**		**X**
Crucigenia quadrangularis	**X**		
Crucigenia rectangularis	**X**		**X**
Crucigenia tetrapedia	**X**		**X**
Dictyosphaerium pulchellum			**X**
Kirchneriella obesa			**X**
Micractinium pusillum	**X**		
Mougeotia viridis	**X**		**X**
Oedogonium sp.		**X**	
Oocystis solitaris	**X**		
Oocystis sp.	**X**	**X**	**X**
Pediastrum Boryanum			**X**
Pediastrum duplex			**X**

	Location		
	Reservoir	**Outflow**	**Inflow**
Pediastrum simplex	**X**		
Pediastrum tetras			**X**
Scenedesmus acuminatus	**X**		**X**
Scenedesmus armatus			**X**
Scenedesmus dimorphus	**X**		**X**
Scenedesmus quadricauda	**X**		**X**
Selenastrum Westii			**X**
Staurastum sp.	**X**	**X**	**X**
Tetraedron limneticum			**X**
Tetraedron minimum	**X**		
CHRYSOPHYTA (diatoms)			
Achnanthes exigua	**X**		**X**
Achnanthes lanceolata			**X**
Achnanthes sp.			**X**
Amphora ovalis	**X**		**X**
Asterionella formosa	**X**	**X**	**X**
Cyclotella comta			**X**
Cyclotella meneghiniana		**X**	**X**
Cymbella lanceolota			**X**
Cymbella turgida	**X**		**X**
Cymbella sp.			**X**
Diatoma vulgare	**X**	**X**	**X**
Eunotia pectinalis	**X**	**X**	**X**
Fragilaria crotonensis	**X**	**X**	**X**
Fragilaria rhomboides	**X**		**X**
Gomphonema constrictum		**X**	**X**
Gomphonema olivaceum		**X**	
Gomphonema parvulum		**X**	
Gomphonema sp.	**X**	**X**	
Gyrosigma scalproides			**X**
Gyrosigma sp.			**X**
Hantzschia amphioxys			**X**
Melosira granulata	**X**	**X**	**X**
Melosira varians	**X**	**X**	**X**
Melosira sp.			**X**
Meridion circulare		**X**	**X**
Navicula cryptocephala	**X**	**X**	**X**
Navicula radiosa	**X**	**X**	**X**

	Location		
	Reservoir	**Outflow**	**Inflow**
Navicula viridula	**X**	**X**	**X**
Navicula tripunctata	**X**	**X**	**X**
Navicula sp.	**X**	**X**	**X**
Nitzschia acicularis	**X**	**X**	**X**
Nitzschia holsatica	**X**		
Nitzschia linearis	**X**	**X**	**X**
Nitzschia palea	**X**	**X**	**X**
Nitzschia sigmoidea		**X**	
Nitzschia thermalis	**X**	**X**	**X**
Nitzschia tryblionella			**X**
Nitzschia sp.	**X**	**X**	**X**
Pinnularia sp.			**X**
Rhoicospheria curvata	**X**		**X**
Stephanodiscus astraea			**X**
Stephanodiscus hantzchii	**X**		**X**
Stephanodiscus niagarae		**X**	
Surirella robusta			**X**
Synedra acus	**X**		
Synedra ulna	**X**		**X**
Tabellaria fenestrata	**X**	**X**	**X**
OTHER CHRYSOPHYTA			
Dinobryon sertularia	**X**		**X**
Dinobryon sp.	**X**	**X**	**X**
Mallomonas sp.		**X**	
Synura uvella	**X**	**X**	**X**
PYRROPHYTA			
Ceratium hirundinella	**X**	**X**	**X**
Chroomonas sp.	**X**		**X**
Cryptomonas ovata	**X**	**X**	**X**
Cryptomonass quadridens	**X**	**X**	
Gymnodinium sp.	**X**		
Peridinium cinctum			**X**
Peridinium wisconsinense	**X**		**X**
Peridinium sp.	**X**	**X**	

	Location		
	Reservoir	**Outflow**	**Inflow**
EUGLENOPHYTA			
Euglena sp.	**X**	**X**	**X**
Lepocinclis sp.	**X**		
Phocus longicauda	**X**	**X**	

(A) Information Obtained from U.S. Army Corps of Engineers

APPENDIX H

MACROINVERTEBRATE SURVEY

TABLE 1
RESULTS OF 1998 RAPID MACROINVERTEBRATE BIOLOGICAL ASSESSMENTS [(A)]
YOUGHIOGHENY RIVER LAKE TRIBUTARIES
TUB RUN AND HALL RUN

	TUB RUN	HALL RUN
ARTHROPODA		
Baetis sp.	19	56
Ephemerella sp.	1	
Heptageniidae	16	23
Epeorus sp.	1	6
Ephemera sp.		2
Isonvchia	9	
PLECOPTERA	>140	>30
Chloroperlidae	10	9
Nemouridae	1	
Capniida	9	21
Peltoperla sp.	247	32
HEMIPTERA		
Veliidae	28	
TRICHOPTERA		
Hydropsychidae		12
Diplectrona sp.	66	4
Hydropshche sp.	20	26
Cheumatopsyche sp.		2
Dolophilodes sp.	21	56
Goera sp.	2	6
Polycentropus sp.		
Rhyacophila sp.		3
COLEOPTERA		
Optioservus sp.		1
Psephenus sp.		1

	TUB RUN	HALL RUN
MEGALOPTERA		
Nigronia sp.	5	2
DIPTERA		
Chironomidae	>240	31
Atherix sp.	1	
Simuliidae	6	4
Tipula sp.	13	2
Hexatoma	10	6
CRUSTACEA		
Asellidae	54	29
Cambaridae	9	1
ANNELIDA		
Oligochaeta	11	14
Turbellaria	2	
TOTAL NUMBER OF TAXA	**41**	**36**
TOTAL NUMBER OF ORGANISMS	**948**	**385**

(A) Information Received From U.S. Army Corps of Engineers

TABLE 2
MACROINVERTEBRATES COLLECTED IN SECTION 02
SITES 0201, AND 0202
YOUGHIOGHENY RIVER (819E) FAYETTE COUNTY
SURVEYED ON SEPTEMBER 19 & 20, 1989 [(A)]

TAXA	0201	0202
EPHEMEROPTERA		
Biotidae		
Pseudocloen	**X**	**X**
Caenidae		
Caenis		**X**
Heptageniidae		
Stenonema	**X**	**X**
ODANATA		
Gomphidae		
Gomphus		**X**
TRICHOPTERA		
Hydropsychidae		
Cheumatopsyche		**X**
Diplectrona		
Hydropsyche	**X**	**X**
Philopotamidae		
Chimarra	**X**	
Wormaldia	**X**	
PSYCHOMYIIDAE		
Psychomyia		**X**
COLEOPTERA		
Dytiscidae		
Copelatus	**X**	
DIPTERA		
Chironomidae	**X**	**X**
Psychodidae		**X**
Stratyomy	**X**	
DECAPODA		
Cambaridae	**X**	**X**

TAXA	0201	0202
ISOPODA		
Assellidae	**X**	
PELCYPODA		
Sphaeriidae	**X**	**X**
GASTROPODA		
Haplotaxide		
Naididae	**X**	**X**

(A) Information obtained from the PA Fish and Boat Commission

TABLE 3
MACROINVERTEBRATE SURVEY [(A)]

Sample Date	Location	TAXA	Number
9/23/92	Youghiogheny River - Addison Township	*Baetis*	3
9/23/92	Youghiogheny River - Addison Township	*Stenonema*	33
9/23/92	Youghiogheny River - Addison Township	*Eurylophella*	1
9/23/92	Youghiogheny River - Addison Township	*Acronaurfa*	1
9/23/92	Youghiogheny River - Addison Township	*Diplectrona*	1
9/23/92	Youghiogheny River - Addison Township	*Ceratopeyche*	3
9/23/92	Youghiogheny River - Addison Township	*Cheumatopsych*	4
9/23/92	Youghiogheny River - Addison Township	*Hydroptia*	1
9/23/92	Youghiogheny River - Addison Township	*Hexatoma*	2
9/23/92	Youghiogheny River - Addison Township	*Simullum*	13
9/23/92	Youghiogheny River - Addison Township	*Chloronomidae*	4
9/23/92	Youghiogheny River - Addison Township	*Planarlldae*	1
9/23/92	Youghiogheny River - Addison Township	*Phydidae*	1
9/23/92	Youghiogheny River - Addison Township	*Otigoohaeta*	14
9/23/92	Youghiogheny River - Addison Township	*Crangonyx*	4
9/23/92	Youghiogheny River - Addison Township	*Caecidotea*	71
8/17/93	Youghiogheny River - Addison Township	*Leptophiedlldae*	1
8/17/93	Youghiogheny River - Addison Township	*Leuctra*	4
8/17/93	Youghiogheny River - Addison Township	*Cheumatopsyche*	1
8/17/93	Youghiogheny River - Addison Township	*Outimnius*	1
8/17/93	Youghiogheny River - Addison Township	*Chironomidae*	11
8/17/93	Youghiogheny River - Addison Township	*Cura*	2
8/17/93	Youghiogheny River - Addison Township	*Ollgochaeta*	28
8/17/93	Youghiogheny River - Addison Township	*Caecidotes*	4
8/17/93	Youghiogheny River - Addison Township	*Cladocera*	51
6/22/94	Youghiogheny River - Addison Township	*Acentrelle*	1
6/22/94	Youghiogheny River - Addison Township	*Leuctra*	1
6/22/94	Youghiogheny River - Addison Township	*Cheumatopsyche*	31
6/22/94	Youghiogheny River - Addison Township	*Cureullonidae*	1
6/22/94	Youghiogheny River - Addison Township	*Chellfera*	6
6/22/94	Youghiogheny River - Addison Township	*Chironomidae*	29
6/22/94	Youghiogheny River - Addison Township	*Ollgochaeta*	41
6/22/94	Youghiogheny River - Addison Township	*Crangonyx*	1
6/22/94	Youghiogheny River - Addison Township	*Caecidotea*	3
6/22/94	Youghiogheny River - Addison Township	*Hydracarina*	3

Sample Date	Location	TAXA	Number
8/14/95	Youghiogheny River - Addison Township	*Stenonema*	2
8/14/95	Youghiogheny River - Addison Township	*Leptophlebia*	1
8/14/95	Youghiogheny River - Addison Township	*Lauctra*	1
8/14/95	Youghiogheny River - Addison Township	*Hydroptlls*	1
8/14/95	Youghiogheny River - Addison Township	*Chironomidae*	8
8/14/95	Youghiogheny River - Addison Township	*Crangonyx*	2
8/14/95	Youghiogheny River - Addison Township	*Caeoidotea*	90
8/21/96	Youghiogheny River - Addison Township	*Aoentrella*	2
8/21/96	Youghiogheny River - Addison Township	*Stenonema*	2
8/21/96	Youghiogheny River - Addison Township	*Lauctra*	1
8/21/96	Youghiogheny River - Addison Township	*Cheumatopsyche*	3
8/21/96	Youghiogheny River - Addison Township	*Chironomidae*	104
8/21/96	Youghiogheny River - Addison Township	*Ollgochaeta*	2
8/21/96	Youghiogheny River - Addison Township	*Caecidotea*	10
9/3/97	Youghiogheny River - Addison Township	*Baetis*	1
9/3/97	Youghiogheny River - Addison Township	*Cheumatopsyche*	6
9/3/97	Youghiogheny River - Addison Township	*Hydropsyche*	11
9/3/97	Youghiogheny River - Addison Township	*Steneimis*	6
9/3/97	Youghiogheny River - Addison Township	*Antocha*	1
9/3/97	Youghiogheny River - Addison Township	*Simullum*	6
9/3/97	Youghiogheny River - Addison Township	*Chironomidae*	87
9/3/97	Youghiogheny River - Addison Township	*Cura*	4
9/3/97	Youghiogheny River - Addison Township	*Gammarus*	7
8/16/98	Youghiogheny River - Addison Township	*Acentrolla*	1
8/16/98	Youghiogheny River - Addison Township	*Chaumatopsyche*	2
8/16/98	Youghiogheny River - Addison Township	*Hydropsyche*	1
8/16/98	Youghiogheny River - Addison Township	*Hydroptlla*	1
8/16/98	Youghiogheny River - Addison Township	*Simullum*	20
8/16/98	Youghiogheny River - Addison Township	*Chironomidae*	78
8/16/98	Youghiogheny River - Addison Township	*Lumbricidae*	3
8/16/98	Youghiogheny River - Addison Township	*Caeoldotes*	13

(A) Data Obtained from the Senator Kasunic's Office.

TABLE 4
MACROINVERTEBRATE SURVEY [(A)]

NAME	TAXA	NUMBER
Station 709 is Located at RM 74.1 at SR 281 Bridge		
709-Youghiogheny River	Baetis	3
709-Youghiogheny River	Stenonema	33
709-Youghiogheny River	Eurylophella	1
709-Youghiogheny River	Acroneuria	1
709-Youghiogheny River	Diplectrona	1
709-Youghiogheny River	Ceratopsyche	3
709-Youghiogheny River	Cheumatopsyche	4
709-Youghiogheny River	Hydroptila	1
709-Youghiogheny River	Hexatoma	2
709-Youghiogheny River	Simulium	13
709-Youghiogheny River	Chironomidae	4
709-Youghiogheny River	Planariidae	1
709-Youghiogheny River	Physidae	1
709-Youghiogheny River	Oligochaeta	14
709-Youghiogheny River	Crangonyx	4
709-Youghiogheny River	Caecidotea	71
709-Youghiogheny River	Leptophlebiidae	1
709-Youghiogheny River	Leuctra	4
709-Youghiogheny River	Cheumatopsyche	1
709-Youghiogheny River	Oulimnius	1
709-Youghiogheny River	Chironomidae	11
709-Youghiogheny River	Cura	2
709-Youghiogheny River	Oligochaeta	28
709-Youghiogheny River	Caecidotea	4
709-Youghiogheny River	Cladocera	51
709-Youghiogheny River	Acentrella	1
709-Youghiogheny River	Leuctra	1
709-Youghiogheny River	Cheumatopsyche	31
709-Youghiogheny River	Curculionidae	1
709-Youghiogheny River	Chelifera	6
709-Youghiogheny River	Chironomidae	29
709-Youghiogheny River	Oligochaeta	41
709-Youghiogheny River	Crangonyx	1

NAME	TAXA	NUMBER
709-Youghiogheny River	Caecidotea	3
709-Youghiogheny River	Hydracarina	3
709-Youghiogheny River	Stenonema	2
709-Youghiogheny River	Leptophlebia	1
709-Youghiogheny River	Leuctra	1
709-Youghiogheny River	Hydroptila	1
709-Youghiogheny River	Chironomidae	8
709-Youghiogheny River	Crangonyx	2
709-Youghiogheny River	Caecidotea	90
709-Youghiogheny River	Acentrella	2
709-Youghiogheny River	Stenonema	2
709-Youghiogheny River	Leuctra	1
709-Youghiogheny River	Cheumatopsyche	3
709-Youghiogheny River	Chironomidae	104
709-Youghiogheny River	Oligochaeta	2
709-Youghiogheny River	Caecidotea	10
709-Youghiogheny River	Baetis	1
709-Youghiogheny River	Cheumatopsyche	6
709-Youghiogheny River	Hydropsyche	11
709-Youghiogheny River	Stenelmis	6
709-Youghiogheny River	Antocha	1
709-Youghiogheny River	Simulium	6
709-Youghiogheny River	Chironomidae	57
709-Youghiogheny River	Cura	4
709-Youghiogheny River	Gammarus	7
709-Youghiogheny River	Acentrella	1
709-Youghiogheny River	Cheumatopsyche	2
709-Youghiogheny River	Hydropsyche	1
709-Youghiogheny River	Hydroptila	1
709-Youghiogheny River	Simulium	20
709-Youghiogheny River	Chironomidae	76
709-Youghiogheny River	Lumbricidae	3
709-Youghiogheny River	Caecidotea	13

NAME	TAXA	NUMBER
Station 706 is Located at RM 14.8 at SR 30454 Bridge		
706-Youghiogheny River	Baetidae	1
706-Youghiogheny River	Centroptilum	2
706-Youghiogheny River	Isonychia	6
706-Youghiogheny River	Stenonema	4
706-Youghiogheny River	Tricorythodes	10
706-Youghiogheny River	Argia	1
706-Youghiogheny River	Sialis	4
706-Youghiogheny River	Corydalus	1
706-Youghiogheny River	Ceratopsyche	66
706-Youghiogheny River	Cheumatopsyche	47
706-Youghiogheny River	Hydropsyche	1
706-Youghiogheny River	Chironomidae	4
706-Youghiogheny River	Planariidae	1
706-Youghiogheny River	Sphaeriidae	1
706-Youghiogheny River	Oligochaeta	12
706-Youghiogheny River	Gammarus	2
706-Youghiogheny River	Hydracarina	1
706-Youghiogheny River	Baetis	1
706-Youghiogheny River	Isonychia	5
706-Youghiogheny River	Stenonema	6
706-Youghiogheny River	Tricorythodes	5
706-Youghiogheny River	Psychomyia	2
706-Youghiogheny River	Neureclipsis	2
706-Youghiogheny River	Ceratopsyche	3
706-Youghiogheny River	Cheumatopsyche	17
706-Youghiogheny River	Hydropsyche	1
706-Youghiogheny River	Macrostemum	4
706-Youghiogheny River	Hydroptila	2
706-Youghiogheny River	Optioservus	1
706-Youghiogheny River	Stenelmis	3
706-Youghiogheny River	Chironomidae	14
706-Youghiogheny River	Dugesia	1
706-Youghiogheny River	Ferrissia	1
706-Youghiogheny River	Sphaeriidae	35
706-Youghiogheny River	Oligochaeta	1
706-Youghiogheny River	Baetis	1
706-Youghiogheny River	Cheumatopsyche	2

NAME	TAXA	NUMBER
706-Youghiogheny River	Hydropsyche	4
706-Youghiogheny River	Psephenus	1
706-Youghiogheny River	Optioservus	1
706-Youghiogheny River	Bezzia	1
706-Youghiogheny River	Chironomidae	30
706-Youghiogheny River	Oligochaeta	30
706-Youghiogheny River	Gammarus	67
706-Youghiogheny River	Acentrella	3
706-Youghiogheny River	Stenonema	10
706-Youghiogheny River	Tricorythodes	36
706-Youghiogheny River	Cheumatopsyche	15
706-Youghiogheny River	Hydropsyche	3
706-Youghiogheny River	Macrostemum	1
706-Youghiogheny River	Glossosoma	1
706-Youghiogheny River	Hydroptila	4
706-Youghiogheny River	Stenelmis	1
706-Youghiogheny River	Chironomidae	5
706-Youghiogheny River	Ferrissia	8
706-Youghiogheny River	Corbicula	18
706-Youghiogheny River	Baetis	5
706-Youghiogheny River	Isonychia	4
706-Youghiogheny River	Stenonema	28
706-Youghiogheny River	Tricorythodes	2
706-Youghiogheny River	Corydalus	3
706-Youghiogheny River	Diplectrona	13
706-Youghiogheny River	Cheumatopsyche	28
706-Youghiogheny River	Hydropsyche	15
706-Youghiogheny River	Psephenus	1
706-Youghiogheny River	Stenelmis	4
706-Youghiogheny River	Hexatoma	3
706-Youghiogheny River	Chironomidae	7
706-Youghiogheny River	Gammarus	1
706-Youghiogheny River	Isonychia	8
706-Youghiogheny River	Stenonema	16
706-Youghiogheny River	Tricorythodes	5
706-Youghiogheny River	Cheumatopsyche	16
706-Youghiogheny River	Hydropsyche	31
706-Youghiogheny River	Macrostemum	1
706-Youghiogheny River	Rhyacophila	1
706-Youghiogheny River	Hydroptila	5

NAME	TAXA	NUMBER
706-Youghiogheny River	Antocha	1
706-Youghiogheny River	Chironomidae	4
706-Youghiogheny River	Ferrissia	1
706-Youghiogheny River	Corbicula	12
706-Youghiogheny River	Acentrella	9
706-Youghiogheny River	Baetis	1
706-Youghiogheny River	Isonychia	9
706-Youghiogheny River	Stenonema	39
706-Youghiogheny River	Tricorythodes	3
706-Youghiogheny River	Trichoptera	1
706-Youghiogheny River	Polycentropus	5
706-Youghiogheny River	Cheumatopsyche	25
706-Youghiogheny River	Hydropsyche	25
706-Youghiogheny River	Macrostemum	2
706-Youghiogheny River	Hydroptila	10
706-Youghiogheny River	Oecetis	1
706-Youghiogheny River	Helophorus	1
706-Youghiogheny River	Psephenus	1
706-Youghiogheny River	Ancyronyx	1
706-Youghiogheny River	Optioservus	2
706-Youghiogheny River	Stenelmis	7
706-Youghiogheny River	Antocha	3
706-Youghiogheny River	Simulium	12
706-Youghiogheny River	Chironomidae	155
706-Youghiogheny River	Sphaerium	1
706-Youghiogheny River	Corbicula	5
706-Youghiogheny River	Naididae	1

(A) Information Obtained from the PA DEP.

APPENDIX I

DESCRIPTION OF TREE SPECIES [(A)]

BIGTOOTH ASPEN
(POPULUS GRANDIDENTATA MICHX.)

Leaves
Alternate; simple, three inches to four inches long; margins with coarse teeth; dull green above, lighter below; petiole flattened.

Twigs
Stout, brown with a pale, wooly coating; buds blunt-pointed, dull and often wooly.

Fruit
Cone-shaped capsules on a drooping stalk similar to Quaking Aspen; fruits mature before the leaves are full-grown; seeds covered with long silky hairs.

Bark
Light gray to green when young; dark brown and rough with age.

General
A small to medium sized tree, 30 feet to 40 feet high; common throughout the State. The seeds sprout best in open areas after cutting or fire and spread rapidly by sending up suckers from the roots. Bigtooth Aspen is important for regenerating forest cover, protecting soil and slower growing species. Many animals browse the twigs and buds in winter and spring. The wood is used chiefly for making paper.

WHITE OAK
(QUERCUS ALBA L.)

Leaves
Alternate; simple; six inches to nine inches long and four inches wide, with six to ten rounded lobes; bright green above, and paler below; both surfaces smooth on mature leaves.

Twigs
Red-gray, often with a grayish coating; buds rounded, reddish-brown, smooth, to 1/8 inch long; end buds clustered.

Fruit
An acorn; ¾ inch to one inch long; light brown; cup bowl-like; hairy inside; enclosing ¼ of the nut; cup scales warty at the base; acorn ripens in September after one season.

Bark
Pale gray; scaly; not deeply fissured; often flaky.

General
A dominant forest tree on dry to moist sites throughout the Commonwealth, usually reaching 80 feet to 100 feet high. This tree is very important to both wildlife and people. The acorn is an important wildlife food; eastern Native Americans made flour from these acorns. Traditional uses of White oak wood include hardwood flooring, whiskey barrels and boat building. The famous Revolutionary War frigate, USS Constitution, "Old Ironsides", was made of White oak. The "white oak group" includes all oaks without bristle-tipped lobes and acorns that ripen in one season.

WHITE ASH

(FRAXINUS AMERICANA L.)

Leaves
Opposite; compound; about 10 inches long, with five to nine leaflets, each three inches to five inches long; short-stalked; silvery beneath; margins entire or with a few rounded teeth toward the tip.

Twigs
Stout; usually smooth; gray-brown with a few pale lenticels and a white, waxy coating which is easily rubbed off called a bloom; buds rusty to dark brown; blunt with adjoining leaf scars half-circular and notched at the top. The first pair of lateral buds is usually at the base of the end bud causing a terminal enlargement of the twig (compare with Black Ash).

Fruit
A winged seed, called a samara, usually one to two inches long and ¼ inch wide, shaped like a canoe paddle with a rounded tip and hanging in clusters which remain attached for several months after ripening in autumn.

Bark
Gray-brown; evenly furrowed into diamond shaped areas separated by narrow interlacing ridges; slightly scaly on very old trees.

General
A large tree, often up to 80 feet or more, usually with a long straight trunk commonly found on rich soils. The wood is used for sporting goods (especially baseball bats), handles, agricultural tools, and furniture. The juice from the leaf has been reported to relieve mosquito bite itching. Fall foliage colors range from brilliant yellow to dark maroon.

TULIP TREE

(LIRIODENDRON TULIPIFERA)

Leaves
Alternate; simple; four inches to six inches in diameter; generally four-lobed; bright green; turning yellow in autumn.

Twigs
Green in spring and summer, sometimes with purplish tinge; during winter reddish brown, smooth and shiny. Buds are large, smooth and flattened; "duck-billed."

Fruit
At first green, turning light brown when ripe in autumn; cone-like, two and one half to three inches long; made up of winged seeds; greenish yellow tulip-like flowers in May or June.

Bark
Young trees are dark green and smooth with whitish vertical streaks; older trunks are dark gray and furrowed.

General
Also known as Yellow poplar, Tulip poplar, White poplar and Whitewood. A large tree; the tallest of the eastern hardwoods. It grows rapidly and is an important timber and shade tree. The wood is valuable for veneer and many other uses. Songbirds and game birds, rabbits, squirrels and mice feed on the seeds. Whitetail deer browse the young growth.

SUGAR MAPLE

(ACER SACCHARUM MARSHALL)

Leaves
Opposite; simple, five-lobed with few large teeth; about four inches wide; bright green above, pale green below. Leaves turn bright yellow, orange or red in autumn.

Twigs
Reddish-brown to light brown; buds brown and sharp pointed.

Fruit
Horseshoe-shaped with wings almost parallel; maturing in autumn sometimes persisting into winter.

Bark
Gray brown and smooth on young trunks; older trunks fissured with long, irregular flakes.

General
Also called Rock Maple for its hard wood; this important timber tree is found on moist, wooded slopes throughout Pennsylvania; typically reaching 60 to 80 feet high. Sugar Maple wood is used for furniture, musical instruments and flooring, and the sap is tapped for maple syrup production. Sugar Maple is an excellent ornamental tree for large open areas. Birds and rodents eat the seeds. Deer, squirrels, porcupine and other mammals browse the twigs, buds and bark.

SYCAMORE

(PLATANUS OCCIDENTALIS L.)

Leaves
Alternate, simple, three to five-lobed; four to seven inches across, generally wider than long; light green above, paler and wooly beneath; petiole hollow at the base, enclosing next year's bud.

Twigs
At first green and hairy, later brownish; smooth, zigzag, buds cone-like with a single, smooth reddish brown scale.

Fruit
A round, light brown ball one to one and ¼ inches in diameter; made up of many seeds surrounded by silky hairs; hanging singly or in pairs by a tough, slender stalk throughout the winter.

Bark
Consists of two layers, the outer peeling in brown flakes, the inner whitish, yellowish or greenish; the base of old trunks dark brown and fissured.

General
Large, massive trees typically found on streambanks and floodplains attaining heights of 70 to 125 feet or more. Also called Buttonwood or American Planetree, the wood is used for furniture, butcher blocks and flooring. The London Planetree, P. x acerifolia Willd., with two to four fruits per stalk, is commonly planted as a shade tree in urban areas.

STRIPED MAPLE

(ACER PENSYLVANICUM L.)

Leaves
Opposite; simple, three-lobed; rounded at the base, with finely toothed margins and rusty pubescence on the lower surface.

Twigs
Smooth and stout; at first greenish, later red or pith brown; each season's growth marked by two or three dark lines encircling the twig.

Fruit
Wings very divergent, about ¾ inch long; maturing in September in drooping clusters; marked on one side of the seed with a depression.

Bark
Smooth, greenish or reddish brown; conspicuously marked with longitudinal white streaks; older trunks rougher, darker and less streaked.

General
Usually from 10 to 25 feet high; common in the mountainous parts of the state on moist, cool, shaded slopes and in deep ravines. Its distinctive white stripes make it an attractive ornamental species.

SHELLBARK HICKORY

(CARYA LACINIOSA (MICHX.F.) LOUD)

Leaves
Alternate; compound; 10 to 24 inches long, usually with seven leaflets; dark green above, paler yellow green and hairy beneath; margins fine-toothed. The dried leaf axis, petiole, often persists on the tree all winter.

Twigs
Orange-brown, usually hairy and often angled with numerous orange lenticels; somewhat stouter than Shagbark Hickory and with orange colored leaf scars. The very large buds have six to eight dark brown, loosely fitting, keeled outer scales; end buds ¾ to one inch long.

Fruit
Largest of the native hickories, one and ¾ to two and ½ inches long with a thick husk splitting into four pieces when ripe. The thick-shelled nut is yellowish white to reddish brown, with four to six ridged, points at both ends and containing a sweet kernel.

Bark
Closely resembles that of Shagbark Hickory but with straighter, tighter plates and appearing less shaggy.

General
Also known as Kingnut Hickory, this species is found on moist to wet, fertile bottomlands across southern Pennsylvania. The nuts are much in demand by man and wildlife. As with other hickories, the wood is very heavy, hard, and strong with very high shock resistance, and is principally used for tool handles.

YELLOW BIRCH

(BETULA ALLEGHANIENSIS BRITT.)

Leaves
Alternate; simple; three to four inches long; doubly-toothed margins; dull green above, yellow-green beneath.

Twigs
Green and hairy when young; later brown and smooth, with only a faint wintergreen flavor and smell; buds dull yellowish green; slightly downy.

Fruit
An erect, very short-stalked cone, one and ½ inches long, made up of small, winged nuts and scales.

Bark
Young stems and branches; yellowish or bronze and shiny; peeling off in thin papery strips; older trunks becoming reddish brown and breaking into large, ragged edged plates.

General
A medium to large tree, commonly 60 to 75 feet high, occasionally to 100 feet tall. Prefers moist, cool soils and cool summer temperatures; often found on north facing slopes and swamps. The wood is used for cabinets, furniture, flooring, and doors. It was a principal wood used for distilling wood alcohol, acetate of lime, tar, and oils. The papery shreds of bark can be stripped off in emergencies and used as a fire starter even in wet conditions. Ruffed grouse feed on buds and seeds, deer and rabbits browse the twigs.

BLACK WILLOW
(SALIX NIGRA MARSHALL)

Leaves
Alternate, simple, narrowly lance-shaped, very long-pointed, tapered or rounded at the base, finely toothed margins, smooth dark green above, pale green below. Conspicuous stipules (small leafy parts at the base of the leaf-stalk) surround the twig.

Twigs
Slender, smooth and brittle, drooping, bright reddish-brown to orange.

Fruit
Small reddish-brown capsules, ¼" long, in a long hanging cluster, each containing many tiny seeds. Each seed covered by a dense tuft of long, silky hairs.

Bark
Thick, rough, deeply furrowed, blackish-brown, with wide ridges and thick plates.

General
The largest of our native willows, typically reaching 30' in height. Found on streambanks and in wet meadows throughout Pennsylvania, it is most common in the east and south. Black willow wood is used in wickerwork and the bark contains medicinal compounds. Deer browse Black willow shoots. Weeping willow, (Salix babylonica L.), is a commonly cultivated species originally from China.

BLACK CHERRY
(PRUNUS SEROTINA EHRH.)

Leaves
Alternate, simple, 2"-5" long, narrow with tapering tip, shiny above, paler below and usually with one or more small glands at the base; margins with short in-curved teeth which distinguish it from other cherries.

Twigs
Smooth, reddish brown, marked with numerous pale, round lenticels; often covered with a thin gray coating which rubs off easily. Buds smooth, shiny, sharp-pointed, reddish brown tinged with green.

Fruit
Round, black with a purplish tint, 1/3" -1/2" in diameter, containing a single round, stony seed. Arranged in hanging clusters. Flowers white, in June.

General
Commonly 50'-75' high, Black cherry grows throughout the State. It thrives best in fertile alluvial soil but also grows on dry slopes. The hard reddish-brown wood is highly prized for quality furniture and interior trim. Many game birds, song birds, and mammals, including black bear, eat the fruits and seeds.

BLACK LOCUST
(ROBINIA PSEUDOACACIA L.)

Leaves
Alternate, compound, 7-19 oval leaflets 1"-2" long, margins smooth.

Twigs
Angled, somewhat zigzag, brittle, with short stout prickles; no end bud, side buds small and hidden in winter.

Fruit
A thin, flat pod, 2"-4" long; usually with 4-8 seeds; splits into halves when ripe. Flowers white, showy, very fragrant in drooping clusters, appearing in May and June.

Bark
Reddish brown, rough, furrowed, thick.

General
A medium-sized tree to 45' high, found in open woods, floodplains, thickets and fencerows throughout the State. Wood is durable in contact with the soil and in demand for posts, poles, railroad ties, and mine timbers. Unfortunately, several insects and wood rots cause heavy damage, especially to trees on poor soils. Squirrels eat the seeds and bees make honey from the nectar of locust flowers.

BLACK OAK
(QUERCUS VELUTINA LAM.)

Leaves
Alternate, simple, 4"-8" long, 3"-5" wide; each has 5-7 pointed, bristle-tipped lobes, sinuses between the lobes go halfway to the mid-rib on lower leaves, deeper on top leaves; smooth and shiny above and usually covered with a rust-brown fuzz below.

Twigs
Reddish brown, usually fuzzy. Buds blunt pointed, ridged, yellow-grey, wooly.

Fruit
An acorn, ½"-1" long, somewhat round, light brown. The acorn-cup is bowl-like with wooly hairs, covering 1/2 or more of the nut; cup-scales sharp-pointed, forming a loose fringe at the rim. Black oak acorns need two growing-seasons to ripen; kernels are yellow and extremely bitter.

Bark
Smooth and dark brown for many years, older trunks are dull black, furrowed, furrows forming irregular blocks; inner bark orange to orange-yellow.

General
A relatively fast-growing tree to 75' high, one of the most common oaks on dry, upland sites. The acorns are eaten by wildlife, but not preferred; the young stems and twigs are browsed by deer. A yellow dye can be made from the bark. The wood is lumped with other oak species and sold as red oak for general construction lumber and furniture.

CHESTNUT OAK
(QUERCUS MONTANA WILLD.)

Leaves
Alternate, simple, 5"-9" long, to 3" wide; with course, rounded teeth. Dark green and smooth above, paler and occasionally downy beneath.

Twigs
Smooth, orange-brown to reddish-brown. Buds light brown, sharp pointed, edges of scales hairy, ¼ to ½" long.

Fruit
An acorn, 1 to 1½" long; rich dark brown, shiny. Cup thin, hairy inside, enclosing 1/3-1/2 of the nut; cup scales knobby. Fruit ripens in one growing season with kernels moderately sweet.

Bark
Grey and smooth on young trees, later brownish gray to dark gray, thick, tough, deep-fissured.

General
Also called Rock oak and Basket oak this tree grows to 80' on dry slopes and ridgetops throughout Pennsylvania. Large crops of acorns produced every 4-7 years are important food for deer, bear, turkey and many other birds and animals. The bark is very rich in tannin and the wood heavy and strong. It is used for furniture, flooring, millwork, and railroad ties.

BUTTERNUT
(JUGLANS CINEREA L.)

Leaves
Alternate, compound, leaflets 11 to 17, each 3"-5" long, small-toothed; dark yellow-green above, paler, hairy below; end leaflet same size as side leaflets; main leaf-stem with conspicuous sticky hairs. Butternut is one of the last trees to unfold its leaves in spring, and the first to shed them in autumn.

Twigs
Stout, greenish-gray to tan, rough, brittle. Pith chocolate-brown, chambered. Buds light brown, hairy, not covered with scales; end bud ½"-¾" long, side buds smaller. Fringe of short hairs between leaf-scar and bud.

Fruit
An oblong nut, 1½"-2½" long, covered with a hairy, sticky husk. The rough nutshell is pointed at one end, the kernel oily and sweet.

Bark
Young trunks rather smooth, light-gray; later becoming darker, deeply furrowed with wide, smooth, flat-topped ridges.

General
A small to medium-sized tree, 30'-50' high usually in rich bottom lands and on fertile hillsides. Butternut is more common in northern tier counties and at higher elevations than Black walnut. Also called White walnut, its wood is used chiefly for furniture, instrument cases, and boxes and the nuts are an important wildlife food. Recently a fungal disease has killed many Butternut trees throughout its range.

CUCUMBERTREE MAGNOLIA
(MAGNOLIA ACUMINATA L.)

Leaves
Alternate, simple, 4"-12" long, smooth above, downy beneath; margins smooth or sometimes wavy.

Twigs
Reddish brown, shiny, with peppery smell and taste. Buds covered with greenish white silky hairs; end buds 1/2"- 3/4" long. Leaf scars horseshoe shaped.

Fruit
When young, like a small green cucumber. When mature in autumn, 3"-4" long, a cluster of small red pods, each containing two scarlet seeds; often remains attached all winter. Flowers large (3" long), greenish yellow, single, upright; appear from April to June.

Bark
Gray-brown to brown, developing long, narrow furrows and loose scaly ridges.

General
A medium-sized tree, native to rich upland woods and slopes in the western half of the Commonwealth. Magnolia wood is used mainly for interior finish, furniture and containers. Songbirds, squirrels and mice eat the seeds.

NORTHERN RED OAK
(QUERCUS RUBRA L.)

Leaves
Alternate, simple, 4"-9" long, to 6" wide, with 7-11 bristle-tipped lobes, sinuses between lobes extend half-way to the mid-rib. Smooth, dull green above, paler with small tufts of reddish-brown hair in vein-axils beneath.

Twigs
Greenish brown to reddish brown, smooth when mature. Buds pointed, light brown, smooth.

Fruit
An acorn, ¾" to 1¼" long; the cup shallow, saucer shaped, covering 1/4 of the nut, cup-scales reddish-brown, narrow, tight, sometimes fuzzy on the edges. The acorns need two growing-seasons to ripen; the kernel is bitter.

Bark
Smooth and greenish-brown or grey, maturing to dark grey or nearly black and is divided into rounded ridges.

General
A dominant forest tree throughout the state growing to 90' in moist to dry soils. Deer, bear, and many other mammals and birds eat the acorns. It is often planted as a shade tree. The hard strong wood is used for furniture, flooring, millwork, railroad ties and veneer. The "red oak group" includes all oaks with bristle-tipped leaves and acorns ripening over two seasons.

RED MAPLE
(ACER RUBRUM L.)

Leaves
Opposite, simple, with 3-5 shallow lobes, coarsely toothed, light green above, pale green to whitish beneath, turning brilliant red or orange in autumn.

Twigs
Slender, glossy, at first green, later red.

Fruit
Wings usually less than 1" long, spreading at a narrow angle, red to brown, maturing in May or June.

Bark
Smooth and light gray on young trunks and branches, older trunks darker, shaggy and roughened with long, irregular peeling flakes.

General
Found throughout Pennsylvania in a wide variety of habitats, typically reaching 50' high, it grows best in wet soils, sometimes over 100'. Also known as Soft maple because its wood is not as hard as Sugar maple, this is an excellent ornamental tree. Young trees are heavily browsed by deer and rabbits; rodents consume the seeds.

PIGNUT HICKORY
(CARYA GLABRA (P.MILL.) SWEET)

Leaves
Alternate, compound, 8"-12" long usually divided into 5 toothed, lance-shaped leaflets. The leaf is smooth on both surfaces, dark yellowish green above and paler beneath.

Twigs
Slender and usually smooth, reddish brown with numerous pale lenticels. Buds reddish brown to gray, blunt pointed, with 6 outer scales which fall off during winter exposing the grayish downy inner scales. End buds ¼" to ½" long, smallest of our native hickories..

Fruit
Somewhat pear shaped tapering toward the stem, 1"-2" long with a thin husk only partly splitting when ripe. Nuts brownish white, thick-shelled, kernels often taste bitter.

Bark
Gray to dark gray, usually tight, becoming shallowly fissured on older trees.

General
Pignut hickory reaches 50'-60' high growing on dry ridgetops and slopes throughout the southern half of the state. As with other hickories, the wood is heavy, hard, and strong with very high shock resistance, and is principally used for tool handles. Although the nuts are too bitter for human use, they are an important food for squirrels and chipmunks.

AMERICAN CHESTNUT
(CASTANEA DENTATA (MARSHALL) BORKHAUSSEN)

Leaves
Alternate, simple, sharp-pointed at the tip and toothed on the margins; smooth on both upper and lower sides, 6"-11" long.

Twigs
Stout smooth greenish to brown, with numerous small, white, raised lenticels.

Fruit
A prickly bur 2"-3" across, containing 2-3 nuts. Nuts, flattened on one side, are shiny brown, sweet and edible.

Bark
Dark brown and thick with shallow irregular furrows separating broad flat ridges.

General
Formerly the most common and arguably the most valuable tree in Pennsylvania for both its wood and nuts. It now persists as stump sprouts and small trees due to the chestnut bark disease commonly called chestnut blight. Chinese chestnut, Castanea mollissima Blume is planted for its 1" nuts. Its leaves are shorter, up to 6" long and pubescent beneath. Chinese chestnut is resistant to chestnut blight.

BLACK GUM
(NYSSA SYLVATICA MARSHALL)

Leaves
Alternate, simple, 2"-5" long, oval with entire and slightly thickened margins, dark green and shiny above, often downy beneath, turning vivid red in early autumn.

Twigs
Smooth grayish to reddish brown, pith white and chambered, buds round, pointed and reddish brown, ¼" long.

Fruit
A dark blue berry, 1/3"-2/3" long, 1-seeded with thin flesh, borne singly or 2-3 in a cluster, ripening in autumn.

Bark
Grayish, smooth to scaly, darker gray, thick and fissured into quadrangular blocks forming what is called "alligator bark" on very old trunks.

General
Also called Black tupelo, this is usually a medium sized tree, to 40' in height on dry slopes and ridge tops, but it can reach 100' and 5' in diameter in moist areas along streams. Most common in the southeast and southcentral portions of the state it is rarer in the northern tier counties. The wood is difficult to split and is used for boxes, fuel and railroad ties. The fruits, twigs and foliage provide food for many birds and animals. The brilliant red autumn color and abundant blue fruit make this species an interesting ornamental planting.

VIRGINIA PINE
(PINUS VIRGINIANA P.MILL.)

Leaves
Evergreen needles in clusters of 2, twisted, stout, relatively short 1½"-3" long.

Twigs
Slender, curved, flexible, brown to purple with bluish white coating. Buds egg-shaped, usually less than ½" long, brown and resinous.

Fruit
Cone 2"-3" long, prickles small but sharp, edge of scales with darker bands, usually without a stalk, remains attached for 3 or 4 years.

Bark
Smooth, thin, reddish brown and scaly, shallowly fissured into small flat plates.

General
Also called Scrub pine, this small tree attains a height of 30'-40' on sandy or poor rocky soils of barrens and ridgetops. Virginia pine is a southern species that reaches its northern limit in Pennsylvania. It is valuable as cover for worn-out farmlands and is harvested for pulpwood. The seeds are eaten by squirrels, songbirds and game birds

SLIPPERY ELM
(ULMUS RUBRA MUHL.)

Leaves
Alternate, simple, 5"-7" long; usually larger than those of American elm, rough on both sides or soft-hairy below; margin coarsely toothed. Petiole short.

Twigs
Stouter than on American elm, grayish and rather rough, Buds slightly larger than those of American elm, and more round (seldom flattened). Bud scales brown to almost black, rusty-haired.

Fruit
Like that of American elm but somewhat larger, 3/4" long; wing margin not hairy and slightly notched at the tip.

Bark
Similar to American elm, but of lighter color, softer, and fissures not diamond-shaped in outline. Inner bark is sticky and fragrant.

General
A medium-sized tree usually found near streams, the crown does not droop like that of American elm. The wood is commonly marketed with American elm

SHAGBARK HICKORY
(CARYA OVATA (P.MILL.) K.KOCH)

Leaves
Alternate, compound, 8"-14" long, usually with 5 leaflets, dark yellowish green above, paler, often downy beneath, margins fine-toothed.

Twigs
Gray-brown to reddish brown, stout and often hairy with numerous lenticels. Buds are large with 3 or 4 nearly smooth, dark brown, loosely fitting outer scales and velvety inner scales; end buds 1/2" to 3/4" long.

Fruit
Nearly round, 1" to 2½" in diameter with a thick husk that splits into 4 pieces when ripe. The usually thin-shelled, 4-ridged, white nut is pointed at one end and has a sweet kernel. BARK: Younger trees smooth and gray; older bark breaking into long, loosely attached plates giving the trunk a shaggy appearance.

General
This 70' to 80' tall tree is found in rich soils on slopes and valleys throughout the Commonwealth. The wood of all the hickories is heavy, hard, and strong and used principally for tool handles. Hickory is a valuable fuel wood and is used to give a smoked flavor to meats. Archaic uses included bow-wood, and wheel spokes for carriages and carts. The nuts are much relished by man and wildlife. The native Americans crushed the kernel, using the oil for cooking and the resulting flour for bread.

SHELLBARK HICKORY
(CARYA LACINIOSA (MICHX.F.) LOUD)

Leaves
Alternate, compound, 10"-24" long, usually with 7 leaflets, dark green above, paler yellow green and hairy beneath, margins fine-toothed. The dried leaf axis, (petiole), often persisting on the tree all winter.

Twigs
Orange-brown, usually hairy and often angled with numerous orange lenticels, somewhat stouter than Shagbark hickory and with orange colored leaf scars. The very large buds have 6 to 8 dark brown loosely fitting, keeled outer scales, end buds 3/4" - 1" long.

Fruit
Largest of the native hickories, 1¾" - 2½" long with a thick husk splitting into four pieces when ripe. The thick-shelled nut yellowish white to reddish brown, 4 to 6 ridged, pointed at both ends and containing a sweet kernel.

Bark
Closely resembles that of Shagbark hickory but with straighter, tighter plates and appearing less shaggy.

General
Also known as Kingnut hickory, this species is found on moist to wet, fertile bottomlands across southern Pennsylvania. The nuts are much in demand by man and wildlife. As with other hickories, the wood is very heavy, hard, and strong with very high shock resistance, and is principally used for tool handles.

SERVICEBERRIES
(AMELANCHIER SPECIES)

Leaves
Alternate, simple, oval shaped, the largest 3"-4" long by 1"-2" wide, sharp-pointed tip, finely toothed margin, round or heart-shaped base.

Twigs
Red-brown to gray-brown and slender. The buds 1/4"-1/2" long, slender, sharp-pointed, greenish to reddish-brown.

Fruit
Fleshy, sweet, dry or juicy, about 1/3" in diameter with 10 small seeds. Ripening to red-purple in June-July. The flowers 1¼" wide, with five white petals, in terminal clusters, about April before the leaves.

Bark
Smooth, light gray, developing shallow longitudinal fissures with age.

General
Amelanchier arborea (Michx.f.) Fern. and A. laevis Wieg. are small trees, typically under 40' high. Also called Shadbush and Shadblow, names refering to their blooming as the shad ascend rivers to spawn. Showy white flowers of Serviceberry, seen through the still naked oaks, provide one of the first floral displays of spring on Pennsylvania ridges. The fruits are excellent food for birds, bears and other wildlife. Humans eat the berries fresh, or in pies, muffins or jam. Seven shrub species of Serviceberry are also found in Pennsylvania.

SCOTS PINE
(PINUS SYLVESTRIS L.)

Leaves
Needles 2 per cluster, 1½" - 3½" long, bluish-green or dark green stout, twisted, circular in cross-section.

Twigs
Fairly stout, brittle, dark yellowish-gray, smooth.

Fruit
Cones 1½" - 2½" long, short-stalked, solitary or in pairs, usually pointing backward, grayish or reddish color.

Bark
Scaly, peeling off in flakes from ridges separated by long shallow fissures. Lower trunk rough and grayish, upper trunk rather smooth and distinctly reddish.

General
Native to Europe, tolerant of various soil and moisture conditions but intolerant of shade. Typically reaching 70' in height it can attain 120' with a diameter of 3'-5'. Widely planted for reforestation and horticulture, with occasional escapes from cultivation. Older books sometimes call it Scotch pine.

SCARLET OAK
(QUERCUS COCCINEA MUENCHH.)

Leaves
Alternate, simple, 3"-6" long, with 7-9 narrow, bristle-tipped lobes, sinuses between the lobes go almost to the mid-rib. Shiny bright green above, paler and smooth beneath except for small tufts of hair in vein-axils; named for its scarlet autumn color.

Twigs
Reddish brown, smooth when mature. Buds blunt pointed, to 1/4" long, upper half wooly.

Fruit
An acorn, to 1" long, oval, light brown; kernel white and bitter, ripening over two growing seasons. Cup bowl-like, covering 1/2" of the nut; cup scales sharp pointed, smooth and tight.

Bark
Smooth and light brown for many years, older trunks are ridged, darker; inner bark reddish.

General
A medium to large sized tree to 75', of dry upland sites and many parks and streets. Drooping dead lower branches persist on the tree for many years. The acorns are important food for many mammals and larger birds. Fungus often infects Scarlet oaks as they reach medium size, rotting the wood.

COMMON SASSAFRAS
(SASSAFRAS ALBIDUM(NUTT.) NEES)

Leaves
Alternate, simple 4"-6" long, smooth, dark green above, much lighter beneath, characteristically aromatic when crushed. Usually three types can be found on a tree: entire, 2-lobed and 3-lobed (rarely 5-lobed).

Twigs
Bright green, sometimes reddish, smooth and shiny; large white pith. End bud much larger than side ones, with many loose scales.

Fruit
A berry, dark blue, shiny, about 1/2" in diameter, on a red stem enlarged at the point of attachment; borne in clusters. Yellow flowers appear before the leaves unfold.

Bark
Young trees furrowed, greenish, changing to brown; inner bark salmon colored; older trees show deep fissures extending long distances up the trunk.

General
A small to medium-sized tree, to 50' high, with crooked branches; often spreading by root suckers. Its roots, leaves, twigs and fruit have a spicy odor; the oil contained in these parts is used for a "tea," in medicines, perfumes, etc. Wood used chiefly for fuel and fence posts.

RED PINE
(PINUS RESINOSA AIT.)

Leaves
Evergreen needles in clusters of 2, slender, 4"-6" long, dark green, borne in dense tufts at the ends of the branchlets: snap easily when bent double.

Twigs
Stout, ridged, yellow-brown to red-brown, buds egg-shaped, about 1/2" long, brown at first and later silvery.

Fruit
A cone, about 2" long, without prickles, nearly stalkless, remains attached until the following year.

Bark
Comparatively smooth, reddish brown.

General
Like white pine, this medium to large-size tree developes one horizontal whorl of side branches each year. A valuable timber tree in the northern part of the state, its wood is used chiefly for construction lumber. Native on dry slopes in Luzerne, Wyoming, Tioga, and Centre counties and planted extensively by the Bureau of Forestry and the Pennsylvania Game Commission. Songbirds, mice and chipmunks feed on the seeds.

REDBUD
(CERCIS CANADENSIS L.)

Leaves
Alternate, simple, heart-shaped, 3"-5" long, margins entire.

Twigs
Slender, smooth light brown to gray-brown, with numerous small lenticels.

Fruit
A pod, rose-colored to light brown, 2½"-3" long by ½" wide, containing 6 egg-shaped, flattened, light brown seeds.

Bark
Thin, shallowly fissured, peeling into numerous scales, reddish-brown to very dark brown.

General
Usually a small tree, with a short trunk and branches forming a shallow, broad crown, 15'-20' high with a trunk diameter of 6", it has been known to reach 30' in Pennsylvania. Prized for its bright rose-colored flowers in early spring. Wild populations are limited to the southern half of the Commonwealth, but Redbud is successfully cultivated further north.

PITCH PINE
(PINUS RIGIDA P.MILL)

Leaves
Evergreen needles in clusters of 3, stiff, 2½"-5" long, yellowish green.

Twigs
Stout, brittle, rough, angled in cross-section, golden-brown. Buds egg-shaped, about ½" long, resinous, red-brown.

Fruit
Cones 1½"-3½" long with short, stiff prickles, nearly stalkless, often remains attached for 5 years or more after ripening. Many remain unopened until being heated by passing forest fire.

Bark
Green and smooth on young branches, thick, rough, grayish brown on older trunks.

General
Pitch pine is a medium sized tree, 40'-50' high. Widespread in Pennsylvania except the Northwestern counties it is more common on poor, sandy soils and areas where forest fires have killed most other trees. Its wood has a high resin content, and is used for railroad ties, construction lumber, pulpwood and fuel. Pitch pine seeds are important to nuthatches, Pine grosbeak and Black-capped chickadee. Deer and rabbits browse the seedlings.

MOCKERNUT HICKORY
(CARYA TOMENTOSA (LAM.EX POIR.) NUTT.)

Leaves
Alternate, compound, 8"-12" long with 7 to 9 leaflets, margins toothed, dark yellowish green above, brownish beneath with golden glandular dots, leaves very fragrant when crushed, the leaf stems finely hairy.

Twigs
Stout and hairy, reddish brown to brownish gray with numerous pale lenticels and distinct three-lobed leaf scars. Buds large, with 3 to 5 yellowish brown, densely hairy outer scales, end buds ½" to ¾" long.

Fruit
Nearly round to egg-shaped, 1½"-2" long, with a thick husk which splits into 4 pieces when ripe. The slightly ridged, thick shelled nut is reddish brown with a sweet kernel. Flowers in catkins, about May when the leaves are half-developed.

Bark
The gray to dark gray bark is tight when young and becomes shallowly fissured as the tree ages.

General
Mockernut hickory is so named because the nuts are large but with thick shells and very small kernels. Found in moist open woods and slopes mostly in the southern part of the state, it usually reaches 50'-75' high. A black dye can be extracted from the bark by boiling it in vinegar solution. As with other hickories, the wood is heavy, hard, and strong and used for tool handles and furniture.

AMERICAN LARCH
(LARIX LARCINA (DUROI) K.KOCH)

Leaves
Needles not evergreen; occur singly near the ends of the twigs, elsewhere in clusters of 10 or more; about 1" long, pale green, turning yellow and falling from the tree during the autumn.

Twigs
At first covered with a bluish white coating, becoming dull brown and with numerous short spurs. Buds round, small, 1/16" long, dark red.

Fruit
A cone, about 3/4" long, egg-shaped, upright, often remains attached for several years after ripening in the fall.

Bark
Smooth at first, later becoming scaly, dark brown.

General
A medium-sized tree also known as Eastern larch and Tamarack. Only cone-bearing tree native to Pennsylvania that loses its needles annually. Found locally in moist situations. Wood used chiefly for paper pulp, lumber, posts and railroad ties. European larch (L. decidua) and Japanese larch (L. leptolepis) are more commonly planted in the state.

FLOWERING DOGWOOD
(CORNUS FLORIDA L.)

Leaves
Opposite, simple, 3"-5" long; clustered toward tips of twigs; margins smooth or wavy; veins prominent and curved like a bow. Foliage bright red in autumn.

Twigs
Red tinged with green, often with a bluish white powdery coating; marked with rings; tips curve upward. End leaf bud covered by 2 reddish scales; side leaf buds very small; flower buds conspicuous, silvery, button-shaped, at ends of twigs.

Fruit
An egg-shaped drupe, 1/2"-3/5" long; coat red; flesh yellowish; stone grooved, 2-celled; usually in clusters of 2-5; persist after the leaves fall. Flowers greenish white or yellowish, small, in flat-topped clusters; four showy white bracts underneath; open before the leaves.

General
Bark red-brown to reddish gray, broken by fissures into small blocks, like alligator hide. A small native tree with low spreading crown, especially valued for ornamental planting. Wood used primarily for textile weaving shuttles. There is a variety with red or pink bracts.

FIRE CHERRY
(PRUNUS VIRGINIANA L.)

Leaves
Alternate, simple, 3" - 5" long, with tapering or rounded base and sharp-pointed tips, sharply toothed margins, shining green and smooth on both sides.

Twigs
Slender, smooth, glossy bright red, sometimes with a thin grayish coating, marked with numerous pale conspicuous lenticels which become horizontally elongated.

Fruit
Juicy, light red drupes ¼" in diameter, tipped with parts of the persistent style, thin-skinned with sour flesh, maturing in early fall. Flowers in May, white, about ½" across, in clusters of 4 or 5.

Bark
Young trunks reddish brown, rather smooth with large horizontally elongated lenticels, older trunks roughened but not fissured. The outer bark peels off in thin film-like layers revealing green inner bark.

General
Also called pin cherry, this shrub or small tree reaches 40', the trunk usually short and branches forming a narrow flat-topped crown. Common in the mountainous sections of the state, rare in the southeast and southwest corners. A valuable reforestation species after fire or limbering clears the land. It provides shade for seedlings of other tree species which follow it in succession and the fruits are food for many birds and small mammals. Deer browse the twigs and young leaves.

EASTERN WHITE PINE
(PINUS STROBUS L.)

Leaves
Evergreen needles in clusters of 5, soft flexible, 3-sided, 2½"-5" long, and bluish green. This is the only pine native to Pennsylvania with 5 needles per cluster.

Twigs
Slender, flexible, with rusty hairs when young, later smooth. Buds egg-shaped, usually less than ½" long, gray-brown.

Fruit
Cones 5"-8" long, without prickles, slightly curved, resinous; each scale usually bears 2 winged seeds as do all our native pines.

Bark
Young trunks and branches greenish brown, later darker grooved and scaly.

General
Eastern white pines are large trees. At present they usually reach 50'-90' high but the original "Penn's Woods" saw white pines reaching 150' and more. It is one of the most valuable timber trees, found in moist or dry woodlands throughout the state and often planted as an ornamental in large open areas. Many birds, squirrels, chipmunks and mice feed on the seeds and soft needles. Inner bark of white pine is a preferred winter food of porcupine and deer browse the twigs.

EASTERN HEMLOCK
(TSUGA CANADENSIS (L.) CARR.)

Leaves
Evergreen needles occur singly, appearing 2-ranked on twigs, flattened, about 1/2" long, dark green and glossy, light green with 2 white lines below.

Twigs
Slender, tough, yellowish brown to grayish brown. Buds eggshaped, 1/16" long, reddish brown.

Fruit
Cones 3/4" long, egg-shaped, hanging singly from the tips of twigs. Under each scale are 2 small, winged seeds.

Bark
Flaky on young trees, gray brown to red brown, thick and roughly grooved when older.

General
A large, long-lived tree, important for construction timber and as a source of tannic acid for tanning leather. Found in cool, moist woods throughout the Commonwealth, Eastern hemlock is the offical state tree of Pennsylvania. Ruffled grouse, wild turkey and songbirds find food (seeds) and shelter in this tree. Deer browse it heavily when deep snow makes other food scarce.

CHOKE CHERRY
(PRUNUS VIRGINIANA L.)

Leaves
Alternate, simple, 2"-4" long, tapering or rounded at the base, abruptly pointed tips and sharply serrate margins, bright green above, paler beneath.

Twigs
Stout, smooth, light brown to reddish brown, with numerous yellowish lenticels. Unlike Fire cherry, the lenticels are not evidently horizontally elongated. Bruised twigs have a disagreeable odor.

Fruit
A juicy, dark red to black drupe, about ½" in diameter, in open, elongated, drooping clusters. The flavor is harsh and astringent.

Bark
Young trunks shiny, smooth, brownish, peeling off in thin film-like layers exposing the green inner bark. Older trunks dark gray, roughened by shallow fissures.

General
A fast-growing but short-lived shrub or small tree, rarely exceeding 25'. Found in a variety of open habitats, thickets, roadsides and upland woods throughout the Commonwealth, but more abundant in the western counties. One of the first species to revegetate cleared areas, it is attractive in spring flower and provides food to several dozen species of birds and mammals.

BLACK WALNUT
(JUGLANS NIGRA L.)

Leaves
Compound, alternate; leaflets 15 to 23, each 3"-4" long, small-toothed; dark yellow-green above, paler, hairy below. End leaflet absent or very small. Main leaf-stem with very fine hairs.

Twigs
Stout, orange-brown to dark brown, roughened by large leaf scars, easily broken; pith pale brown, chambered. Buds gray, downy; side buds 1/6" long, end bud larger.

Fruit
A round nut, 1"-2" in diameter, shell rough, covered with a thick, almost smooth, green spongy husk; oily kernel sweet. Flowers in drooping green catkins, appearing with the unfolding leaves, which is also true of butternut.

Bark
Dark brown to gray-black, with narrow ridges.

General
A large-sized tree, found locally on rich soils mainly in the southern part of state. Wood valuable for quality furniture, veneer, gun stocks and musical instruments.

AMERICAN BEECH
(FAGUS GRANDIFOLIA EHRH.)

Leaves
Alternate, simple, 3"-4" long, stiff leathery texture, with a tapered tip and sharply toothed margins, light green and glossy above, yellow green below.

Twigs
Slender, dark yellow to gray, at first hairy, later smooth, zigzag. Buds very long slender sharp-pointed, covered by 10-20 reddish-brown scales.

Fruit
A stalked, prickly 4-valved bur containing triangular, pale brown, shining nuts.

Bark
Smooth, light gray mottled with dark spots.

General
Found on moist rich soils throughout the Commonwealth but more abundant in the north. An important timber species typically reaching 50'-60' high but can be higher. The beechnuts are very important food for wildlife including bears, squirrels, turkeys, and grouse. Beech is a handsome shade tree for large open areas in parks and golf courses.

WITCH HAZEL
(HAMAMELIS VIRGINIANA L.)

Leaves
Alternate, simple, oval, 4"-6" long, rounded to acute at the tips, oblique at the base; margins dentate; dark green above, paler beneath midrib and primary veins prominent.

Twigs
Zigzag, light-brown with small light green pith, rather slender, often downy or scaly especially near the end, but sometimes smooth and shiny, with a few scattered, white lenticels.

Fruit
A yellowish-brown woody pod holding two shiny black seeds, ripens in October-November of the year following fertilization, at the same time as the current year's blossoms appear. Flowers with bright yellow strap-shaped petals. Ripe pods burst open throwing the seed five feet or more.

Bark
Light brown somewhat mottled, when young smooth, later scaly. Inner bark reddish purple.

General
A small tree or large shrub, to 25' high, tolerant of shade. Found in moist, rocky locations throughout the Commonwealth, occasionally ascending slopes to rather dry sites. A medicinal extract is distilled from the bark.

GLOSSARY

Axil - The upper angle where a leaf stalks joins the stem or a smaller stem joins a larger one.

Alternate - One leaf attached at each node. See opposite and whorled.

Capsule - A dry fruit which contains more than one seed and splits open when ripe.

Catkin - A compound bloom consisting of scaly bracts and flowers usually of one sex.

Deciduous - Refers to trees which drop their leaves in autumn. Compare to evergreen.

Downy - With very short and weak soft hairs.

Drupe - A type of fruit having a single seed enclosed in a hard layer and that is covered with soft, often juicy flesh, as in cherries and peaches.

Evergreen - A plant that retains green leaves throughout the year. Life span of an individual leaf can be 2-15 years.

Leaflet - A leaf-like portions of the blade of a compound leaf. There is no bud in the axil of its petiole.

Leaf Scar - The impression in a twig at the point where a leaf was attached.

Lenticel - A pore in the bark of young trunks and branches through which air passes to interior cells.

Lobe - A division or projecting part of the blade of a leaf.

Opposite - Two leaves attached at each node. See alternate and whorled.

Pedicel - The stalk of a flower or inflorescence.

Petiole - The stalk attaching a leaf blade to the stem.

Pith - The spongy material in the center of twigs and young trunks.

Sessile - Refers to a plant part having its base attached directly to the stem without an intervening stalk.

Stalked - Refers to a leaf or flower having a length of petiole or pedicel between its base and the stem. See sessile.

Witches'-broom - Abnormal brushy growth of small branches caused by an infection.

Whorled - Three of more leaves or other parts attached to a stem at the same point.

(A) Information Obtained From DCNR Internet Site – Tress of Pennsylvania

APPENDIX J

DESCRIPTION OF SELECTED SPECIES OF CONCERN FOUND IN THE CORRIDOR [(A)]

WOODRAT

Identifying Characteristics
The eastern woodrat is an eastern relative of the much better known packrat of the West. It is buff gray above, with white underparts and paws. An adult averages just over a pound, and 17-inches in length, including an 8-inch tail. Its ears are large and may appear naked. The eastern woodrat is distinguished from the Norway rat – the only animal in Pennsylvania for which it may be confused – by its hairy, bi-colored tail; the Norway rat has a naked tail.

Biology Natural History
This animal is found along the Appalachian Mountains, from northern Alabama to northeastern New Jersey. In Pennsylvania the eastern woodrat was historically found throughout the mountainous parts of the state, but recent surveys indicate its range here has diminished, with most colonies found west of the Susquehanna River. Characteristic toilet areas most often determine the presence of eastern woodrats. Less frequently, surveyors find their bulky nests made of twigs and bark, built on ledges or in caves, or piles of fresh herbaceous vegetation stored under rock overhangs. The breeding season runs from February until September, during which up to three litters containing two or three young each may be produced.

Preferred Habitat
The eastern woodrat does not thrive around civilization. It prefers rock strewn sites, usually mountaintops and valley sides. There, a canopy, a cave or boulders provide the network of subsurface crevices that shelter woodrats. This and their nocturnal habits make the woodrats largely unknown among the general public.

Reasons for Being Threatened
The eastern woodrat has been classified as threatened because populations have suffered significant declines across the northern part of its range. The woodrat is no longer found in Connecticut and New York. In Pennsylvania, they are absent from many historic sites, particularly in the eastern part of the state. Where they persist, their numbers are low.

Management Programs
Little is known about the woodrat's requirements. Before any management procedures can be developed, more detailed life history characteristics need to be learned, including more precise information concerning its movements, habitat requirements, and the reasons for its apparent decline.

OSPREY

Identifying Characteristics

Ospreys are large, striking, fish-eating birds of prey most often seen around water. They may exceed 24 inches in length and sport wingspans approaching six feet. Ospreys are dark brown above, bright white below, with some brown streaking across the breast. Key identification characteristics are the prominent dark eye stripes, black patches at the crooks of bent wings, and a characteristic silhouette.

Biology Natural History

The osprey is one of the world's most widely distributed birds. They are found along seacoasts and major waterways on every continent except Antarctica. They prey almost exclusively on fish. Ospreys nest in colonies or singly. Their stick nests are large and usually built near water. A breeding pair adds to the nest every year it's occupied. They usually nest in large trees, but they may be found nesting on channel markers, telephone poles, chimneys and man-made platforms built specifically for their use. Usually three eggs are laid.

Preferred Habitat

Ospreys may be found anywhere around open water containing adequate fishing opportunities. In recent years, ospreys have produced young in the Pocono and lower Susquehanna Valley regions of the state, and Somerset County. During spring and summer, non-breeding sub-adults can be found throughout the state.

Reasons for Being Endangered

In the early 1900s ospreys nested along the state's rivers and streams, but habitat destruction and water pollution made these areas unsuitable. Osprey populations were further decimated through the effects of pesticides on their reproductive capabilities.

Management Programs

Between 1980 and 1986, 111 ospreys – obtained as nestlings from burgeoning Chesapeake Bay populations – were hand-reared and released in northeastern Pennsylvania. From 1982 to 1990, more than 30 of these released birds returned as adults and built nests. Through 1990, these birds produced 49 young.

Similar releases in Tioga and Butler counties, at the rate of 8 to 12 young per year through 1994, should help extend the breeding population of ospreys farther westward along the headwaters of the Susquehanna and Allegheny. Concurrently, the Chesapeake Bay population is expanding up the Susquehanna River. Management includes monitoring, nest site protection and erection of artificial nest platforms.

LARGE FLOWERED MARSHALLIA

Identifying Characteristics
Large flowered Marshallia has single, long-stalked flowerheads composed of pink or lavender, tubular blossoms with blue anthers. The larger leaves are thick, with three main veins. The flowering stems can be 10 to 36 inches high.

Biology Natural History
Large flowered marshallia is a perennial member of the Aster Family (Asteraceae). It blooms in June and July. There are four species of Marshallia in the United States, but only this species is found this far north. As its name suggests, this species has the largest flowers of the four.

Preferred Habitat
In Pennsylvania, this plant grows only in crevices of flood-scoured rock shelves and cobble/sand banks of the Youghiogheny River. The regular flood cycles of the river may be necessary to prevent competing grasses and shrubs from taking over the sites and squeezing out Marshallia. It is found in similar habitats in West Virginia, Kentucky and Tennessee.

Reasons for Being Endangered
All 12 Pennsylvania populations are in one river system. Consequently, they are extremely vulnerable because any activity, such as dam construction, could destroy most of the individuals. Other water projects and recreational uses of the river could also impact these plants. Plant populations that occur in state park high-use areas are subject to trampling and collection. Marshallia grandiflora is in jeopardy throughout its natural range. It is no longer found in Maryland and North Carolina, is listed as endangered in Kentucky and Tennessee, and is considered threatened in West

Management Programs
The USF&WS lists this plant as a candidate for federal protection. The Bureau of State Parks--the agency responsible for most of the plant populations, is preparing plans that recognize the importance of protecting endangered plant species. Environmental assessment using PNDI will help to avoid potential impact to the plants by state projects and permitted activities.

(a) Information Obtained From DCNR Internet Site

Microbac Laboratories, Inc.
Microbac Inc.-Pgh Division
100 Marshall Dr.
Warrendale PA 15086
(724)772-0610

NOV 1 1999

AIR • FUEL • WATER • FOOD • WASTES

CERTIFICATE OF ANALYSIS

PAUL C. RIZZO ASSOCIATES
Mr. Mark Lazzari
105 Mall Boulevard
Suite 270 East
Monroeville PA 15146

Date Reported 10/28/99
Date Received 10/11/99
Order No 9910-00311
Invoice No 036961
Cust # BP112
Sampled Date 9/30/99
Sampled Time 00:00

Permit No
Cust P.O.

Subject: 99-1978/Mid Yough - Water Sample for Analysis

SMP	TEST	METHOD	RESULT	UNITS	DATE	TECH
1	5 / Ram Cat Run (P99-1362) Collected 9/30/99 @ 12:15					
	Acidity (as CaCO3)	EPA 305.1	<2	mg/l	10/08/99	PJW
	Alkalinity (as CaCO3)	SM18 2320	12.2	mg/l	10/18/99	JGR
	Dissolved Oxygen	EPA 360.1	10.8	mg/l	10/01/99	PJW
	PH	EPA 150.1	6.61	su	10/01/99	PJW
	Sulfate	EPA 375.4	13	mg/l	10/21/99	RDB
	Iron	EPA 200.7	0.20	mg/l	10/05/99	JAP

Approved By Laboratory Director: Daniel J. Davis

Sample ID: DUNBAR CREEK
Lab ID: P9133401
e Collected: 09/24/99
Time Collected: 10:00

Date Received: 09/27/99
Project No: PA7A6737
Client No: L70354
P.O. No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Iron - Total	0.13		0.050	MG/L	200.7	09/29/99	JAP
Wet Chemistry Analysis							
Total Alkalinity (Methyl Orange)	58.0		2.0	MG/L	310.1	09/30/99	PJW
Total Acidity - Phenolphthalein	<2.0	U	2.0	MG/L	305.1	10/08/99	PJW
Sulfate	68.0		1.0	MG/L	375.4	10/12/99	LLS
pH	7.49		1.00000	S.U.	150.1	09/24/99	PJW
Dissolved Oxygen	10.2		1.0	MG/L	360.1	09/24/99	RDB

Sample ID: DISCHARGE TO DUNBAR
Lab ID: P9133402
Date Collected: 09/24/99
Time Collected: 10:45

Date Received: 09/27/99
Project No: PA7A6737
Client No: L70354
P.O. No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Iron - Total	3.5		0.050	MG/L	200.7	09/29/99	JAP
Wet Chemistry Analysis							
Total Alkalinity (Methyl Orange)	95.0		2.0	MG/L	310.1	09/30/99	PJW
Total Acidity - Phenolphthalein	<2.0	U	2.0	MG/L	305.1	10/08/99	PJW
Sulfate	92.0		1.0	MG/L	375.4	10/12/99	LLS
pH	6.55		1.00000	S.U.	150.1	09/24/99	PJW
Dissolved Oxygen	8.8		1.0	MG/L	360.1	09/24/99	RDB

Sample ID: BRUNER RUN
Lab ID: P9133403
Date Collected: 09/24/99
Time Collected: 13:00

Date Received: 09/27/99
Project No: PA7A6737
Client No: L70354
P.O. No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Iron - Total	0.046		0.050	MG/L	200.7	09/29/99	JAP
Wet Chemistry Analysis							
Total Alkalinity (Methyl Orange)	8.4		2.0	MG/L	310.1	09/30/99	PJW
Total Acidity - Phenolphthalein	3.3		2.0	MG/L	305.1	10/08/99	PJW
Sulfate	15.0		1.0	MG/L	375.4	10/12/99	LLS
pH	6.70		1.00000	S.U.	150.1	09/24/99	PJW
Dissolved Oxygen	9.6		1.0	MG/L	360.1	09/24/99	RDB

Sample ID: MEADOW RUN
Lab ID: P9133404
Date Collected: 09/24/99
Time Collected: 13:35

Date Received: 09/27/99
Project No: PA7A6737
Client No: L70354
P.O. No:

Parameter	Result	Flag	Detection Limit	Units	Method	Date/Time Analyzed	Analyst
Metals Analysis							
Iron - Total	0.053		0.050	MG/L	200.7	09/29/99	JAP
Wet Chemistry Analysis							
Total Alkalinity (Methyl Orange)	50.0		2.0	MG/L	310.1	09/30/99	PJW
Total Acidity - Phenolphthalein	<2.0	U	2.0	MG/L	305.1	10/08/99	PJW
Sulfate	23.0		1.0	MG/L	375.4	10/12/99	LLS
pH	7.50		1.00000	S.U.	150.1	09/24/99	PJW
Dissolved Oxygen	11.0		1.0	MG/L	360.1	09/24/99	RDB

APPENDIX L

PROPOSED ACCESSIBILITY GUIDELINES FOR RECREATION FACILITIES: AN OVERVIEW [A]

Under the Americans with Disabilities Act (ADA), the Access Board recently published guidelines for recreation facilities which are available for public comment. Presented here are highlights of these guidelines.

The proposed guidelines would add a new chapter on recreation facilities to the ADA Accessibility Guidelines (ADAAG). Like ADAAG itself, this chapter would address only those facilities that are *newly built* or *altered*. (Generally, existing facilities while subject to certain ADA requirements, are not addressed by ADAAG except where altered). The guidelines provide scoping requirements, which indicate *what* is to be accessible, and technical requirements, which explain *how* to achieve access. The guidelines address:

- Boating facilities;
- Fishing piers and platforms; and
- Sports facilities.

Why were these guidelines developed?

While ADAAG addresses various types of facilities, it does not specifically address many recreation facilities in particular detail. The Access Board determined that various types of recreation facilities needed to be specifically addressed since many questions arose as to how certain requirements should be applied and to what degree.

How were these guidelines developed?

The proposed guidelines are based largely on recommendations prepared by the Recreation Access Advisory Committee, which the Board had established for this purpose. These recommendations are contained in a report, *Recommendations for Accessibility Guidelines: Recreational Facilities and Outdoor Developed Areas*, which the Board has made widely available as a source of guidance until guidelines are developed. The Board's guidelines, like most other Federal regulations, are developed under a process that invites public comment through publication in the *Federal Register*. Once public comment has been reviewed and changes made to the guidelines as necessary, the Board will republish the guidelines in final form. The Board's final guidelines serve as the basis of standards the Department of Justice (DOJ) uses to enforce the ADA's design requirements.

Boating Facilities (15.2)

The dynamic interface between land and water presents unique and significant challenges to access criteria for floating facilities. Criteria for gangways take these constraints into account. The rule applies ADAAG requirements for accessible routes (4.3) and ramps (4.8) but provides exceptions to criteria for maximum rise and slope, handrail extensions, and level landings. The

key challenge to slope is the variable vertical difference due to changing water levels. In some environments, this fluctuation can be drastic. Significant vertical changes would make gangways exceptionally long if held to the maximum 1:12 slope. The exception for slopes is based on distance between the water level and the "design high point" (the practical upper limit for the design of a gangway) and the size of the boating facility (total square footage) as shown in the table.

Vertical Level Change*	Total Pier Area
> 2.5 ft	< 3,000 sq ft
> 5 ft	< 10,000 sq ft
> 10 ft	< 20,000 sq ft
> 12.5 ft	< 30,000 sq ft
> 30 ft	< 95,000 sq ft
*Distance between water level and design high point	

The guidelines would require at least 3 percent of boat slips to be accessible and dispersed among the different types provided on a site. (Where the number of boat slips cannot be identified, access then would be required at every 40 feet of mooring space along the perimeter of a pier).

A question asks whether the exception for slopes should also take into account the size of vessels a gangway is designed to accommodate (#5).

Fishing Piers and Platforms (15.3)

This section addresses guardrails and edge protection on fishing piers and platforms. Railings, guardrails, and handrails are *not* required by the guidelines. However, where they are provided, a portion (25 percent minimum) cannot be more than 32 inches high so that the railings do not obstruct fishing for people using wheelchairs. Lowered railings are required to be dispersed throughout a fishing facility. Edge protection at least 2 inches high from the deck or ground surface is required where railings, guardrails, or handrails are provided. This prevents wheels of mobility aids from slipping over the edge. Proposed criteria also address wheelchair space and maneuvering space on platforms and piers.

Play Areas (15.6) [Reserved]

Requirements for play areas were proposed separately in April 1998. The Board is currently finalizing these guidelines based on the comments received last summer and will issue a final rule separately.

(a) Information Received From ADA

APPENDIX M

IMPORTANT RESOURCES AND INFORMATION SOURCES

Pa Geologic Survey-Library
P.O. Box 8453
Harrisburg PA 17105-8453

Fayette County Conservation District
10 Micken Plaza
Lamont Furnace PA 15456
(724) 438-4497

David A. Steele
Somerset Conservation District
1590 N. center Ave., Suite 103
Somerset PA 15501
(814) 445-4652
Fax (814) 443-1592

Terry Ackman
626 Cochrans Mill Rd.
P.O. Box 10940
Pittsburgh PA 15236-0940
(412) 892-6566

Rick Beam
Pam Milavick
BAMR
122 South Center St.
P.O. Box 149
Ebensburg PA 15931
(814) 472-1800

Tim Dreier
PA DEP
400 Waterfront Drive
Pittsburgh PA 15222-4745
(412) 442-4000

Rita Coleman
PA DEP –Watershed Corridator
400 Waterfront Drive
Pittsburgh PA 15222-4745
(412) 442-4149

PA Fish and Boat Commission
P.O. Box 67000
Harrisburg PA 17106

Doug Hoehn
Ohiopyle State Park
Parks and Recreation Manager
Bureau of State Parks
P.O. Box 105
Ohiopyle PA 15470
(724) 329-8591

DCNR-Bureau of Forestry
PNDI Inventory
Jeanne Brennan
400 Market St.
Harrisburg PA 17105

DCNR-Bureau of Recreation and Conservation
P.O. Box 8475
Harrisburg PA 17105

Bureau of Historic Sites and Museums
P.O. Box 1026
Harrisburg PA 17108

Fayette County Planning Commission
Office of Community and Economic Development
61 East Main St.
Uniontown, PA 15401
(724) 430-1210

Department of Interior
Geological Survey
P.O. Box 25286
Federal Center
Denver CO 80225

Department of Environmental Protection
Harrisburg, PA 17105
Bureau of:

- Air Quality
- Land Recycling and Waste Management
- Water Supply and Management
- Water Quality Protection
- Watershed Conservation
- Waterways Engineering
- Mining and Reclamation
- Abandoned Mine Reclamation

Division of:

- Municipal and Residual Waste
- Waste Minimization and Planning
- Conservation Districts and Nutrient Management
- Wastewater Management
- Waterways, Wetlands, and Erosion Control
- Dam Safety

Penn Dot District 12
Engineering District 12-0
P.O. Box 459
North Gallatin Ave. Ext.
Uniontown PA 15401-0459

Mike Koryiak
US Corps of Engineers
Federal Office Building
1000 Liberty Ave.
Pittsburgh PA 15222
(412) 395-7100 x7365

Somerset County Planning Commission
Bradely A. Zearfoss, AICP
165 East Union Street, Suite 200
Somerset PA 15501-1418
(814) 445-1544

Jim Mays
DCNR
River Conservation Plan Coordinator
(717) 783-8526

Jo Lofstead
Aid to Bill Dewise
(724) 785-8477

Edwin L. Deaton
(717) 787-6674
Chief of Planning
Bureau of State Parks

Fayette Forward
Environmental Action Committee
Craig Cheselske
(724) 329-4898

Abbey Falcone
(412) 442-5219
Biologist
Statewater Plan

Mayor's Office
Confluence Borough
323 Sterner Street
Confluence PA 15424

Confluence Borough Council
350 Garrett Street
Confluence PA 15424

Connellsville Township Supervisors
McCoy Road
Connellsville PA 15425

Mayor's Office
Dunbar Borough
9 York Street
Dunbar PA 15431

Dunbar Township Supervisors
171 Oglevee Lane
Dunbar PA 15425

Henry Clay Township Supervisors
RD 1 Box 85-H
Markleysburg PA 15459

Springfield Township Supervisors

PO Box 13
Mill run PA 15464

Stewart Township Supervisors
PO Box 13
Mill Run PA 15464

Henry Clay Township Supervisors
PO Box 95
Ohiopyle PA 15470

Ohiopyle Borough Council
PO Box 83
Ohiopyle PA 15470

Wharton Township Supervisors
Elliottsville Road
PO Box 1
Farmington PA 15437

South Connellsville Borough
Mayor's Office
2020 Fourth Street
South Connellsville PA 15425

South Connellsville Borough Council
1503 S. Pittsburgh Street
South Connellsville PA 15425

Important Internet Web Sites:

Pennsylvania Department of
Environmental Protection (PA DEP)
www.dep.state.pa.us/

Pennsylvania Game Commission
www.state.pa.us/PA_Exec/PGC/

Environmental Protection Agency
www.epa.gov

US Army Corps of Engineers
www.usace.army.mil/

Pennsylvania Department of
Conservation and Natural Resources (PA DCNR)
www.dcnr.state.pa.us/
Links to Other Resources

- Fall in PA
- Keystone Trails Association
- Commonwealth of PA Home Page
- Pennsylvania Visitor's Guide
- USGS Current Streamflow Conditions
- The Pennsylvania Elk Herd
- PA State Data Center
- Environmental Education Link
- National Tree Trust

Pennsylvania Fish and Boat Commission
www.state.pa.us/PA_Exec/Fish_Boat
Links of Interest to Anglers and Boats

- PFBC Law Enforcement
- Wild Resource Conservation Fund
- National Safe Boating Council
- U.S. Fish and Wildlife Service
- Great Lakes Sport Fishing Page
- American Sportfishing
- Boating.com
- Fishing.com
- Flyfishing.com
- Pennsylvania Fly Fishing
- Pennsylvania Wildlife federation
- Pennsylvania Council Trout Unlimited
- Traditional Anglers of Pennsylvania
- International Game Fish Association
- Pittsburgh Herpetological Society
- Surf Your Watershed
- Lake Erie Levels and Weather

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

COMMENT SHEET

(1) Name: RANDY C. BROWN Phone: (optional) (724) 628-7536

Address: (optional) 213 W. FAYETTE ST.
CONNELLSVILLE, PA. 15425

(2) Comprehensive description of your comment, issue, or question:

(1) My CONSERN IS OVER-USE, AND DEVELOPEMENT OF the Yough RIVER, AND its TRIBUTARY'S, AS a TOURIST ATTRACTION, AND COMMERCIAL CASH GENERATOR AT NO COST to the BENIFACTOR!

By INCRESING ACCESS to this FRAGIL ENVIRO-MENT, WITHOUT the MANPOWER OR FINACIAL MEANS to KEEP it CLEAN. CAN ONLY REGRESS the IMPROVEMENTS MADE PAST YEAR'S. (SUPPLEMENTAL COMMENT ATTACHED) *

(2) WATER AUTH. Dam LOCATED AT SO. CONNELLSVILLE IS IMPEADING the NATURAL MIGRATION of all FISH. Should be STUDIED to DETERMINE IMPACT ON MIDDLE Yough RIVER (GOOD OR BAD)

(3) Location or other specifics that can be used to pin-point issue:

"THE BEACH" LOCATED above WATER AUTH DAM USED by MANY SWIMMER'S (litter, parking, ALCOHOL DRUGS, ECT.) Problem

* *Only input submitted in writing will be addressed in the Final River Conservation Plan.* *

Please return this sheet at the end of the meeting to our representative or mail to:

Paul C. Rizzo Associates
Attn: Mark W. Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999

CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED
COMMENT SHEET

(2) Comprehensive description of your comment, issue, or question: (supplemental)

YOUGH RIVER RAPE

With the help of the D.E.P.,Fish & Boat Commission, PA Game Commission and many other watershed groups and volunteers, the Yough River has re-emerged to be a potential pristine natural resource and cold water fishery.

As this resource attempts to cleanse itself of past intrusion, it is now attractive to other groups or enterprise's seeking to (cash-in) with renewed interest.

I cannot see the Yough River being isolated from this intrusion, therefore I propose a state or local government be commissioned to oversee the following.

1. Any new user of the Yough River, or tributaries to the Yough
   a. Post Bond to insure there enterprise can handle clean-up, sewage, soil erosion, defilement, ect. of said use.
2. Any existing user submit in writing, (20 or more users per)
   a. There activity and purpose ,and how they intend to enforce detrimental environmental impact to the Yough River.

3. Any commercial use of water from the Yough River and it's tributary's, whether recreational or municipal be taxed at 2% gross income, to be put in a fund to maintain and enhance the quality of water and ground in the Yough River or it's tributaries.

Randy C. Brown

7-31-99

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

COMMENT SHEET

(1) Name: ROGER W. UHAZIE Jr. Phone: (724) 628-0204 (optional)

Address: 185 MORRELL ROAD (optional)
DUNBAR, PA. 15431

(2) Comprehensive description of your comment, issue, or question:

RIVER ACCESS: VERY FEW AREAS CAN BE ACCESSED BETWEEN CONFLUENCE AND SOUTH CONNELLSVILLE. BRUNNER RUN AREA IS RESTRICTED BY PARK SERVICE GUIDELINES. INDIAN CREEK AREA (AT OPPOSITE) CAMP CARMEL IS NOT AN OPTION BECAUSE OF VANDALISM PROBLEMS. LACK OF ENFORCEMENT PERMITTS ILLEGAL ACTS SUCH AS DRINKING, DRUGS, AND OPERATING 4-WHEEL DRIVE VEHICLES AND ATV'S IN AND THROUGH INDIAN CREEK IN THE HAWKINS HOLLOW AREA TO OCCUR ALL TOO FREQUENTLY, ACCESSING RIVER PRIMARILY FROM THE BIKE TRAIL THROUGHOUT THE SURVEY AREA DOES LITTLE FOR THE ELDERLY & HANDICAPPED.

(3) Location or other specifics that can be used to pin-point issue:

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PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

PAGE 2

COMMENT SHEET

(1) Name: ROGER W. UHAZIE Jr. Phone: (724) 628-0204 (optional)

Address: (optional) 185 MORRELL ROAD
DUNBAR, PA. 15431

(2) Comprehensive description of your comment, issue, or question:

WATER QUALITY CONTINUED: NEED TO DETERMINE THE DOWNSTREAM EFFECT OF THE NITROGEN PROBLEM AT THE DISCHARGE OF THE HYDRO PLANT. BECAUSE OF THE RIVERS LOW ALKALINITY, WHAT EFFECT WOULD REDUCED FLOW RATES HAVE IF AN INUNDATION OCCURED OF ACID MINE WATER SUCH AS THAT FROM THE CASSELMAN RIVER 4-5 YEARS AGO.

(REDUCED FLOW RATES FROM YOUGHIOGHENY LAKE PROPOSED BY MUNICIPAL AUTHORITY OF WESTMORELAND COUNTY)

NOTE! THE PROPOSED REALLOCATION STUDY BY CORPS. OF ENGINEERS AND MAWC COULD PRODUCE RESULTS THAT WILL IMPACT ANY DECISIONS MADE PRIOR TO STUDY BEING COMPLETED.

(3) Location or other specifics that can be used to pin-point issue:

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MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

COMMENT SHEET

(1) Name: ROGER W. UHAZIE Jr. Phone: (724) 628-0204 (optional)

Address: 185 MORRELL ROAD (optional)
DUNBAR, PA. 15431

(2) Comprehensive description of your comment, issue, or question:

MONITORING: MONITORING STATION SHOULD BE ESTABLISHED THROUGHOUT THE WATERSHED TO PINPOINT PROBLEM AREAS. COORDINATION WITH CORPS. OF ENGINEERS SHOULD BE MADE TO SEE IF THEIR CURRENT GAUGES AND MONITORS COULD BE PART OF AN EXPANDED SYSTEM THAT WOULD INCLUDE ADDITIONALS MONITORS THAT WOULD TRANSMITT DATA TO INCLUDE ALL THAT IS NOW BEING CAPTURED; I.E. ALL MONITORS WOULD BE CAPABLE OF (1) FLOW DATA (2) PH (3) WATER TEMPERATURE (4) DISSOLVED OXYGEN (5) ANY OTHER CONTITIONS THAT COULD EFFECT WATER QUALITY - DETERMINED BY STUDY

(3) Location or other specifics that can be used to pin-point issue:

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MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

PAGE 1

COMMENT SHEET

(1) Name: ROGER W. UHAZIE Jr. Phone: (724) 628-0204 (optional)

Address: (optional) 185 MORRELL ROAD
DUNBAR, PA. 15431

(2) Comprehensive description of your comment, issue, or question:

WATER QUALITY: SURVEY SHOULD ADDRESS ALL FACTORS THAT COULD AFFECT WATER QUALITY EXAMPLES: COMPARE RESULTS FROM PREVIOUS STUDIES TO CURRENT INFORMATION AVAILABLE FOR EFFECTS OF (1) ACID MINE DRAINAGE (2) SEWAGE (3) SEDIMENT (4) DISSOLVED OXYGEN LEVELS BEFORE AND AFTER HYDRO PLANT WAS INSTALLED TO DETERMINE DOWNSTREAM EFFECTS. (5) HOW HAS TEMPERATURE CHANGES AND REDUCED FLOW RATE FOR CY 98 & 99 AFFECTED WATER QUALITY - EXCESS ORGANIC MATTER? (6) WHAT IS OCCURING OR PLANNED FOR THE YOUGHIOGHENY LAKE THAT MAY AFFECT WATER QUALITY OR DOWNSTREAM RELEASE? (A) WATER RETENTION FOR WATER AUTHORITIES (B) REDUCED FLOW FROM PRIMARY FEED - YOUGH. RIVER FROM MARYLAND.

(3) Location or other specifics that can be used to pin-point issue:

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Attn: Mark W. Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

February 19, 1999
2095 Humbert Road
Confluence, PA 15424

Chestnut Ridge Chapter
Trout Unlimited
P. O. Box 483
Uniontown, PA 15401

Gentlemen,

I understand that the Chestnut Ridge Chapter is soliciting comments on the Rivers' Conservation Plan and would appreciate you submitting my comments both as a member of Trout Unlimited, and the Youghiogheny Riverwatch, to the appropriate authority.

There are a number of problems on the upper watershed, being the Laurel Hill Creek, Casselman River, and Youghiogheny River, in the Confluence area.

I would like to address each body of water separately.

1. LAUREL HILL CREEK -- Laurel Hill Creek is a high quality cold water fishery, running through state park, state forest, and state gamelands, and has two delayed harvest areas, one at Trent, and one at Humbert. This is one of the largest unpolluted put-and-take fisheries in western Pennsylvania, and has had a special protected status for years.

Unfortunately there are coal reserves on the watershed, and we have become aware of plans to exploit those reserves in the near future. Several years ago Amerikohl engaged in exploratory drilling in Upper Turkeyfoot Township on the watershed. It is extremely important that no mining take place on this pristine watershed, and an effort should be made to designate the watershed unsuitable for mining under the provisions of the Surface Mine Conservation & Reclamation Act.

The second greatest threat to the watershed is water withdrawal at Seven Springs, Hidden Valley, and by the Somerset Township Municipal Authority. Several years ago Dr. William Kodrich, then president of the TU State Council and a number of other members of the executive committee of Trout Unlimited met with Seven Springs concerning water

withdrawals. Unfortunately, due to the amount of work which needed done around the Commonwealth the matter of water withdrawals was not pursued.

With the construction of two prisons in Somerset County, and expansion plans, several million gallons a day are being withdrawn from Laurel Hill Creek, resulting in very high temperatures, low oxygen, and low flows during summer and early fall. This matter could be remedied by Somerset Township drawing water from the recently acquired Quemahoning Dam, a solution which is both practical, efficient, and likely to allow Somerset to engage in sustained growth.

These are two problems on the Laurel Hill Creek watershed which could be addressed in the Rivers Conservation Plan.

2. CASSELMAN RIVER - The greatest problem on the Casselman River is uncontrolled mining on coal seams which are known to produce acid mine drainage. In 1993 Action Mining allowed the illegal discharge of millions of gallons of acid mine drainage from an elaborate piping system on Coal Run, a tributary to the Casselman River which the Department of Environmental Protection determined contributed one-third of the acid loading to the Casselman River. Action Mining also was engaged in mining the Shaw Mines complex, a complex which produced a substantial volume of contaminated water which was discharged largely without treatment into the Casselman River.

Although Action Mining has entered into a Consent Order with the Department of Environmental Protection for the Shaw Mines complex, it has yet to be placed under Consent Order for the degradation of discharges and the illegal piping which occurred on Coal Run. Although the Department has determined that several of the deep mine discharges on Coal Run have been degraded by Action Mining it has failed to take any enforcement action against the coal company or required them to treat the degraded discharges as of this time.

Additionally, the Department has allowed mining to occur on sites where the overburden is marginal and there is a potential for acid mine drainage, by requiring the

utilization of alkaline in addition to the mine soils, a technique which has not been consistently proved to be effected in the Commonwealth of Pennsylvania.

Although the Casselman River is currently rebounding with great vitality, due to the fact that Action Mining is now treating the discharges on Coal Run which had been piped illegally, and is getting modicum of treatment from a limestone ditch on the Shaw Mines complex, there is no guarantee that Action will continue to treat these discharges, or that the mines being permitted on the watershed will not have similar problems.

Given the value of the Pittsburgh coal reserves, and their potential revenue generating prospects, the Department of Environmental Protection should become involved in the Rivers Conservation Plan, and should take special steps to assure that permits are not issued on marginal areas, and to assure that a trust fund for perpetual treatment is established by Action Mining to treat the Shaw Mines and Coal Run discharges. Without these guarantees this magnificent resource as well as the Youghiogheny River can become imperiled in a very short time.

3. YOUGHIOGHENY RIVER - In addition to the problems described on the two tributaries to the Youghiogheny River which enter the stream at Confluence, there is a major sewage problem at the Confluence Borough Sewage Authority treatment plant on the Youghiogheny River. Despite efforts to eliminate inflow and infiltration at the sewage plant, the plant is outdated, overloaded, and continues to discharge sewage in excess of the effluent limits.

In addition to being an aesthetic concern to users of the River, the potential for exposure to pathogens, and nutrient loading downstream is substantial.

The Confluence Sewer Authority has expressed a greater interest in acquiring the Citizens' Water Company which provides "potable" water to Confluence, than it has in upgrading a sewage treatment plant which operates far beyond its capacity. The only way to deal with this problem is for the Confluence Sewer Authority to take its responsibilities seriously and to make the capital expenditures necessary to upgrade the plant.

I would appreciate it if you would include these comments for consideration in the Rivers Conservation Plan, and thank you for your anticipated courtesy and cooperation.

Bob Ging

BG/rae

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

COMMENT SHEET

(1) Name: JAMES O. GREEN Phone: 724-628-6484 (optional)

Address: 212 - EAST END ROAD (optional)
CONNELLSVILLE, PA.
15425

(2) Comprehensive description of your comment, issue, or question:

WHERE IS THE E.P.A. IN THIS WATER ISSUE
RONALD REGAN SAID DAMS ARE BOONDOGLES
IF SO. WE NEED MORE OF THEM.

WATER IS BEING DIVERTED FROM ITS NATURAL COURSE IN MORE THAN ONE OCURRENCE IN FAYETTE Co.
WHERE IS THE E. P. AGENCY IN THIS OR CAN'T THEY DO THEIR JOB.

(3) Location or other specifics that can be used to pin-point issue:

BULLSKIN TWP. FAYETTE Co
CARINGTON EST.

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105 Mall Blvd.
Monroeville, PA 15146-2347

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING – JULY 15, 1999

≈ *CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED* ≈

COMMENT SHEET

(1) Name: Wendell Fisher Phone: 724-628-9220 (optional)

Address: 1629 So. 6th St (optional)
South Connellsville, PA-15425

(2) Comprehensive description of your comment, issue, or question:

#1- Clean up The Indian Creek Valley From The mouth To Indian Head. This will help The water Quality of The Youghiogheny

#2- Put Pressure on The D.E.P. For Allowing The W.M Water Auth From Taking any more water From The Youghiogheny, Set up Plans To Install more Tanks To Store water

(3) Location or other specifics that can be used to pin-point issue:

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Monroeville, PA 15146-2347

MIDDLE YOUGHIOGHENY RIVER

PUBLIC MEETING – JULY 15, 1999

≈ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ≈

COMMENT SHEET

(1) Name: MISS NANCY L. STAFFORD R.N. Phone: (optional)

Address: (optional) 4403 LESHER DR
DAYTON OHIO
45429-3011

Born + raised in Connellsville & may be moving back — I have fished these mountains with my parents & Indian Creek, Sandy Run, etc.

(2) Comprehensive description of your comment, issue, or question:

I am against any more water from Youghi to Westmoreland County — they need to be explicit as to why, where & when their water sources are contaminated and by what, and what they are doing about THEIR situations. Elevated temps resulting in low flow of the Youghi. are hazardous to humans as well as trout life.
In low flow, water temps are elevated and bacteria growth is increased to hazardous proportions so that recreational prospects of swimming and eating ANY fish from such a condition existing, should be forbidden by any city, County, Township, sports club, State Health officials, etc.

(3) Location or other specifics that can be used to pin-point issue: Bacteria counts are crucial — any local university, college could use their biology labs and do this as a public service. A good experience for students! Retired Volunteers can easily be trained to gather samples. (over).

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— There is a volumn of wonderful printed matter out there. No one better than Tim Palmer, a good old western Pennsylvanian whose father taught him all about the Yough.

Tim has been a prolific writer:—

1. "Youghiogheny & Appalachian River"
   ISBN 0-8229-3495-7
   U. of Pittsburgh Press
2. "Rivers of Pa."
   ISBN 0-271-00226-3 — Penn State Press
3. "Endangered Rivers" U. of CA Press Berkley
   ISBN 0-520-05714-7
4. Hundreds of articles by him in magazines (science, environmental, etc. inc Wildlife)

Locate him and get him involved in your program as resource and as a speaker at a BIG meeting

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Consumer Reports Books:— "Is Your Water Safe To Drink?" by Raymond Gabler

ISBN 0-89043-041-1

Recent (this year)

1. "The Water We Drink" — by 3 MD's on Water - Rid Quality and its effects on Health
   — Barzilay, Weenberg & Eley, ISBN 0-8135-2673-6
2. "No Safe Place" — Phil Brown & Edwin Mikkelsen
   (Toxic Waste, Leukemia & Community Action)
   Forward by Jonathan Harr author of A Civil Action
   ISBN 0-520-21248-7

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: "River Watch"
Citizens of Connellsville
%Judy Reed
204 West Cedar Ave.
Connellsville, PA 15425

Judy Reed

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 8, 1999

COMMENT:

The water in the Youghiogheny River at Connellsville is at a dangerously low level. Too much water is being removed from the Youghiogheny River. The amount of water being removed from the Youghiogheny should be reduced.

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	Judy Keller	260 Wells Road	Connellsville, Pa
2.	Jean Wrote	402 S. 12th St	Connellsville, Pa
3.	Tony Brianza	503 W. Gibson Ave	Connellsville Pa
4.	Dorothy M. Thompson	1523 Hyndman St	S. Connellsville Pa
5.	Eva Jeanne Ritenour	E. Gibson Ave	S. C'ville Pa
6.	Tom Ritenour	" "	S. C'ville Pa.
7.	George Rohel	Virginia St	So. Connellsville Pa.

8. Lila Schroyer — BOYD AVE DAWSON PA 1542
9. Betty Lessard — 502 Decatur Ave. Crille. Pa
10. Jane Easler — 1724 W. Crawford ave Crille Pa 1542
11. Mary Benson — Highland ave 42 Crille Pa 15425
12. Kay Miller — 1206 Oak St. Connellsville, PA 15425
13. Ruth Farrow — 814 Blackstone Ave 15425
14. Betty Lee Petrilla — 1027 Morrell Ave Crille 15425
15. Ben Babula — 109 N 7th St Conn. Pa.
16. Mildred A. Kay — 101 Pearl ST. Crille, Pa 15425
17. Sophie Carbonara — 105 Pearl St Connellsville
18. Bernard Lipowsky — 1009 W. Crawford Ave Crille Pa
19. Virginia L. Hankinson — 60 Fairview Apts. Crille, Pa
20. Mary Lipowsky — 1009 W. Crawford Ave Crille
21. Elmer "Bud" Swan — 1307 Chestnut St Crille
22. John Alder — 408½ E Gibson Ave Donora
23. Kenneth L. Ross — 413 North Decatur Crille Pa
24. James E. McGuinness — 805 Blackstone Ave Crille, Pa
25. Pete Reggier — 606 Johnson Ave Crille
26. Viola Easler — 502 Decatur ave Crille
27. Bridget Marchese — 502 Decatur Ave. Crille
28. Richard Williams — 226 S. 6th Crille, Pa
29. Paula Mahoney — Gibson Ave S. Crille Pa.
31. George Lucchi — Crille, Pa
32. Mrs. D[illegible] — Crille

33. Ruth Webster	C'ville, Pa.
34. Helen DeMeue	C'ville, Pa 15425
35. Genevieve Hann	C'ville, Pa 15425
36. Grace E Livingston	Dawson Pa 1542
37. Catherine Neste	C'ville Pa
38. Tom Ober	C'ville Pa.
39. Marianne Lloyd	C'ville Pa
40. Jean Moscia	C'ville Pa
41. Mary Kocis	So C'ville Pa
42. Anna Oglethorpe	1404 Aetna St. C'ville
43. Fuccian Schipani	502 [illegible]
44. Mary Dennis	Greenwood Hgts
45. Pat Ward	So. C'ville Pa.
46. Sarah Kerrigan	Connellsville, Pa.
47. Irene Puzzia	Connellsville, Pa
48. Jeannine Monopoli	E Connellsville, Pa.
49. Betty Colland	Vine St C'ville
50. Evelyn Malago	Tower C'ville
51. Joe Fieschneller	Connellsville, Pa
52. Thelma Hipkiss	Dunbar, PA.
53. Geraldine Smarto	Connellsville, Pa.
54. Carole Fieschneller	Connellsville Pa (ob)

55. Hattie Wood C'ville
56 Marian Gannon C-ville
57 Elsie Haley C'ville
58 Joseph J Gonda C'ville
59 Isabelle Smith C'ville

60 Evelyn Miller C'ville
61 Mgt. Carbonara C'ville
62 Lainie Wilson C'ville
63. Lloyd Wilson C'ville
64 Deanne Hullen C-ville
65 William Hullen C-ville
66. Judy Armbrecht
67 David Wilson C-ville
68 Mary McCarthy C'ville
69 Kay Woods C-ville
70 Gwen Hoover C'ville
71 Vera Conaway C'ville
72 Marge Lewellen C'ville
73 Dolores L Capella C'ville
74 Ethel Poiser C'ville
75 Nancy Bean C'ville
76 Jean Wrote C-ville
77 Charlotte M Skerske C'ville
78 Sandra Rozenstee C'ville
79. Tammie K. Gearhart C'ville
80. Opal Smith C'ville
81 Ruth Rich C'ville
82 Joan Smith Leisenring
83 Maryrose May Connellsville
84 [illegible] C'ville.

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: [redacted]

STAR JUNCTION SPORTS SHOP
Box 382 Star Junction PA 15482

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 8, 1999

COMMENT:

Too much water is being removed from the Youghiogheny River. The lower Youghiogheny River is too low. The amount of water being removed from the Youghiogheny should be reduced.

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	Elizabeth Boyle	Box 113	Perryopolis, Pa. 15473
2.	Jamie Morris	748 Hindstone Rd	Grindstone PA 1544
3.	Rob Morris	748 Heindstone Rd	Grindstone PA 1544
4.	J. Daniel Boyle	Box 113	Perryopolis, Pa. 15473
5.	James Hogatto	Box 41	Vanderbilt Pa 15486
6.	John Coffee	Box 37	Star Junction Pa 15482
7.	Clyde Landeth	169 Laurdale	Perryopolis Pa 15473

8. [illegible] Box 407 Perrypolis PA 154

9. [illegible] Box 84 Star Jct PA 15482

10. [illegible] 2 Duke Circle Belle Vernon PA 15012

11. [illegible] 381 Fayette city rd. Perrypolis PA 15

12. [illegible] 818 Hoover Dr Arnold PA 15668

13. Barry Baird RD1 Box 291 Perrypolis PA 154

14. Terry Baird P.O. Box 371 Star Junction PA 1548

15. Dave Thorpe 347 Fayette City Perrypolis PA

16. Bob Hajduk PO Box 14 155 Church St Star Junction PA 1548

17. Ken Gates RD1 Box 317 Grindstone PA 15442

18. Russell Johnson RD #2 Box 196A Perrypolis PA

19. Brent Strother 510 Green St. California Pa

20. Jeff Evans Rear 306 Pittsburg St Uniontown

21. Rick Hoffman Po Box 668 Perrypolis Pa. 15473

22. Willard Hurley 4028 RT 51 N Belle Vernon Pa 15012

23. Jim Lint Po Box 55 Wick Haven Pa. 15492

24. [illegible] 229 Murphy Rd Grindstone, Pa. 15442

25. [illegible] 353 Central School Rd Fayette City PA 1543

26. [illegible] 2[illegible] Maplewood Rd Vanderbilt PA 1547[illegible]

27. [illegible] Po Box 193 Waltersburg PA 15488

28. [illegible] RD #1 Box 380 Vanderbilt 15482

29. [illegible] 157 Keffer Rd Dawson Pa

30. Dolores Keffer 125 Keffer Rd. Dawson, Pa. 15428

31. Conrad J Stingle 251 GRIFFIN Rd VANDERBILT 154
32. Michael S. Pratos P.O. BOX 421 STAR JUNCTION PA. 15482
33. Dave M Kaloti 268 Greenfield Road Perryopolis PA 15473
34. Shaun O Frankl P.O. Box 565 PERRYopolis, PA. 15473
35. Sean M. Rush 509 PERRY Rd Perryopolis, PA 15473
36. DANNA KRUKOWSKY 38 Reservoir Rd Perryopolis Pa 15473
37. Charles S Stull Box 303 Star Junction
38. Art Tuttle Sr. Box 78 Star Junction 15482
39. David D Isidoro 238 Tippecanoe Rd Smock Pa
40. Patricia D Isidoro 238 Tippecanoe Rd Smock Pa 154
41. Wm J. Oldham P.O. Bx 365 Perryopolis, Pa 1547
42. [illegible] 223 CARUSO RD MONROEVILLE 1514
43. Ron Babchak Box #733, Perryopolis, PA 15473
44. Michael B Kushner PO Box 331 FAYETTE City PA 15438
45. Duane S Fausnt Box 49 Dunbar Pa 15431
46. Tom Phillips RR2 Box 430 Perryopolis, Pa 15473
47. [illegible] 255 Grindstone RD Grindstone PA 15442
48. Ryan Reed 406 May St. Belle Vernon Pa 15012
49. Matt Warren 333 Morris Hollow Rd. Smock Pa 15480
50. RIB. ZORN 468 8th St. DONORA PA 15033
51. Charles Darrell PO Box 312 Dawson PA 15428
52. Henry Adams RD #2 Box 466 Layton PA 15473
53. M Staff Box 332 STAR JUNCTION, PA 15482

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: _____

STAR JUNCTION SPORTS SHOP
Box 382 Star Junction PA 15482

_____

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 8, 1999

COMMENT:

Too much water is being removed from the Youghiogheny River. The lower Youghiogheny River is too low. The amount of water being removed from the Youghiogheny should be reduced.

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	Thomas Morgan	P.O. Box 7	Wick Haven Pa. 15
2.	Patricia A Morris	PO Box 7	Wickhaven, Pa 1549
3.	Rick Adams	P.O Box 43	STAR JUNCTION PA 1548
4.	[illegible]	17 Pine Lane	Perryopolis, PA 15473
5.	David P Morton	PO Box 516	Perryopolis, Pa 1547
6.	Brad M. Shaffer	114 Cemetery Rd	Vanderbilt PA 15486
7.	Bruce Rush	P.O. BX 694	Perryopolis, Pa. 1547

8. Kirk E Hickle 152 Clark RD Perryopolis PA 15473
9. [illegible signature] PO BOX 254 Perryopolis PA 15473
10. Chuck Glover P.O. Box 117 Star Junction, PA. 15482
11. Frank Kayga P.O. Box 274 Fayette City Pa 15438
12. Elaine Hornstch 171 McClellandtown Lambert rd McClellandtown PA
13. Brent Showman 249 Town Country Rd Vanderbilt,
14. Matt Devitti RD#1 Box 152-A Perryopolis Pa.
15. Jason Fox RD3 Box 124 Tarrs PA 15688
16. Shawn Pravlik Po Box 196 Tarrs PA 15688
17. Raymond J. Maloney Jr 1127 Amanda St. Pgh PA. 15210
18. Timothy R Kurszka 971 Flatswoods Rd Vanderbilt PA 15
19. Adam P Marcinik Rd #1 Box 51 Perryopolis Pa 15
20. Mike Wolf Mt. Pleasant, Pa. 15666 R.D. 4
21. Christen Victor 145 N 2nd St C'ville Pa 15425
22. George Porterfield Sr C'ville Pa 15425
23. Dornella Pirl - 3F N. Manor C'ville Pa
24. Jason R. Pirl - 3F N. Manor C'ville, PA.
25. Brenda Pirl - 3F N. Manor C'ville, PA.
26. Junior Victor C'ville
27. Erica Victor C'ville
28. Marci Pahel 542 E. Crawford Ave C'ville
29. Derrek Pahel 542 E Crawford Ave. C'ville
30. Percy Rozi X East Crawford ave. C'ville.

31. George Szczecki	C'ville, Pa
32. Marie Dunaway	C'ville, Pa.
33. Ruth Webster	C'ville, Pa.
34. Helen DeMuse	C'ville, Pa 15425
35. Genevieve Hann	C'ville, Pa 15425
36. Grace E Livingston	Dawson Pa 1542
37. Catherine Neste	C'ville Pa
38. Sam Tober	C'ville Pa.
39. Marianne Lloyd	C'ville Pa.
40. Julia Moscia	C'ville Pa
41. Mary Kosis	So C'ville Pa
42. Anna Oglethorpe	1404 Aetna St. C'ville
43. Frances Schipani	502 Duquesne Ave
44. Mary Dexas	Greenwood Hgts
45. Pat Ward	So. C'ville Pa.
46. Sarah Kerrigan	Connellsville, Pa.
47. Irene Puzia	Connellsville, Pa
48. Jeannine Monopoli	Connellsville, Pa.
49. Betty Colland	Vine St C'ville
50. Evelyn Malago	Lower C'ville
51. Joe Fierschnaller	Connellsville, Pa
52. Thelma Hipkiss	Dunbar, PA.
53. Geraldine Somaro	Connellsville, Pa.
54. Carole Fierschnaller	Connellsville Pa

10%

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: South Connellsville Rod and Gun Club
Jack Raubaugh, President
South Connellsville, PA 15425

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 8, 1999

COMMENT:

Too much water is being removed from the Youghiogheny River. The lower Youghiogheny River at South Connellsville is at a dangerously low level.

The members of the South Connellsville Rod and Gun Club help with the annual stocking of fish. Club members feed and raise trout fingerlings then release them into the Youghiogheny River each year. The removal of additional water would lower the level of river water and cause water temperature to raise. Trout cannot survive in warmer water.

We the undersigned, members, families, and friends of the South Connellsville Rod and Gun Club are opposed to the removal of water that is not replaced with equal quality. Previously permitted water allocations should be reevaluated.

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Jack Raubaugh	210 Shenandoah Rd.	C'ville 15425
2.	Harry Crytzer	PO Box 503	C'ville Pa 15425
3.	Tom Schomer	1009 Grandview	C'ville, Pa. 15425
4.	Robert Preston	353 N. Pgh. St	C'ville PA 15425
5.	Leslie K Hauser	353 N Pgh St	C'ville PA 15425
6.	Regis Dailey	158 N. 2nd St	C'ville Pa 15425
7.	Tom Heffner	2219 - I St	S. C'ville 1542[illegible]
8.	Stanley Clements	R.D. 1. Box 433	Dunbar P[illegible]
9.	Jean Grace	1009 Grandview	Connellsville, Pa
10.	George L. Legorth Sr	300 5th St	West Leisenring Pa 15489
11.	Nancy C Brown	213 W. Fayette St.	C'ville 15425
12.	Wendell Fisher	1619 So. Pgh St	So. C'ville PA 15420
13.	John Ward	1113 S. Pitt. St.	S. C'ville PA 15425
14.	Charles E. Meyers	107 Hampton	So. C'ville Pa. 15425
15.	John R Kaylor	512 East York ave	So. Conn Pa. 15425
16.	Don Burke	116 E Painter	So. C'ville 15425
17.	Lloyd A Maust	239 Bethelboro Road	Uniontown PA 15
18.	Nancy L Maust	" "	" " "
19.	Irma Maust	" "	" " "
20.	Gary Maust	239 Bethelboro Road	Uniontown, Pa. 1540[illegible]

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Rachel Brant	P.O. Box 403	Connellsville, Pa. 15425
2.	Ruth Brant	P.O. Box 403	Connellsville, Pa. 15425
3.	John Paul	1608 S Pittsburgh St	S. Connellsville, Pa 15425
4.	Terry Russell	42 High St.	Dunbar PA 15431
5.	Glenn Leonard	1307 Avon Dr,	Clville, PA 15425
6.	Bob Meyers	208 N. Atlantic Ave	Cheswick PA 1502
7.	Diane Meyers	→	
8.	Estella J. Shipley	106 Pine St	South Connellsville Pa 15425
9.	Roza Shipley Sr	106 Pine St	South Connellsville Pa 15425
10.	Dorothy Vise	502 Decatur Ave	Connellsville Pa 15425
11.	Betty M. Just	310 E. Yough. Ave	So. Connellsville, Pa
12.	Peter E Just	310 E. Yough Ave	So Connellsville Pa
13.	Ira Ohler	685 Rid Hill Road	
14.	Richard Ohler	177 Hackin Hollow Rd	
15.	TOM MEANS	RD 2	Box 533
16.	Lucy Malone	515 W Gibson	Connellsville PA
17.	Walter Calhoun	247 Cedar St	Dunbar, Pa.
18.	Martha Calhoun	247 Cedar St	Dunbar Pa.
19.	James Green	212 East End road	Connellsville Pa. 15425
20.	Gilbert Booher	267	SPRUCE HOLLOW RD, PA 15425

PUBLIC MEETING - JULY 15, 1999
~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

Name	Address	City
1. Marian Burke	116 E Painter	South Connellsville, Pa 15425
2. [illegible]	210 Shenandoah Rd	Connellsville Pa 15425
3. Milan Basingio	637 Englishman Hill RD	Connellsville Pa 15425
4. Marie Basingio	631 Englishman Hill,	Connellsville PA 15425
5. [illegible]	1087 West Penn Blvd	Uniontown, PA 15401
6. Carol Hixson	173 Gault School Rd	Connellsville PA 15425
7. James W. Gearhart	258 MONTGOMERY RD	SCOTTDALE 15683
8. Debbie Gearhart	"	" "
9. Pam Shultz	909 Aetna St.	Connellsville, Pa 154[illegible]
10. John Shultz	"	" "
11. [illegible] Booher	277 Spruce Hollow Rd	Connellsville, Pa, 15425
12. [illegible]	Box 450 Brownsville Rd	Fayette City Pa 15438
13. Senator Richard A Kasunic	RD#1	Dunbar 15431
14. [illegible] II	RD#	Dunbar 15431
15. Mr/Mrs [illegible]	918 Franklin Ave	C'ville
16. Clyde + Bertha Kimmel		Mt Pleasant, Pa 15666
17. [illegible] Stillwagon	108 Prittstown Rd	Mt. Pleasant, Pa 15666
18. Frances Stillwagon	108 Prittstown Rd.	Mt. Pleasant 154
19. Muriel Booher	267 Spruce Hollow Rd	Connellsville Pa 1542
20. Lindy & Thelma Hixson	100 Gault School Rd	Connellsville PA 154

PUBLIC MEETING - JULY 15, 1999
~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

Name	Address	City
1. [illegible]	918 Franklin	C'ville PA
2. Robert Nicklow	51 Hope Hollow Rd	Lake Lynn Pa
3. Angel [illegible]	1715 Buttermore Blvd	C'ville, PA
4. John R. Ryan	453 Reidmore Rd	So. C'ville, PA.
5. Donald [illegible]	Rd 381 L	C'ville PA
6. [illegible]	718 [illegible]	C'ville PA
7. Edna Halfhill	1522 Gulf St.	C'ville, Pa
8. Donald R. Evans	1517 Martin Rd.	S. C'ville Pa
9. Carl F. Evans	1517 Martin Rd.	S. C'ville Pa.
10. Norma Evans	1517 Martin Rd.	So. C'ville Pa.
11. [illegible]	158 1/2 St	C'ville Pa
12. [illegible] Musgrove	R.D. 1	Mt. Pleasant Pa.
13. D. [illegible] Shipley Jr.	2400 Cowley Rd.	Scottdale Pa
14. [illegible] Shipley	Cowling Road	Scottdale [illegible]
15. John [illegible]	47 [illegible] Hill Rd	Uniontown PA
16. Sandra [illegible]	164 Twin Hills Rd	Brandstone PA
17. [illegible]	Bx 71	Chalk Hill Pa. 15421
18. Lana J. Sealover	PO Box 274	Allison PA 15413
19. Joseph A. [illegible]	301 Mt. View Dr.	Brownsville PA 15417
20. Donna M. Washo	254 Bank St.	Brownsville PA 15417
21. Ruth Ann Roos	395 Ridge Road	Brownsville Pa 15417

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Rev. Marvin C. Wilcox	R.D. 4 Box 60A	Mt. Pleasant
2.	[illegible]	127 College Ave	[illegible]
3.	[illegible]	Box 93	Merrittstown Pa 15463
4.	Linda L. Workman	206 Raymond Ave	Brownsville Pa 15417
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PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Rev. Marvin C. Walux	R.D.4 Box 60A	Mt. Pleasant
2.	[illegible]	127 College Ave	Connellsville
3.	[illegible]	Box 93	Mount [illegible] Pa 15465
4.	Linda L. Workman	206 Raymond Ave	Brownsville Pa 15417
5.	Alverta Porterfield	Crawford Ave.	C'ville
6.	Don Porterfield	East Crawford AVE	C'ville
7.	Bruce Piel	4B North M.	C'ville
8.	Tammy Livestone	4B N. M.	C'ville
9.	Lee Piel		C'ville
10.	LISA PIEL		C'ville
11.	Charles E. Rose		INDIAN Head PA
12.	Dolly Rose		INDIAN Head PA.
13.	Kenny Rose		INDIAN Head Pa
14.	Steve Rose		INDIAN Head PA
15.	MARK ROSE		Normalville Pa.
16.	DAVID ROSE		Normalville Pa.
17.	Jenny Swope		ROGERS MILL'S
18.	BILL Pirl		Roger's MILLS
19.	Jackie Pirl		Roger's MILL'S
20.	Le-Ann Balutch		C'ville.

Middle Youghiogheny River Conservation Plan
COMMENT SHEET

Name: Minnie & More Bait Shop
Address: Dawson, PA
August 8, 1999

Minnie & More Bait Shop has many customers. Fishing is not only a recreation but a very important industry. Dawson is revitalizing the many cultural, historical, and recreational resources. The most valuable natural resource is the Youghiogheny River.

The water in the Youghiogheny River should be monitored, preserved and protected. The water level should be maintained to provide an opportunity for economic and recreational development. Protect the water in the Youghiogheny River and prevent the removal of any more water.

Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	Robert Helty	717 Walnut Avenue	Scottdale
2.	Chris Hollabaugh	572 Vanderbilt	
3.	John R McBurney	BOX 617	Vanderbilt
4.	Tina Dignatt	P.O. Box M	Dawson
5.	J Saunders	150 Spring Thorn Church Rd	Dawson
6.	Marsha Liguald	R.D#1 Box 57B	Dawson
7.	Howard Argot	532 DAVIS Rd	Dawson. Pa. 15428
8.	Mac Leaure	Box 12 Boyd Ave	Dawson Pa. 15428

9. Pauline Christner 209 Galley St Dawson, Pa
10. Marlene [illegible] 360 Spring St Vanderbilt, Pa
11. [illegible] 230 ~~330~~ Vanderbilt Rd Connellsville PA
12. J. Ansell Connellsville Pa
13. Ralph [illegible] 2210 Ridge Blvd Connellsville, PA
14. [illegible] Box 175 Dickerson Run Pa
15. Kathy Lint 719 Virgin Run Rd. Vanderbilt, Pa.
16. G. F. Strickler R.D. #1 Box 26-A Vanderbilt, Pa.
17. Donald Harshman Box 12 Dickerson Run 15438
18. [illegible] Martinsville [illegible]
19. [illegible] Dawson Pa
20. Jeff [illegible] - Dawson
21. [illegible] - Dawson 112 Railroad St
22. Shawn McGee PO Box 715 Vanderbilt
23. Rodney [illegible] D Dawson
24. Sandie Kefer Dawson Pa
25. [illegible] Vanderbilt PA 15486
26. Jessica Chambers Vanderbilt, Pa. 15486
27. Kerry Pellisa Sr. New Cumberland PA 17020
28. Frank [illegible] Jr. Vanderbilt PA 15486
29. [illegible] Dickerson Run 15438
30. Duncan E Keedy P.O Box 303 Galley St Dawson PA 15428

31. Anna Lee Billy Box 417 Perryopolis 15426
32. William Dailey 610 PARK ST C-ville PA 15425
33. James Shandorf 249 BROWN ST. EVERSON PA 15631
34. Geary E Robaugh P.O. BOX 139 PA 15428
35. Charles D. Jennings R.D. 1 Box 671 Scottdale PA 15683
36. [illegible] BOX N DAWSON PA. 15428
37. JAMES D DILLINGER RD#3 BOX 362 RUFFSDALE PA 15679
38. ERNIE HAYES Bx 294 DAWSON PA 15428
39. [illegible] Bx 364 ~~[illegible]~~ Mcgill Ave Dawson
40. James Lentz BX 93 MADISON PA
41. Art Connors SCOTTDALE, PA
42. Bob Henz Keckslurg Pa.
43. Mike Fetsko Smock Pa 15480
44. Robert Keffer BOX 309 DAWSON PA 15428
45. [illegible] Connellsville Pa 15425
46. Theodore Huffman Connellsville 15425 PA
47. Andy Galiney 335 oak ave VanderBilt PA 15486
48. Tom D. Kummer 238 FAIRVIEW AVE VANDERBILT, PA 1548
49. [illegible] Po Box 384 Vanderbilt, PA 154
50. [illegible] PO Box 161 Main Street Dawson Pa 154.
51. [illegible] Hall DUNBAR PA 15431
52. [illegible] Connellsville Pa
53. [illegible] BOX 605 Vanderbilt PA 15486

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Brady Cole	1413 Morrell ave	Connellsville
2.	Betty [illegible]	213 Jimtown Rd	Dawson
3.	Dale Budd	3006 FRICK	LANE CONN.
4.	[illegible]	P.O. Box 91	Leisenring Pa 15455
5.	[illegible] Sigwalt	151 Clark Road	Dawson Pa 15428
6.	Robert C. Sigwalt	151 CLARK ROAD	DAWSON PA 15428
7.	Kathy Roadman	RD #1 Box 10-L	Dawson Pa 15428
8.	[illegible]	118 Collsburg Rd	15089
9.	Warren Boord	141 Kelly St	Scottdale Pa 15683
10.	Roy Mayer	326 ENGLISHMAN HILL	CONNELLSVILLE
11.	Barry [illegible]	9 Colonial Ave	SMOCK PA. 15480
12.	[illegible]	HOUSE 9	SMOCK PA 1548[illegible]
13.	[illegible]	417 Jimtown Rd	Dawson PA 15428
14.	Donald Davis	522 BANNING RD	DAWSON PA
15.	Carl [illegible]	BETHAL CH RD	DAWSON Pa
16.	[illegible] Jr.	258 Vanderbilt Rd	Connellsville Pa
17.	[illegible]	218 Pa. Ave	Vanderbilt
18.	[illegible]	209 DICKERSON RUN	DICKERSON RUN
19.	Chris Jordan	1343 Lenwood [illegible]	Uniontown
20.	Matt Basinger	170 N[th] 12[th] St	Connellsville

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Coneilsville Rod & Gun Club Petition

	Name	Address	City
1.	Bob Sigwatt Jr.	226 Jimtown Rd	Dawson
2.	Dan Roadman		Dickerson Run
3.	James H Jordan	128 Gibson Terrace	Connellsville PA
4.	Karen Coughenour	8 Stadium Drive	Uniontown
5.	[illegible]	1279 Pittsburgh St	Uniontown Pa 154[illegible]
6.	Richard Thomas	49 - Hickory st	Uniontown
7.	Hank Schifflbauer	Shining Stone	Uniontown PA 15401
8.	Edie Bernsteener	1249 Pittsburg Rd.	Uniontown PA 15[illegible]
9.	David [illegible]	RD #1 Box 230H	Grindstone
10.	Mark A. [illegible]	54 Hickory Rd.	Uniontown, Pa 15401 (Phill[illegible]
11.	Charles M. Sampson	66 E. Fayette St.	Uniontown Pa.
12.	[illegible]	232 Smock Rd	
13.	Sandra Shipley	P.O. Box 461 Vleda Pa	
14.	Chris Sylvester	Lenox St	Uniontown
15.	Scott Whetsel	RD1 Smock PA 15480	
16.	David A. Spear	P.O. Box 251	Hopwood PA 15445
17.	[illegible] Wells	186 Main St.	Smock Pa. 15480
18.	[illegible]	125 Alicia Hts Rd.	Brownsville Pa 15417
19.	Babbett Miele	140 Lower Oliver 3	Uniontown 15401
20.	John Miele	140 Lower Oliver 3	Uniontown 15401

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

Name	Address	City
1. Tim S Tiner	42 Sixth hills	Brownsville
2. Bob Lyytoh		Uniontown PA
3. [illegible]	316-B Bute Rd	Uniontown, PA
4. Randy Tomecky		U-Town PA
5. Ralph Dewaye		U-Town Pa
6. James Clary	RD#1	Uniontown PA. 15401
7. Tom Copeland	702 Kingview Rd.	Scottdale
8. Thomas P. Orr	RD#2	Dunbar Pa 15431
9. Carson D. [illegible]	676 Banning Rd	Dawson Pa 15428
10. Greg Colbert	PO Box 518	Vanderbilt PA 15486
11. Lana Capot	532 Davis Rd.	Dawson, Pa. 15428
12. Kevin Hales		Dawson PA
13. Edward Jacobs		Dickerson Run PA
14. Linda Eliada	Main St.	Dawson Pa. 15425
15. Mary Dignault	233 E Crawford	C'ville 15425
16. Archie S. Tait	P.O Box #159	Dunbar, PA. 15431
17. Joe Timms	Po Box 234	Dawson PA 15428
18. Vic Halfi	P.O Box P	Dawson PA 15428
19. Russel Dhury	509 Homestead Ave	Scottdale Pa 15683
20. Todd Duff	418 Banning Rd	Dawson 15428

MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Debbie Long	P.O. Box 520	Dawson
2.	Don Vanderman	P.O. Box 172	Dickerson Run
3.	Sandy Knight	Box 149	Dawson
4.	[illegible]	[illegible] 174	Dickerson Run
5.	Jason Dipple	PO Box 84	Dawson
6.	Michael A. Long	RD4 Box 160	Uniontown
7.	George M. Lint	RD#2 Box 696	Mt. Pleasant
8.	James L. Hulbert	Box 41	Chalk Hill Pa
9.	Roy Miller E.	Box 10	Dawson PA 15428
10.	Harold Jordan		Connellsville
11.	Chris Kesser	P.O. Box 209	Dawson
12.	Leslie Hall	P.O Box 162	Dawson PA 15428
13.	Kenny Cuff	RD 1 Box 137	Vanderbilt PA - 15486
14.	Cindy Hart	959 Banning Rd	Dawson, Pa 15428
15.	Sam Henry	224 Pine Lane Rockwood, PA. 15557	Rockwood
16.	Jessica Henderson	RD#1 Box 371	Perryopolis, PA. 15473
17.	Alisha Basinger	959 Banning Rd	Dawson, Pa 15428
18.	[illegible]	155 Dickerson Run	PA 154
19.	Mike Kalafut	PO Box 475	Hopwood PA
20.	M French	Box 255	Scottdale

PUBLIC MEETING - JULY 15, 1999

~ CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED ~

South Conellsville Rod & Gun Club Petition

	Name	Address	City
1.	Charles G. [illegible]	Box 145	Waltersburg Pa
2.	Bobby [illegible]	RD 1	Dawson PA
3.	Jim [illegible]	PO Box 204	Dawson PA
4.	Richard Harshman	Box 87	Dickerson Run, PA. 15430
5.	Donald [illegible]	151 Gilespie Rd	Pa 15428
6.	[illegible]	543 [illegible] Rd	Dunbar Pa 15431
7.	[illegible] B. [illegible]	RD1	Vanderbilt, Pa. 15486
8.	[illegible] Alexander	RR1 Box 641	Scottdale PA 15683
9.	Nathan Alexander		Scottdale, PA
10.	Charles W. [illegible]	RD.	Vanderbilt 15486
11.	William E Cassel	Box 4	Dickerson Run 15430
12.	Kenneth M. [illegible]	147 Mt. Rd.	Uniontown, Pa. 154[illegible]
13.	Todd A. [illegible]	154	Dickerson Run Pa. 15430
14.	[illegible]	RD#1 Bx 360A	C'ville PA 15425
15.	Dan Miller	19-A N. Chestnut St.	Scottdale Pa 156[illegible]
16.	Scott [illegible] D Colle	147 Upper Holttown RD	Dawson Pa 154[illegible]
17.	Donald B. [illegible]	P.O. Bx 398	Dawson Pa 15428
18.	Charles [illegible]	Box 75	Dawson PA 15428
19.	[illegible]	117 C'ville St.	Dunbar PA 15431
20.	[illegible]	105 Campbell Ave	Connellsville PA. 15425

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: Youghiogheny "River Watchers"
c/o Judy Reed
204 W. Cedar Ave
Connellsville, PA 15425

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 14, 1999

COMMENT:

Too much water is being removed from the Youghiogheny River. The lower Youghiogheny River is too low. The amount of water already being removed from the Youghiogheny River should be reduced.

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	[illegible]	336 Breakneck Rd	Cville
2.	Lora Hartman	114 A. Hall Town Rd	Dawson
3.	[illegible]	RD 2 Box 171	Perryopolis PA
4.	Evelyn Orsell	P.O. Box 239	Dawson, PA.
5.	Gary C. Kobaugh	P.O. Box 139	Dawson PA 15728
6.	James Daily	610 PARK ST.	CONNELLSVILLE, PA
7.	Charlotte Pavlic	RD 6 Box 1905	Mt. Pleasant PA 15666

8. Guy Saunders Perryopolis Pa

9. James E. Choney 276 Banning Rd Dawson PA 15428

10. Adrianne Provlic RD#6 Box 1905 Mt. Pleasant Pa

11. Gene Pierce 65 Vine St. Mt. Pleasant Pa. 1566

12. Diane Tuitts 520 Homestead Scottdale Pa.

13. Ralph Pritts 520 Homestead Ave Scottdale PA.

14. Robert Henry 221 East Apple St. Cville.

15. Ed Wontrofa 67 East End Rd. Smock

16. Bruce C Berry 262 French Island Rd Perryopolis Pa

17. Joe Danello 565 Bitner Rd. Dunbar PA. 1543

18. Larry Omatoth 776 Skylark Cville PA 1542

19. Bill Guyon Box 240 A Vanderbilt Pa. 1548

20. Jeff Mines Railroad St. Everson PA. 1563

21. Robt E. Turk 151 N. 10th St Connellsville PA. 15425

22. Nikki Dilldo 609 Howell St Dawson PA 15428

23. Ed Swink Box 145 Laughlin St Dawson, PA 15428

24. Ryan Noble PO Box 162 Dawson PA

25. Gerald R Grat ~~PO.~~ Box 275 Smock, PA

26. Randy Matlis Uniontown

27. Donna Graft Dawson Pa 15428

28. Wayne Graft Dawson Pa 15428

29. Jay Karal LT

30. Bill Shawley Jr LT

31. Edna Echard 1000 Emerson St., Scottdale Pa 15683
32. Fred Lowry Dawn PA
33. Robert Pritts 535 DRY HILL ROAD C-VILLE
34. Carl R. Adley RD3 Box 467 Altoona, Pa. 16601
35. George Justin RD1 Box 73 James Creek Pa 16657
36. [illegible] R.D. #9 Greensburg Pa
37. Carla E. [illegible] Farmington
38. Richie Jo Thomas Farmington
39. Mike Hall Farmington
40. [illegible] [illegible]
41. Jim Huff[illegible] Vanderbilt
42. Mark T. Hay Connellsville
43. Debbie Gragg Dawson Pa 15428
44. H. Wayne Gragg Jr Dawson Pa 15428
45. H. G. Beckwith Clairton
46. Robert Bibby DAWSON
47. Dan Bibby DAWSON
48. Jon Bibby DAWSON
49. Jack Bibby DAWSON
50. Richard R. Driscoll Connellsville
51. [illegible] Driscoll Connellsville
52. [illegible] Chalk Hill Pa.
53. John [illegible] Farmington Pa.

TO: Paul C. Rizzo Associates
Attn.: Mark Lazzari
Expo Mart, Suite 270-E
105 Mall Blvd.
Monroeville, PA 15146-2347

FROM: Youghiogheny "River Watchers"
c/o Regis Dailey
158 N. 2nd St
Connellsville, PA 15425

REFERENCE: MIDDLE YOUGHIOGHENY RIVER CONSERVATION PLAN
PUBLIC MEETING - JULY 15, 1999
CHESTNUT RIDGE CHAPTER OF TROUT UNLIMITED

DATE: August 14, 1999

COMMENT:

Too much water is being removed from the Youghiogheny River. The lower Youghiogheny River is too low. The amount of water already being removed from the Youghiogheny River should be reduced.

We the below signed want the waters in the Youghiogheny River protected and no more water removed.

	Name	Address	City
1.	Richard Gerbonara Jr.	239 South 12th St	Connellsville
2.	Frank Pacya	P.O. Box 174	Uniontown Pa 15401
3.	Dale E Kerle	340 Switzer Rd	Mt. Pleasant
4.	Tina M Stank	600 Delaware Ave.	Scottdale
5.	Danny L Dowell	1822 1/2 S. Pittsburgh St	S. Connellsville PA
6.	Tammy Onusko	RD2 Box 291J	Connellsville PA
7.	Matt Onusko	RD2 Box 291J	Connellsville pa

8. Thomas Nickelson 1221½ Sycamore St C'ville Pa
9. Penny Nickelson 1221½ Sycamore St Connellsville Pa.
10. Ron Beaverle C'ville Pa
11. [illegible] Carroll Pa
12. Dan Doppelheuer C'ville Pa
13. M. Madge "
14. Ray Autan Connellsville
15. George E. Kirshman 1800 Ridge Blvd. Connellsville, Pa.
16. Mike McCue C'ville PA
17. Mark Hay [redacted] Connellsville
18. Cathy Guth 408 Breakneck Rd Connellsville Pa.
19. Richard Guth 408 Breakneck Rd. Connellsville
20. George Miller South Connellsville
21. Scott Wettgen 145 Hickory Sq RD. Dawson Pa
22. Bridget Wettgen 145 Hickory Sq RD. Dawson Pa
23. Theresa Wettgen Connellsville
24. Kathy Ruggeri Connellsville Pa
25. Clifford D Miller 1501 Isabella Rd. C. Ville
26. MARK A WETTGEW RD1 Box 308B C'ville
27. TRACEY GEMAS RD1 Box 308B C'ville.
28. Russell Robinson 1311 Ridge Blvd Connellsville Pa
29. Donald Wettgen 1221 ISABella Rd Connellsville
30. Michelle Sherrick 1601 Sun Street Connellsville, Pa. 15

31. TERRY A SHERRICK 16 MAPLE ST. DUNBAR PA

32. Jeanette Taza APT 113 EAST FAYETTE ST

33. Gary Nicholson Chulls 626-8917

34. [illegible] Carrie Brennstuhm 531 old RT 21 McClellandtown

35. Sherrie Baron 626-1763

36. CHUCK CLARK 1005 ROY ST CONNELLSVILLE PA

37. Tom Yoonkin R.D.1 Box 31E Lake Lynn P.A 15451

38. John Petrusin Jr 28 N Grant ST Scottdale Pa 15683

39. Dean Harucy 715 W. Crawford Ave. Conn. Pa. 15425

40. Harry Livingston RD#1 DAWSON 15428

41. Steve Lishego 111 N 5th Youngwood PA 15697

42. Lu Ann Sells 111 N 5th Youngwood PA 15697

43. Rich Wagner 1639 Belasco Ave Pgh PA 15216

44. Bonnie Wagner 1639 Belasco Ave Pgh PA 15216

45. [illegible] 181 Saw Mill Road PA 15386

46. Richard Branson 549 Nelson Road PA 15437

47. Christina Branson 549 Nelson Road PA 1543[illegible]

48. John [illegible] RD#1 [illegible]

49. [illegible] 714 E. Francis Ave. PA. 154[illegible]

50. Jesse L. Keffer Box 194 Dawson Pa.

51. Tammy [illegible] Rt Marion Villa Belle Vernon PA 15012

52. Jane Straits 105 Elm Ave Monessen Pa 15062

53. Nicole Bainbridge 105 Elm Ave Monessen PA 15062

54. [illegible] 43 Morgantown St. Uniontown PA 15401

55. Doris [illegible] 705 Elm ave Monessen Pa 15062

56. William Bennett 531 Old [illegible] 21 Rd McClellandtown PA 15458

57. Ralph [illegible] 440 Pitt. St. Uniontown

58. Richard Thomas 49 HICKORY UNIONTOWN

59. Sue Kemp 69 Stewart Ave Uniontown Pa 15401

60. Sally Di Nunno 139 E Fayette St. Uniontown

61. Robert G. [illegible] Jr. RD#6 BOX 205 UNIONTOWN PA.

62. Paul S. [illegible] 307 Easter St. UNIONTOWN Pa. 15401

63. Jamie Busano 307 Easter St Uniontown Pa 15401

64. [illegible] PO Box 48 West Leisenring Pa 15489

65. Mark [illegible] Box 39 Walkersburg 15488

66. Jerry [illegible] 137 Lower Olive St UNIONTOWN

67. Janet [illegible] 6 Phillips Manor Uniontown, Pa 15401

68. Dave E Guffey 64 Wilson Ave Uniontown PA 15401

69. Kim Stewart 78 Mullan ST UNIONTOWN PA 15401

70. [illegible] 140 WENDY DR. UNIONTOWN PA 15401

71. [illegible] 40 Taylor Ave Uniontown PA 15401

72. Don [illegible] 109 Laughlin St. Dawson Pa

73. David H. [illegible] Box 77 Dickerson Run PA 15430

74. Kenneth [illegible] PO B 9 Chalkhill PA 15421

75. [illegible] 100 S Pine St Connellsville PA 15425

76. Joe [illegible] 116 [illegible] St [illegible]

77. Orville H. Shipley Connellsville 15425

78. [illegible] RD #1 Box 57-B Dawson 15428

79. [illegible] P.O. Box 499 Dawson 15428

80. [illegible] 901 Park Ave Belle Vernon 15012

81. Jeff Miles Jr. Rd 1 Vanderbilt 15486

82. Aaron Rowe RD 1 Dawson 15428

83. Joseph F. Zook Jr. 401 Fourth Ave. Brownsville, PA. 15417

84. Ray [illegible] Vanderbilt 15486

85. Robert Fisher Dunbar 15431

86. Jeff Miles Sr. Rd 1 Vanderbilt Pa 15486

87. Thomas W. Rosinski 177 Town Country Rd Vanderbilt PA 15486

88. Sadie R. Humphreys RD 1 Box 312A Connellsville PA 15425

89. Jessica M [illegible] PO Box 78 Dawson Pa 15428

90. Bill Clark PO Box 261 Dawson Pa 15428

91. R. Jacobs Bethel Park Pa

92. [illegible] Connellsville, Pa. 15425

93. [illegible] 999 River Road Dawson 15428

94. Nicole Keffer Dawson PA 15428

95. Brenda [illegible] Dawson Pa 15428

96. Todd W. Miner Connellsville PA 15425

97. George [illegible] Uniontown, Pa 15401

98. Jim [illegible] C'ville, Pa. 15431

99. ROBERT KEFFER Dawson PA 15428