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## EXECUTIVE SUMMARY

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### Project Background

Located in southwestern Pennsylvania, Crooked Creek is a major tributary of the Allegheny River, entering near Ford City in Armstrong County. It is rich in natural and recreational resources. The watershed is located within the bituminous coalfields of western Pennsylvania and is impacted by abandoned mine drainage. It also suffers from erosion and sedimentation, and nutrient loading mainly from the agricultural areas found within the watershed as well as the lack of municipal sewage systems.



*Tub Mill Run*

In 1981, the Crooked Creek Watershed Association (CrCWA) formed a volunteer, non-profit, grassroots organization. The initial focus of the group was to reopen the Carl White Treatment Plant, a treatment facility for abandoned mine water. It was abandoned by the state due to excessive cost and poor design. The group has worked to improve the water quality of Crooked Creek and its tributaries by preserving and enhancing natural habitats in the watershed, and increasing the awareness and education of the public. CrCWA has evolved from a small, very focused group to a large and diversely active organization. The group has been involved in a variety of projects including streambank stabilization, mine drainage remediation, habitat improvements, increasing recreational opportunities, and watershed planning and assessment.

In 1997, the Indiana County Department of Planning and Development initiated the Upper Crooked Creek River Conservation Plan. It was completed in 2002. Due to a lack of interest at the time, the Lower Crooked Creek watershed was not included in the Upper Crooked Creek Plan.

In 2002, CrCWA received a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR) to complete a River Conservation Plan (herein referred to a watershed conservation plan) for the 101.8 square miles of the Lower Crooked Creek watershed. In the summer of 2003, after meeting with municipal officials from Manor Township Armstrong County, the steering committee decided to add the neighboring Tub Mill Run watershed to the plan.

The Pennsylvania River Conservation Program operates through the Keystone Recreation, Park, and Conservation Fund administered by DCNR. The program aids groups in accomplishing their local initiatives through planning, implementation, acquisition, and development activities. As a part of the program, DCNR has established the Pennsylvania Rivers Registry to validate the local initiative to complete approved River Conservation Plans. The registry serves to promote public awareness of the completed plan while fostering support for future projects that will enhance the overall quality of the watershed. With the completion of this plan, the Lower Crooked Creek watershed will join the Upper Crooked Creek watershed on the Pennsylvania Rivers Registry ([www.dcnr.state.pa.us/brc/rivers/riverconservation/registry/](http://www.dcnr.state.pa.us/brc/rivers/riverconservation/registry/)).

### Purpose

The purpose of this study is to create a vision for the future of the Lower Crooked Creek watershed to become a significant resource and regional asset. The watershed community was actively involved in

developing that vision through public meetings, interviews, and surveys. Stakeholders identified important issues and resources needing restoration, protection, conservation, and/or preservation. The goal is to develop a strategy to make the vision for the watershed a reality. Practical solutions and action steps were suggested, and resources were identified to support implementation. This plan can be used to assist groups and citizens working and/or living in the watershed to obtain resources to fulfill the vision set forth for the area. This watershed conservation plan should also be used in planning for long-term growth.



*Crooked Creek*

One objective of the plan is to restore and enhance the watersheds' natural resources and regional assets. This can be achieved by implementing solutions and action plans identified and by working with a variety of organizations. Another objective is to increase environmental education in the watershed. Many residents and stakeholders are still unaware of basic watershed functions and the interaction between human activities and natural processes. Educational programs are needed to inform youth, residents, and stakeholders on environmental issues within the watersheds. Getting stakeholders actively involved increases the pride they have for their community and their willingness to become involved in conservation efforts.

## **Planning Process**

In October 2002, the Watershed Conservation Planning process was initiated at a public meeting held at the Crooked Creek Environmental Learning Center. Local citizens were invited to come together to voice their opinions about local conservation and the need to improve the watershed.

Municipal officials were invited to participate throughout the planning process. Between March and May 2003, steering committee members met with officials of each municipality within the watershed. They discussed projects completed by CrCWA and identified potential future projects. Officials were again outreached to at the 2003 Township Officers Conventions in Armstrong and Indiana counties.

Members of the steering committee and staff of the Watershed Assistance Center also attended a number of community events for outreach such as, the Kittanning River Blast event and the CrCWA Annual Fish Fry. At these events, community members were informed about the planning process via presentations, displays and personal communication. They were given the opportunity to express their opinions by completing a survey.

One year into the planning process, stakeholders' concerns and issues were again reviewed at a second public meeting in October 2003. Issues were identified and prioritized during a visioning session. Top priority issues identified include: all terrain vehicles, lack of public official support, education, zoning, biodiversity, and water quality improvements.

With the completion of the draft plan, a public meeting was held in March 2004. Stakeholders were given the opportunity to review the plan and provide comments. Public comments were collected and incorporated into the final plan. The final public meeting was held in June 2004 to present and distribute the plan.

## Implementation

The Lower Crooked Creek Watershed Conservation Plan should be used by any citizen, group, or agency interested in improving the quality of life in the Lower Crooked Creek and Tub Mill Run watersheds. This document should serve as a reference and educational tool to promote the conservation of natural resources, monitor and improve water quality, and advocate sound community planning practices.

Implementation of this plan is the responsibility of the entire watershed community and depends



*Watershed stakeholders gather to discuss the Lower Crooked Creek watershed*

upon cooperation and collaboration among many different organizations. Although the CrCWA will likely spearhead many of the projects throughout the watershed, numerous partnerships are needed to ensure success. Partnering among organizations is invaluable in implementing and completing projects.

Involvement of local municipal officials in watershed efforts is critical. Decisions that affect the overall quality of the watershed, such as establishing zoning ordinances, stormwater management, and sewage treatment begin at the local level. Municipal cooperation and collaboration on any community project provides the needed local connectivity for success. Many of the management recommendations involve changes in regulations and ordinances, which require the cooperation of local government officials.

## Management Recommendations

This chapter of the plan provides a matrix of the various issues identified for each of the subject areas. The recommendations were compiled from the municipal and public meetings, and individual comments. The matrix of recommendations includes: issues, recommended approaches, potential partners, potential funding sources, and priority ratings. Issues refer to a concern, situation, project, or idea deemed important by watershed stakeholders. The recommended approach is the action step, or objective, necessary to address the issue. Potential partners are groups with the resources best suited to assist in meeting the objectives. Potential funding sources identify avenues to finance projects identified. The priority rating was determined by public comment and response, and was based on need, feasibility, and probability of funding.

Management recommendations are suggestions to improve the quality of life within the watershed. It is important to note that these suggestions are non-regulatory in nature and are to be used as a guide. No limitations to the number or types of issues, actions, approaches, partners, or funding opportunities should be assumed due to ever-changing circumstances. Creativity is encouraged.

## Chapter Summaries

### Chapter 1. Project Area Characteristics

The project area characteristic topics addressed include: watershed location, size, climate, topography, major tributaries, socio-economic profiles, and education.

#### Summary

- The Lower Crooked Creek watershed drains 101.8 square miles within Indiana and Armstrong Counties.
- The Tub Mill Run watershed drains 1.79 square miles within Armstrong County.

- Both watersheds are located in the Pittsburgh Low Plateau section of the Appalachian Plateau Physiographic Province.
- Between the 1990 and 2000 census, the population in the watersheds decreased by 236 people.
- Land use regulation is generally lacking.
- There are two rail lines existing in the watersheds. The only active line is a spur of a Norfolk Southern line owned by the Keystone Generating Station.
- Roadways are limited to state highways and secondary roads.
- The largest employment sectors in Armstrong County include manufacturing, education, health, and social services.
- Four school districts and one technical school are located in the watersheds.

#### Goals

- Encourage municipal and regional planning initiatives.
- Complete county comprehensive plans.
- Encourage high growth industries to move into the region to enhance employment opportunities.
- Increase awareness and education of residents, municipalities, and decision makers to help them realize the economic benefits and importance of watershed protection.

### Chapter 2. Land Resources

The land resource topics addressed in this chapter include: geology, soil characteristics, land use, ownership, critical areas, and hazardous areas.

#### Summary

- There are four soil associations identified.
- There are 3,428 acres of agricultural security areas.
- Forestry and agriculture dominate the land use, accounting for 97 percent.
- Deciduous forests account for 99.8% of the forestland.
- Pasture and open areas account for 28.35 square miles.
- Croplands account for 14.55 square miles.
- The majority of the watersheds are privately owned.
- The United States Army Corps of Engineers owns 2,664 acres.
- Hazardous areas such as illegal dump sites, abandoned mines, refuse piles, waste sites, and subsidence areas are significant because of the threat they pose to environmental and human health.

#### Goals

- Work with local municipalities and farmers to preserve agricultural land use and the right to farm.
- Inventory, map, and cleanup illegal dumpsites and tire piles.
- Re-establish a chapter of PA CleanWays in Armstrong County.
- Encourage forestland owners to develop stewardship plans.
- Work with the agricultural community to implement best management practices on their properties.
- Establish and protect riparian buffers along streams using smart land use practices.
- Promote use of best management practices to control erosion and sedimentation related to farming, forestry, and mining industries.

### Chapter 3. Water Resources

The water resource topics addressed in this chapter include: major tributaries, wetlands, floodplains, lakes and ponds, surface water quality, Pennsylvania's impaired waters list, monitoring, drinking water, and water resources.

### Summary

- The Lower Crooked Creek watershed has 13 named tributaries.
- The watershed tributaries have been designated as warm water fisheries except for Cherry Run, which has been designated as a cold-water fishery.
- There are approximately 220 acres of wetlands.
- Visual assessments of the Lower Crooked Creek watershed indicate that floodplain encroachment has occurred in many areas.
- There are 42 ponds located throughout the watershed.
- Non-point source pollution such as abandoned mine drainage, erosion and sedimentation, agricultural runoff, sewage, and stormwater impact the watersheds.
- Abandoned mine drainage and agriculture are the sources of impairment for waters listed on the Pennsylvania Department of Environmental Protection 303(d) list of impaired waters in the Lower Crooked Creek watershed.

### Goals

- Reduce erosion and sedimentation by incorporating best management practices in all earth-moving activities.
- Develop a watershed monitoring program.
- Work to eliminate sewage discharges that have entered waterways.
- Continue to address abandoned mine drainage issues using the best available technology.
- Develop partnerships and community involvement to implement stream restoration projects.
- Develop source water protection plans for drinking water sources.
- Study impacts of ponds on water quality and wildlife habitat, and stormwater management.

## Chapter 4. Biological Resources

The biological resource topics addressed in this chapter include: wildlife; vegetation; rare, threatened and endangered species; and important habitats.

### Summary

- Two hundred and thirty one terrestrial and aquatic species reside in the Lower Crooked Creek watershed.
- Invasive and exotic species are a growing problem and can be blamed for stressed populations of native species.
- Rare, threatened and endangered species information is limited due to a lack of research studies.
- Currently, there are no designated natural heritage areas or important bird areas.

### Goals

- Conduct an invasive plant survey.
- Conduct County Natural Heritage Inventories in Armstrong and Indiana counties to identify natural heritage areas, and the presence of rare, threatened and endangered species.
- Increase public awareness on biological diversity and the importance of habitat and wildlife protection.
- Encourage the development of woodlot management plans.
- Encourage and implement management of biologically sensitive plant species and faunal habitats.
- Encourage property owners to establish or maintain riparian buffers.
- Incorporate aquatic habitat improvements into streambank stabilization and water quality improvement projects.
- Protect and preserve native habitats by employing smart land use practices.
- Implement abandoned mine drainage and sewage remediation projects to improve the viability of aquatic life.

## Chapter 5. Cultural Resources

The cultural resource topics addressed in this chapter include: recreation, environmental education, and historical resources.

### Summary

- Hiking, boating, hunting, fishing, camping, golfing, and horseback riding are common recreational opportunities.
- There are a variety of trails including 10 trails at Crooked Creek Lake, five at the Crooked Creek Horse Park, the Armstrong Trail, and the Baker Trail.
- The use of all terrain vehicles is a popular recreational activity.
- Public access to Lower Crooked Creek is limited to the boat launches at Rosston and Crooked Creek Lake.
- Cherry Run is the only PA Fish and Boat Commission approved trout stream.
- There are no State Parks, State Game Lands, or State Forests existing in the watershed.
- The cooperative farmland program includes 10,694 acres of farmland open to hunting.
- There exists a dire need to educate the public about the environmental challenges.
- Elizabeth Cochran, also known as Nellie Bly, is a famous female journalist who was born in Cochran Mills.
- Crooked Creek Dam and the Damtenders' House are the only "eligible" properties listed on the National Historic Places Register.

### Goals

- Market recreation and history to increase tourism in the region.
- Increase youth involvement in the outdoors.
- Partner with all terrain vehicle riders to establish appropriate trails without trespassing on private or restricted properties.
- Continue efforts to improve the Crooked Creek Horse Park.
- Utilize the Crooked Creek Environmental Learning Center to increase environmental awareness.
- Partner with the Armstrong County Commissioners, Tourist Bureau, and Department of Development to establish a county park in the Lower Crooked Creek watershed.

## Chapter 6. Issues and Concerns

Topics addressed in this chapter include: public meeting summaries, issues and concerns, and survey results.

### Summary

- Public input was collected from public meetings, community events, and meetings with individuals and municipal groups.
- Public officials were invited to participate throughout the planning process.
- Watershed residents and municipal officials were asked to complete surveys.
- Clean water, erosion and sedimentation, waste cleanup, public awareness and education, youth involvement, recreation, historic preservation, smart growth planning, working with municipal officials, and protecting biodiversity were all issues identified by watershed stakeholders.
- Participants surveyed thought that agriculture, residential, and forest were the most common land uses in the watershed.
- Abandoned mine drainage was noted as the most prevalent water quality issue. The lack of sewage treatment systems was second amongst those surveyed.
- Stakeholders recognized the various sources of recreation, amount of open space, diversity of species, natural beauty of the area, and local citizens as positive attributes of the watershed.
- Negative attributes identified include: lack of public awareness, threatened water quality,

- uncontrolled use of all terrain vehicles, lack of jobs and planning, and lack of trash cleanup.
- Stakeholders' goals and visions for the future of their watershed address public awareness, recreation, economics, water quality, funding, relationships with public officials, concerns of landowners, and using the regions resources to increase tourism.