HOCKING RIVER LAND USE PLAN
MANAGING A SOUTHEASTERN OHIO RESOURCE

PREPARED FOR THE ATHENS COUNTY
REGIONAL PLANNING COMMISSION

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A truss bridge over the Hocking River near Haydenville

Morning dew highlights spider webs on the River

FOREWORD

In order for any plan to truly succeed, it needs popular support. People must feel excited about the plan's potential and vision. A planner therefore needs to be a bit of a salesman as well as a technician, politician and analyst.

The word potential is important because often a planner sees opportunities within reach. In order to get government and business support the plan must gracefully combine vision with reality. Costs cannot be too high, demand for services must be predicted and available resources need analysis.

The writers believe that the Hocking River represents an untapped opportunity for southeastern Ohio. Its recreational potential and scenic qualities are assets that, when properly planned and managed, can improve the quality of life for those who live in its watershed.

ACKNOWLEDGMENTS

This report was made possible through the combined efforts of a number of individuals and organizations.

I wish to thank the Athens County Regional Planning Commission which provided the funds that made this endeavor a reality. This study would not have been possible without the funding and support received from the Commission.

Mr. Robert Eichenberg, my indefatigable supervisor and partner, is to be commended for his professional insight, suggestions and participation in collecting and compiling the necessary data for this report.

Mr. Archie Stanley, Athens County Engineer, must be commended for the office space and materials provided to undertake and complete this study. He created a convivial office atmosphere which made my job much easier.

I also wish to thank Chris Cotton, Cheryl Hedges, and Olga Coon, employees of the County Engineer for their invaluable assistance. Chris escorted me on several field trips and his training helped me understand the geography of the Hocking River basin. Olga was very helpful in receiving phone calls and collecting suggestions and concerns from interested officials and citizens. Cheryl helped with interviews and typed this report. A special thanks goes to Rebecca Woods, an instructor in the recreation and wildlife program at Hocking College. Rebecca and Hocking College provided canoes for the river trips. Rebecca paddled the lower portion of the river during the study and offered valuable suggestions.

Finally, I wish to thank all the prominent community leaders, federal and state employees, and representatives of various regional agencies for their time and suggestions in preparing this report.

EXECUTIVE SUMMARY

The Athens County Regional Planning Commission hired Marcus Dahn on a consultancy basis to work with Assistant County Engineer, Bob Eichenberg, to prepare a report detailing opportunities which the Hocking River poses for southeastern

Ohio. Research and data gathering were performed during the spring and summer of 1990. This initial phase involved interviewing a number of individuals whose jobs or personal interest involved them with the Hocking River. Ideas concerning wiser river management and needed projects on the River were sought. The research team also paddled the River from Haydenville, in Hocking County, to Coolville, in Athens County, in order to observe firsthand the interactions between nature and people in the floodplain. An inventory of 35 mm slides was made as one result of the trip.

The attached report was prepared as the second step in this project. The goal of the report is to provide information which will a) increase awareness and appreciation for the Hocking River in order to help protect it as a natural resource; b) analyze the economic development potential of recreation; and c) be the planning document needed to guide the implementation of the proposed projects.

Water and rivers have always impacted human civilization as cultures located near water to satisfy their many fresh water demands. People have not always understood their impacts on the water or the water's impacts on them. Pollution in many forms has entered waterways for years and only recently have there been serious attempts to alleviate it. Likewise, rivers have always periodically flooded, at times with disastrous effects for anyone living in the floodplains.

Planners are increasingly viewing human activity in the entire river watershed when planning for a particular river. A watershed is all the land that drains into a particular body of water. The land uses that occur in a watershed have a large impact on the river. Water flowing overland picks up pollutants and sediments which can degrade the water quality. Land uses such as farming, logging, and residential and commercial development affect the rates and volumes of water flow to a river. This impacts flood severity and is an example of how activity in one area can affect people miles away. Land uses, both past and present, are summarized with an explanation of how these uses impact the Hocking River. Mining, logging, agriculture, flood control, recreation, and transportation are reviewed.

The section entitled Plan for the Hocking River is written in a goal, objective, and project format. The goals are general statements of direction. They take a look at the big picture. The objectives are suggested means of reaching the stated goals. They are the means to make the plan a reality. The Table of Contents lists the goals, objectives, and projects for a quick overview.

A Hocking River Commission is proposed as the body which can oversee the implementation of the river plan. The Commission proposal acknowledges the fact that existing organizations are not set up or prepared to deal with the number or magnitude of projects described in this report.

Existing organizations may be asked for assistance but not to shoulder the responsibility of plan oversight.

The plan as proposed herein can only be realized with an acknowledgment from local leaders that it is worth pursuing. The necessary commitment can not be underestimated. The underlying premise of the plan is that local agencies, groups, and citizens can realize far greater potential when working in concert on the common goals stated in this report.

INTRODUCTION

Purpose of Study

This study was undertaken as a preliminary investigation to evaluate and provide planning for the Hocking River Floodplain in Athens County in order to achieve maximum protection and enjoyment of its aesthetic values and improvement and enhancement of its recreational potential. The County Land Use Plan, adopted in October 1989, established as one of its goals the protection of areas unsuitable for development. A corollary objective of this goal was the need to protect fragile and natural man-made environments, especially those that reflect the natural and cultural heritage of the county (Athens County Land Use Plan). Specific focus will be on: (a) increasing awareness and appreciation for the Hocking River, which will help protect the river as a natural resource; (b) analyzing the economic development potential of recreation; and (c) planning for the Hocking River (goals, objectives and policies).

The collection and analysis of information for this study started as an O.U. graduate internship project on January 26, 1990. It was further intensified on a consultancy basis in April through June 1990 and extended in July through September 1990. The information collection process included: (a) canoeing the 55.6 miles of the Hocking River in Athens County; (b) field trips to Hocking County and Cincinnati to meet with a canoe livery owner and the Directors of Rivers Unlimited and the Little Miami River, Inc.; (c) interviews conducted with representatives of citizens groups, the Ohio University Ground Maintenance Department, the Hocking Conservancy District, Ohio Environmental Protection Agency, Ohio Department of Natural Resources--Divisions of Reclamation and Wildlife, Athens County Commissioners, the Army Corps of Engineers, American Rivers, an Athens County Common Pleas Judge, a former County Commissioner, and heads of several non-profit organizations; and (d) reviewing federal and state laws concerning rivers.

This study has included interviewing people with expertise in matters relating to the river. They discussed both the problems and opportunities as they see them along the river. Additionally federal and state laws regarding rivers were reviewed, environmental organizations were surveyed, and previous studies regarding the problems and opportunities in the Hocking River Basin area were evaluated.

The study shall recommend methods, based upon the results of the aforementioned investigations, to both arrest

identified problems and to further enhance and utilize the river as a valuable natural resource.

The Importance of River and Watershed Planning

Mankind has always been attracted to water. Long before the invention of the alphabet or the "advent of civilization", the power of flowing water, the health renewing properties of mineral springs, and the fish laden depths of high mountain lakes all offered opportunities and benefits to mankind. Free-flowing waters, in particular, have often determined where people chose to settle by providing a means for transportation, commerce, agriculture, industry, and recreation. As civilization spread, so did both the use and misuse of fresh surface water. Although systems were designed to control the utilization of water, the restrictions were difficult to enforce or were not honored by all members of society. As a consequence of misuse, people were forced to move on or they perished and the land was left barren.

The destruction of irrigation systems by the ancient Mongols in what is now known as Iran and Iraq is a classic example of disrespect for water use (Meinger, pp. 1-5). Unfortunately, the abuse of resources has continued to present times with the situation made even more critical by entire countries which pollute, change the course of rivers and destroy water resources in the name of development.

The "death" of the Ohio River and the "burning" of the Cuyahoga River in the late 1960's and 1970's are cases in

point (Massaro, pp. 3-13). Fortunately for the Hocking River, the problems of misuse are at a manageable level, but, in order to protect, preserve, and better utilize it, the problems must be identified and solutions proposed.

A growing awareness of humankind's impacts on the earth's resources has led many states and regions to improve natural resources planning. One branch of these efforts is watershed management. A watershed is all the land that drains into a particular stream, river, pond, or lake. Watersheds can vary in size from the small acreage required for a pond site to major portions of entire continents which drain to form mighty rivers such as the Nile or Amazon (see appendix 1 -- the Hocking River Watershed).

A watershed is a convenient land feature to use for planning purposes because it is measurable topographically and because the resource with which it is associated, water, is an excellent barometer of environmental health. While the scope of this report cannot address all the watershed planning issues in the Hocking River basin and will focus on the river floodplain, the reader must be aware that the Hocking River is affected by all activity that occurs in its watershed. Water that falls as rain within the Hocking River watershed either evaporates, percolates underground as groundwater, or flows overland to the Hocking River.

The Massachusetts Audubon Society, in its report entitled Watershed Decisions summarized the importance of water management.

Watersheds are Cultural and Ecological Units

Watersheds are integrally connected with human culture and plant and animal ecology. There is a strong correlation between the quality, diversity, and degree of protection of water resources within a watershed and the richness of its flora and fauna. Healthy and diverse wildlife communities can serve as indicators that human uses of the land are not degrading important resources such as water supplies. Maintenance of biological diversity within a watershed context should be a goal of watershed planning and management.

Land Use and Water Quality are Linked to One Another

The bedrock, soils, and vegetation of a watershed determine the quality of the water flowing in the streams, under the ground, and in the lakes and ponds of the basin. Human activities, likewise, are reflected in water quality, because of the interconnections among the water resources within the watershed that were discussed above. Runoff flowing over or through the land picks up sediments and dissolves chemicals, carrying them into surface and groundwaters. Wastes disposed of into the ground or into receiving waters in the upper reaches of a watershed affect growth of aquatic plants downstream, as

well as survival of aquatic wildlife, health of fisheries, usability of water for industrial processes, potability of drinking water, and the safety of water for recreational uses such as swimming.

To mismanage our water resource is a mistake no one can afford to make (see appendix 4 for information concerning the State of Maryland's efforts at water resource protection).

LAND USE IN THE HOCKING RIVER WATERSHED

How we use the land for our daily activities has major impacts on our health and well-being. This section chronicles land use in the Hocking River watershed through time. These land uses have impacted the river, often in a negative fashion, and awareness of them will help planners better manage land use in the watershed.

Indians roamed the Hocking River region for thousands of years before white men settled the area in the late 1700's. The rugged terrain has greatly limited the development of the Hocking River watershed. Limited development opportunity has reduced employment opportunity but preserved the natural beauty of the forests and hills.

Fertile bottomland was farmed. While agricultural pursuits have been attempted on hillsides, many have failed due to poor soil and bad farming practices. The establishment of Ohio University in Athens in 1804 and the growth of coal mining from the 1830's into the 1900's played major roles in

the region's development. Brick manufacture and logging are two other industries which have had major land use impacts in the Hocking River watershed.

Mining

Some past land use practices still have major impacts on the Hocking River today. Before land reclamation was required of mining companies, mine spoil (or gob) was left uncovered on top of the ground. This material, high in iron and sulfur, chemically reacted with the rainfall and air to produce an acidic leachate which lowered the pH of our rivers and discolored the water. Many acres of unreclaimed mines still exist and continue to pollute the watershed.

The Abandoned Mine Lands program, funded through a tax on coal, is utilized to reclaim old mine spoils. While reclamation technology is helping to revitalize some areas, others go unreclaimed due to severe funding limitations. Old mines that pose a threat to life or property are reclaimed first, leaving the majority of sites untouched because they are posing only environmental threats in the form of water pollution. The Monday Creek and Sunday Creek watersheds are major polluters of the Hocking River due to this acid drainage.

Agriculture

Past agricultural practices left soil exposed to erosion which subsequently kept the River silted in. This is still a problem today although improved farming techniques help to

reduce erosion. These techniques include providing winter ground cover, contour plowing, no-till farming, strip cropping, and preparing ground at appropriate times of the year. Additionally, livestock farmers can reduce erosion by not exceeding the grazing capacity of the land, by fencing and rotating pastures, by keeping livestock out of woodlots, and by keeping livestock out of waterways. Many farmers in the Hocking Valley do not consistently practice good conservation techniques. An on-going education program is essential.

Less land is being used for agriculture today than was the case even 30 years ago. However, the use of chemicals in farming has increased over time. Due to agricultural runoff these chemicals accumulate and are deposited in our waterways. The EPA water quality study, currently underway, will hopefully shed light on the impacts of agricultural runoff.

Logging

Logging trees for the variety of hardwood products they provide has occurred ever since settlers arrived here in the late 1700's. There is still debate raging about the effects of clear-cutting on soil loss. However, almost no one disagrees that an improperly planned and executed logging operation causes severe erosion. Poorly designed operations are those that occur on land that is too steep, have roads on grades which are too steep, don't properly divert water off the logging roads, or don't provide seeding and erosion control on bare soil areas. Because the forest reclaims

itself, erosion from any one site doesn't continue forever. However, because enough logging occurs in the watershed at any given time, the Hocking River receives a continual flow of sediment from poorly planned and poorly implemented logging operations.

Floodplain Development and Flood Control

People have always settled near rivers because of the fertile, flat land and beautiful views which they provide. Such settlements on old river terraces such as The Plains and Athens are ideal sites provided any development occurs outside of the 100 year flood plain (that area of the floodplain which has a 1% chance of being flooded in a given year). Unfortunately, knowledge of flooding is often lacking or quickly forgotten and much development in the last two centuries has occurred in the 100 year floodplain. Some residential, commercial, and institutional properties in all cities and towns through which the River flows are subject to periodic flooding. Outside of cities and towns, residential and agricultural land uses are those which are inundated during high water periods.

Periodic major flooding which has occurred over the years led to the formation, in 1963, of the Hocking Conservancy District. The Conservancy District was organized to help plan, construct, and maintain flood protection on the Hocking River and its tributaries. The following is excerpted from The Hocking Conservancy District Annual Report for 1989:

HISTORY - STATUTORY AUTHORITY

The Hocking Conservancy District is a political subdivision and a public corporation of the State of Ohio. It was established in December 1963, under the Ohio Conservancy District Act, Section 6101.01 to 6101.84 inclusive of the Revised Code, for the prevention of floods and other purposes relating to water management.

The original Ohio Conservancy Act was enacted in 1914 and since that time amendments have broadened the purpose for which a district may be organized. The legislation has served as a model for similar laws in other states. Many of its features have been tested in state and federal courts. Under Ohio law, the authority to create a Conservancy District is vested in a Conservancy Court, consisting of one judge of the Court of Common Pleas from each County in the District. After creating the District, the Court appoints a three-member Board of Directors to administer the affairs of the District, with the Court retaining continuing jurisdiction. The Board of Directors is required to make an annual report to the Court of its proceedings and an accounting of its receipts and disbursements for the period.

The Conservancy Court also appoints a three-member Board of Appraisers. The Board appraises lands or other property to be acquired for right of way, reservoirs and

other works of the District, and makes appraisals of all benefits and damages accruing [sic] to all lands and all benefits accruing [sic] to public corporations as public entities by reason of the execution of the official plan. . . .

An Official Plan to carry out the purposes for which the Conservancy District was organized was completed in June 1965, and approved by the Court in November 1965. The Official Plan proposes many improvement projects for the two-county area with priorities affixed to each. One of the high priority projects was the Athens Local Flood Protection Project.

The Board of Directors is continuing to carry out the Official Plan adopted for the Conservancy District with annual reports submitted to the Hocking Conservancy Court consisting of the Judges of the Common Pleas Court of Athens and Hocking Counties.

THE HOCKING RIVER BASIN

The Hocking River is a southeastward flowing tributary of the Ohio River with its mouth at Hockingport, Ohio, about 200 miles below Pittsburgh. The watershed is roughly rectangular in shape, extending in a southeasterly direction an air line distance of about 70 miles from the headwaters in Fairfield County to the mouth of the river in Athens County, and has a maximum width of 26 miles and a total drainage area of

1200 square miles. The river distance from its source to its mouth is approximately 95 miles.

The bottom lands along the Hocking River are generally flat and cultivated, and average about one-half mile in width. Most of the large communities in the watershed are situated in the river valley, including the cities of Lancaster, Logan, Nelsonville, and Athens.

The earliest flood for which any specific date could be obtained occurred in 1873. Old newspaper accounts, however, indicate that major floods occurred at Athens in 1832, 1847, 1852, 1858 and 1859. A newspaper account of the flood of June 11, 1858 stated the river had left its bank four times in the previous 30-day period. According to the story, on June 11th the flood did "little" damage "because there was not much left to destroy".

The greatest flood, for which more or less complete information could be obtained, occurred in 1907. The highest flood recorded since collection of stage data was initiated, was in March, 1964 (The Hocking Conservancy District Annual Report, 1989).

As a result of major flooding which occurred in 1964 and again in 1968 the Army Corps of Engineers, working with the Hocking Conservancy District, constructed a major channelization project through the City of Athens. Plans for flood control projects in Chauncey, Nelsonville, and Logan have been discussed.

Flood control projects involving major channel work are extremely controversial and costly. While this report does not attempt a discussion of all the costs and benefits of flood control, it is safe to say that some of the unaesthetic side effects of channelization can be countered with a planned landscaping program. Organizing such a program will be discussed in the plan section of this report.

Recreation

One of the primary uses of the Hocking River is recreation. This takes the form of power boating, canoeing, fishing, swimming, camping, and hunting. These activities take place in spite of a scarcity of any planned, organized, or maintained facilities for recreating. There is one canoe livery north of the City of Logan. Hockingport, at the mouth of the Hocking River, has facilities for power boaters. The state maintains a boat ramp north of the Village of Coolville.

The Hocking River is not a large river and, like any waterway, is sensitive to overuse and abuse. Unmanaged recreation has the potential to degrade the natural environment and the Hocking River is no exception to this rule. The river is currently underutilized for recreation but the Hockingport area is already showing the negative effects of overuse and poorly planned development.

Powerboating on the river is generally limited to the area between Frost and Hockingport due to water depth. This form of recreation is increasingly popular but has the

negative aspect of interfering with other forms of recreation due to noise levels and the wake generated from boats travelling too fast. Wakes generated by powerboats travelling up the Hocking River are causing noticeable bank erosion. The authors observed water skiers on the river as far upriver as the State Boat Launch near Coolville. High speed powerboating on the Hocking River is both dangerous and detrimental to the river's environment.

Fishing on the river is very popular and has shown signs of improvement due to better sewage treatment facilities in Lancaster, Nelsonville, and Athens (Larry Pennington, OEPA). The best fishing appears to be scattered north of Nelsonville, in the river's bend at the White's Mill Dam, and at scattered points beginning several miles below Athens City to the Ohio River.

Hunting from a boat on a navigable river is legal in Ohio. The Hocking River is navigable and hunting is allowed provided any game killed be retrieved from the boat. Unless property owner permission is secured, the hunter cannot leave the boat to retrieve game (George Billy, ODNR). Due to the small size of the river, hunting without property owner permission does not seem wise.

With the exception of fast water seen during spring flooding, the Hocking River is ideal for easy and safe canoeing. Access points are limited and there are no organized camping facilities on the river, although fire pits

were seen on several of the larger sandbars. The River's small size and serenity make canoeing an appropriate form of recreation.

Swimming in the river is not a widespread activity although deeper pools are used. River swimming can be dangerous because of shallow water, snags, and extremely cloudy water. Swimming in the river will never take the place of pond or pool swimming in Athens County but will continue to occur, especially in deeper pools near the larger towns.

Land near the river in the City of Athens is used as a combination bikepath and jogging path. This is an excellent use of riverfront property which will be expanded as Athens County develops a bikepath between the cities of Nelsonville and Athens.

Passive forms of recreation on and near the river include walking and birding. The rich floodplain soil allows a diverse ecosystem to flourish. The student of nature can observe a wealth of flora and fauna, including some of Athens County's finest wildflowers.

Highways

Highways in the proximity of the river have both positive and negative aspects. Township and County roads provide access to the river and offer some very scenic views where historic truss bridges span the water. In hilly southeastern Ohio, flat floodplain land was a good locale for construction of state highways too. Unfortunately, where the river passes

close to busier routes, especially U.S. 33 and State Route 50 with their truck traffic, the noise is a reminder that the river's tranquility is close to a bustling civilization.

Historic Preservation

The Hocking River was the major transportation route for settlement of the region, therefore it is rich in history, much of which physically remains. Old towns, farm houses, bridges, mills and mill sites, Indian mounds, and canal remnants are constant reminders of our forefathers' presence in the region. Many of these historic features are unprotected and warrant further study. Additional research may recommend ways to insure their protection.

PLAN FOR THE HOCKING RIVER

This section represents the majority of the work performed as a part of this study. It is structured around five goals, the basis of which came from the planning direction of the Athens County Regional Planning Commission and stated in the Athens County Comprehensive Land Use Plan, 1989. The five goals for the Hocking River are as follows:

1. Enhancement of recreation potential
2. Protection of the Hocking River as a natural resource
3. Improve economic opportunities in southeastern Ohio
4. Improve communications among and between all parties with an interest in the Hocking River
5. Protect people and property near the Hocking River from periodic flooding.

In order to realize the goals, objectives and specific projects are listed under each. The objectives are general suggestions for goal attainment. The projects are more specific suggestions. The projects range in magnitude from the relatively simple and inexpensive to the very complex and costly. It is suggested that several small projects be attempted first and after several successes, larger projects can be initiated.

The key to moving forward with the river plan is the objective stated under goal #4: Form an organized planning and policy making body for the Hocking River - a Hocking River Commission. Currently there is no body that attempts to

coordinate plans and projects on the Hocking River. While the Commission would have no authority over existing federal, state, and local agencies it could serve as a facilitator and promoter of projects that are beneficial to many agencies. It is hoped that some members of the Commission whose jobs involve the Hocking River might be able to contribute some time during working hours to accomplish the Commission's goals.

The Plan will only be as good as the amount of quality time devoted to accomplishing its goals. Elected officials, government agencies, and local citizens must be convinced of the Plan's value before further steps are taken. The Athens County Regional Commission's role will be one of organizer and promoter in this regard.

Goal - Enhancement of Recreation Potential

People are naturally attracted to water resources for the many benefits they provide. The Hocking River is no exception. The authors share a common belief that the Hocking River's recreation potential has not been fully tapped. Given additional planning and programming, river use will likely occur amongst those who already occasionally use the river, local residents who currently don't use the river, and people from outside the region who don't use the river. The Columbus metropolitan area is growing and southeastern Ohio offers an escape from urban life. Urban dwellers who enjoy fishing and canoeing will take increased advantage of the Hocking River if

programs offering improved fishing, canoe access, and camping are put into place. It is also crucial to coordinate river recreation with other events and activities in the region.

Objective - Improve Access to the River

Access to the Hocking River is difficult in many areas due to the steepness of banks, property ownership patterns, and scarcity of roads along certain of its stretches. Limited access has the benefit of preserving resources by preventing overuse. While additional access sites are not necessarily recommended, especially in more remote areas, access sites currently being used should be improved.

Project - Provide canoe access points near roadways. Most canoes and small boats are put in the river near bridges where the distance between vehicles and the river is minimal. Where banks are steep, handling a canoe can be a difficult task especially for the very young and old. Strategic points near roadways need to be developed for improved access. The Ohio Department of Natural Resources has typical plans for the development of these sites and access to some limited funding for such purpose (Jim Marshall, ODNR).

Project - Investigate a river park idea in the City of Athens. The channelization project through the City of Athens currently provides some recreation opportunity because of the bikepath and convenient access. The recreation tends to be exercise-oriented although some students and families use the path for walking. It is recommended that planning be pursued

which will provide additional landscaping and developed access to the river's edge. This will encourage more passive recreation such as walking and picnicking and draw local residents to the river. To fully realize the river's benefits it is important to be able to walk along the river's edge even if only for short distances.

Project - Coordinate plans with the County bikepath development. Athens County is developing a bikepath to eventually travel between the City of Athens and Nelsonville. The bikepath is adjacent to the Hocking River for virtually its entire length. Consideration should be given to providing developed river access at key points along the pathway.

Objective - Provide Regulated Camping Opportunities at Strategic Locations

Campsites along the Hocking River consist of fire pits on some of the bigger sandbars. These areas offer no privacy to campers and are under water during flooding. The possibilities of private and public campgrounds need investigation. Some sites could be accessible by auto at various canoe put-in points and some could be primitive sites with access from the river only. Adequate management is required to keep such sites clean and preserved.

Project - Develop small campsites at strategic locations. Opportunities exist to provide small campsites at points along the river which should be planned according to several criteria: (a) strategic spacing of camps for variable-length

canoe trips; (b) willingness of property owners to cooperate; and (c) physical suitability of sites in terms of access, flood potential, and aesthetics.

Project - Investigate the possibility of a full service campsite near the City of Athens. While Athens County offers camping opportunities at several state parks and in the Wayne National Forest, these areas are removed from the river. The City is drawing attractions such as the American Motorcycle Association's annual event. Motels are full during these times and some of the event's participants would take advantage of camping opportunities in or near the City. A river site would be attractive and be useful for tourists. The City of Marquette, Michigan, has such a facility (see appendix 2).

Objective - Increase and Improve Fish and Wildlife Habitat

One of the Hocking River's major drawing cards is the diversity of wildlife it offers. Existing opportunities for fishing and wildlife viewing must be preserved and expanded.

Project - Provide riffles and lunker structures. The best fishing areas occur where the water is rich in oxygen. This occurs, for example, where water is mixed with air as it tumbles over the former dam at White's Mill. Participants in Hocking College's "Wildlife Management" program plan to improve fishing on the river by providing strategically placed natural and man-made structures to help add the necessary oxygen to

the water. These structures can be placed where they offer a minimal resistance to floodwaters.

Project - Identify nesting areas and protect them. A variety of bird species inhabit the river corridor. Special attention must be paid to identifying the most sensitive nesting areas and insuring they are protected, most likely by volunteer monitoring.

Project - Provide vegetative plantings (buffer strips) in the river corridor. See vegetative plantings, p. 30.

Objective - Keep River Cleared of Fallen Trees and Debris Where Needed

Log and debris jams can cause floodwaters to back up and also can make canoe travel difficult. Some river studies indicate that debris clearing is the preferred alternative to channelization for flood control. An annual inspection and river cleanup can be initiated with local villages, townships, and volunteers to remove log and debris jams.

Objective - Study the Effects of Increased Power Boating on the Hocking River

The increased popularity of the river as a recreation source has led to increased use of the river by powerboats featuring large horsepower engines. Because the Hocking River is relatively small compared to the Ohio River, these powerboats, if unregulated, can produce the negative side effects of increased bank erosion, loud noise levels, and dangerous conditions that accompany high speed travel. A no-

wake law should be enforced by the Ohio Department of Natural Resources.

Objective - Develop an Education Program

A self-guided tour of the Hocking River, complete with mapping, is needed. The maps can be similar to those available for the state hiking trails. Educational signs or plaques are another possibility for unique sites on the river.

Goal - Protection of the Hocking River As a Natural Resource

Objective - Minimize Erosion and Sedimentation of the Hocking

What is erosion? It is a gradual wearing away of and/or gradual destruction, by abrasion, of river banks, usually due to flowing water and the carrying away of soil by wind. Eroding land carries debris, fertilizers and pesticides from farmland into the river. According to Mitch Farley of ODNR's Reclamation Division, and Larry Pennington of the Ohio EPA (1990), acid drainage and erosion are the two most severe problems facing the Hocking River.

There are other sources of sedimentation. Highway construction and maintenance, residential and commercial development, and logging road construction contribute significantly to erosion and subsequent sedimentation. As sediment (suspended soil particles that settle to the bottom of the river) builds up, the river level rises, increasing flood potential. Sediments kill or displace wildlife living in and near the river.

When asked if there were any conditions such as erosion, pollution, or sedimentation that could be improved on their property, 86% of those landowners surveyed along the Hocking River said that erosion, resulting in sediment build-up, was the biggest problem confronting them (1990). The study verified that farming and deforestation of hillsides adjacent to the river are additional causes of erosion of the Hocking Riverbanks.

Water quality testing of the Hocking River is continuing. The OEPA is conducting biological, chemical and physical sampling. These tests will help the OEPA verify existing water quality and check for the impact of water treatment plants as well as the status of mine drainage. The OEPA will calculate pollution levels and recommend any enforcement measures to help maintain water quality (1990).

Project - Initiate education programs concerning erosion.

The study found that erosion is affecting residential and commercial riverfront property. To address these problems, an educational program for local property owners and river users, must be considered. In its 1987 study the Ohio Riverfront Redevelopment Task Force, established at the request of the Ohio General Assembly, mandated the Ohio Department of Natural Resources, the Ohio River Development Commission, and the U.S. Army Corps of Engineers to "coordinate, develop, and implement an overall plan to include specific policies and programs to contend with, ameliorate, and correct the problems of erosion. . . . [The plan was to] provide maximum protection for

owners, users and potential developers of the Ohio riverbank property" (River Development of the Ohio Riverfront, p. 49). The ODNR was specifically clothed with the authority to work to reduce the loss of valuable riverbank property and to alert occupants to the problems of "erodible land" by doing the following: (a) asking the Division of Soil and Water Conservation to conduct a review of aerial photos of river corridors to locate riverbank erosion and determine whether more detailed review is needed, and (b) asking county Soil and Water Conservation Districts and the Division of Soil Conservation to initiate a project to verify apparent riverbank erosion problem areas. In addition to farmland, other private property and public lands adjacent to any river should be evaluated to calculate the total economic impact of erosion losses on farming, on personal property, and on commercial and industrial development.

Public awareness of these endeavors is essential if any evaluation effort is to be successful. The public must be involved from start to finish. Building a support base of interested local officials, landowners, and public and private interests is the key to any successful river conservation efforts. Public involvement means "building support and developing a constituency involving a broad cross-section of interested individuals" (National Park Service, Div. of Park and Resources: Riverwork Book, pp. 12-13). Studies show that public involvement and education ensure that a community will

view such goals as relevant to its needs and will cooperate towards achieving them.

Project - Encourage vegetative plantings. Traveling along the 56 mile stretch of the river within Athens County, it was determined that vegetative planting (creating a buffer strip to help solve the erosion problem) may be another effort in which property owners could be involved (see appendix 4).

According to Jim Marshall from ODNR's Division of Wildlife, erosion can be controlled with proper application of recommendations by the Soil Conservation Service, the U.S. Forestry Service, or the State Division of Forestry. For example, when used as directed, trees such as box elder, sycamore, willow, and silver maple can help in erosion control. It is also possible to encourage planting winter cover crops in the flood plain.

In order to gain the maximum use and enjoyment of the river's natural resources, it is urgent that an ecological balance be achieved and maintained. This study urges that in addition to preventing soil losses by erosion, there should be protection against water quality degradation. Furthermore, measures must be taken to preserve ecologically significant land and biotic resources.

Project - Identification and preservation of wetlands. While it is true that the specific study of wetlands and their ecological importance is a relatively new phenomenon in the study of the environment, identification and protection of the

existing ones near the Hocking River must and should be encouraged. Wetlands are "fragile ecosystems, easily damaged or destroyed by the various activities of man" (Kenneth G. McManus, Missouri State Conservationist, letter of Jan. 16, 1979). Although wetlands form a significant part of our natural resource base people have generally viewed wetlands as unproductive wastelands fit only for conversion to more useful purposes. Actually wetlands are "highly productive areas [which] provide significant environmental diversity, aid in natural flood control, help to recharge ground water aquifers, improve water quality, and furnish critical habitat for many fish and wildlife species" (McManus, USDA-SCS, 1979). For a large number of people, wetlands provide recreational, aesthetic, and scientific areas of high interest. Thus, it is no wonder that both the Federal and State governments are increasingly involved in both the proper utilization as well as the preservation of wetlands across the United States.

What are wetlands and why are they important? The Environmental Protection Agency and the Army Corps of Engineers define wetlands as "those areas 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." Generally, this includes swamps, marshes, bogs and similar areas and can be both vegetated and nonvegetated. The Food Security Act of

1985 (U.S. Department of Agriculture) adds that wetlands have a "predominance of hydric soils . . . and a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions. . . ." The Fish and Wildlife Service and Federal and State agencies define wetlands as "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. . . ." (Federal Manual for Identifying and Delineating Jurisdictional Wetlands, pp. 2-5).

It is estimated that 50% of the wetlands in the midwestern states (including unglaciated southeast Ohio) have been drained over the past 100 years, primarily for agricultural development. A significant proportion of the remaining 50% are fringe wetlands. Preliminary studies show that wetlands in southeastern Ohio are of the fringe type. By way of definition, "fringe" wetlands are those found along the edge of lakes or reservoirs. According to the EPA, fringe wetlands provide many important functions among which are: (a) improving water quality by acting as sinks for nutrients, by filtering suspended solids and by absorbing heavy metals; (b) stabilizing shorelines, minimizing the erosive forces of waves, seiches, and boat wakes; and (c) providing important food sources, nesting sites, nurseries, and refuges for fish and wildlife (Wetlands Creation and Restoration: The Status of the Science, E.P.A., pp. 306-309).

There are numerous laws supporting the identification, proper utilization and preservation of wetlands. From the voluminous laws reviewed on this topic, the study found that the Federal government seems persistent in its determination to provide assistance to State and local authorities to better utilize and preserve the remaining wetlands. For example, Executive Order 11990-Protection of Wetlands in 1977 supported the National Environmental Policy Act of 1969 in declaring that:

> in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, (1) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities, and (2) To improve and coordinate Federal plans, functions, programs and resources to the end that the Nation may attain the widest range of beneficial uses of the environment without degradation and risk to health or safety, each agency, to the extend permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless each agency finds that: (a)

there is no practicable alternative to such construction, and (b) that the proposed action included all practicable measures to minimize harm to wetlands. . . .

This Order, like other Acts, mandated that there be an opportunity for early public review of any plans or proposals for new construction in wetland areas. This Executive Order also helps to promote, "in concert with other Federal and State statutes and programs, the conservation of the wetlands of the Nation in order to maintain the public benefits" (U.S. Congress, PL 99-645, Sec 303). Based on the aforementioned, the U.S. Congress declared that "for fiscal year 1988 and thereafter, each comprehensive statewide outdoor recreation plan shall specifically address wetlands within that State as an important outdoor recreation resource as a prerequisite to approval" (U.S. Congress, PL 99-645). The National Wetlands Inventory exercise being conducted in Ohio is a part of this piece of legislation. The inventory for Southeast Ohio, will be completed by August of 1991, and laws, rules, and regulations governing the protection and better utilization of wetlands are expected to be enforced. Wetlands, like other depletable resources, have no second chance and as such, must be protected for the enjoyment of all (see appendices 10 and 13 for more information on wetlands).

Project - Attempt to enact and enforce a no-wake law. In the Coolville and Hockingport areas, landowners complained about erosion caused by boat wakes and the fact that no buoys had

been installed in the area. The study found that some erosion is caused by water skiing and other high speed boating activity. While there are laws describing where and when such recreational activity involving boats is allowed, apparently the laws are not yet applicable to the Hocking River. The reason is probably due to the fact that the River is not named a "wild and scenic river" which would give it the status required to receive some form of state and federal protection. In fact, Chapter 1547.08 (Operation in Restricted Areas) of the Ohio Department of Natural Resources' Division of Watercraft Revised Code states that:

> no person shall operate a watercraft at greater than idle speed or at a speed that creates a wake near any marina, boat docking facility, gasoline dock, launch ramp, recreational boat harbor, or harbor entrance or within any area buoyed or marked as a no wake area . . .
>
> (see appendix 12 for laws regulating watercraft).

<u>Objective - Minimize Chemical Pollutants Going Into the River</u>

Water pollutants are typically described as either point or non-point. Any pollutants being discharged at a separate, identifiable point of entry, such as a pipe, are considered to be point discharges. Effluents from industry and water treatment plants are examples of point-source pollutants. Pollution which enters our waters by general dispersion through the groundwater or through overland flow is known as non-point discharge. Examples of non-point discharge include

septic systems, road salt, fuel tanks, agricultural chemical runoff, and leachates from old landfills and strip and deep mines.

The Ohio EPA monitors point discharges. Non-point discharges are much more difficult to monitor because their sources are widespread and pollution sources are much more difficult to locate once the pollution has been mixed in the environment. While pollution from the activity of people is never going to be completely erased, its impacts can be reduced and monitored.

Project - Encourage buffer strip plantings, especially adjacent to farmland. The filtering capability of vegetation is well documented. Water flowing through plant roots is slowed, thus allowing microbes in the soil to break down pollutants. Vegetation also absorbs large quantities of water which helps to keep certain dissolved pollutants out of the river (see appendix 4). A vegetative strip 50 feet wide should be considered the minimum.

Project - Track EPA water monitoring activities. The results of periodic water quality testing by the Ohio EPA should be monitored and assistance offered to help alleviate known pollution sources that are having a detrimental effect on the river.

Project - Utilize a river commission to serve as a monitoring agency to identify problems or potential problems. A volunteer commission (see proposal p. 42) can assist in being

the eyes and ears for the river and work in conjunction with ODNR and the EPA.

Project - Investigate wetlands creation for sewage plant effluent treatment. Loss of wetlands in the United States is a major concern because of the many benefits they provide (see identification and preservation of wetlands, pp. 30). Costs of treating waste water also continue to increase over time. Because wetlands have proven water filtering capabilities and provide excellent wildlife habitat, investigations should center on the feasibility of creating wetlands near wastewater treatment facilities to act as additional treatment areas. In their study, Experimental Use of Emergent Vegetation for the Biological Treatment of Municipal Wastewater, F. Spangler, W. Sloey, and C.W. Fetter, concluded that in Wisconsin, "Wetlands have been effective at improving water quality where they have been used for wastewater treatment." Should any existing wetlands have to be destroyed and new wetlands created as is required by law, locations near wastewater treatment facilities may be feasible sites. The land near these structures is usually of little value for development because of odors and proximity to the floodplain.

Objective - Maximize the Beauty and Aesthetics of the Hocking River

Project - Encourage alternatives to stone rip rap for bank stabilization based upon suggestions of the Soil Conservation Service. Mixed success has been achieved utilizing large rock

rip rap for bank stabilization in those areas where flooding has undercut a bank, creating an unstable geologic situation. Such rip rap tends to be unsightly since it takes many years for vegetation to cover the rocks. At times the rock only adds weight to an already top heavy area, thus creating more, rather than less, instability. The Soil Conservation Service has tested two species of willow tree, both of which hold promise as feasible natural alternatives to rip rap for bank stabilization (Athens SCS). The species are named Streamco Willow and Banker's Willow. Such vegetation then provides many other benefits such as wildlife habitat and water filtering in additional to bank stabilization.

Project - Provide a specific plan for landscaping in the Hocking Conservancy District's flood control project in the City of Athens. Athens County must take pride in the fact that it lies in the premier tree growing region in the State of Ohio. The attractiveness of Athens to outsiders largely depends on this fact. The forested hills of southeastern Ohio help draw students to our University, the major regional employer.

The highway and river channelization projects of recent years have left large areas near the City of Athens barren of trees. While some large open spaces are very important near cities because of the views and aura of expansiveness they provide, a proper balance between wooded areas and openings

must be maintained. Additional landscaping in areas near the channelization project is warranted.

The following are important points to consider when designing a detailed landscaping plan for the channelized area in the City:

1. Plantings must take place no closer than 20 feet to the channel's banks. The Hocking Conservancy District cannot plant any vegetation which will impede water flow in the channel.

2. Ohio University and the Hocking Conservancy District must be involved with planning this endeavor.

3. The highly compacted soil within the project makes growing vegetation difficult. A subsoiler (tractor-drawn implement capable of loosening soil up to four feet deep) should be used to help break up the soil wherever trees will be planted. Species which grow well in moist, compacted soil should be considered. Pin oak is an excellent example.

4. A representative from the U.S. Forest Service, the ODNR Division of Forestry, the Dawe's Arboretum or Holden Arboretum may be available to offer initial planning advice at minimal expense.

5. Begin with several small plots to insure that the plantings will prosper. Unless the compacted soil is properly worked, it will greatly limit tree growth.

6. The Hocking Conservancy District and Ohio University are willing to cooperate provided some successes can be

guaranteed. Funding for some of the planting stock may be available from these bodies.

Project - Initiate an annual river cleanup. A major river cleanup can be organized every spring with the help of elected officials, local outdoor organizations, students, and volunteers.

Project - Initiate a scenic easement program on the Hocking River. An easement is defined as a nonprofitable interest in land owned by another that entitles its holder to a specific limited use or enjoyment (Webster's, 1967). Scenic easements are those granted by a landowner to perpetually keep an area in its relatively undeveloped, natural condition for the enjoyment and use of the public. Scenic easements can preserve the river and make its management more efficient. For example, an easement may contain a clause allowing for the planting of a buffer strip of vegetation (see appendix 9).

Goal - Improve Economic Opportunities in Southeastern Ohio

Traditionally, agriculture and coal mining have been the primary sources of income in southeast Ohio, but both industries declined during the latter part of the 20th century. The problems of agriculture stemmed, in part, from the uneconomic scale of small farms, increased use of less productive hillside land, lack of conservation measures to prevent soil erosion and limited use of increasingly expensive farm technology. The high sulfur coal remaining in southeastern Ohio is expensive to extract and current prices

do not justify mining it at any large scale. This scenario is not expected to change soon. With little or no manufacturing industries moving into the area, other sources of income must be contemplated to create jobs in southeastern Ohio.

Objective - Promote the Hocking River as a Tourist Attraction

While it is true that the Hocking River may not be as scenic as rivers in West Virginia or the Little Muskingum River in Monroe and Washington Counties, in many respects it does offer economic opportunities as a recreational resource. Recent studies show that tourism and recreational industries have experienced tremendous growth in recent years and that both tend to create stable jobs.

There are other reasons for developing the Hocking River as a tourist and recreational attraction. For example, an overwhelming majority (89%) of property owners interviewed believe that the Hocking River has some recreational potential that should be developed. Another 75% consider the area of the river which fronts their own property as scenic and thus, a possible tourist attraction needing to be developed.

Project - Promote recreational opportunities to Columbus and other markets. Athens County is located 75 miles from the growing urban areas in Columbus and its vicinity. Many of these residents already flock to nearby Hocking Hills Park on weekends and holidays. Some of them will be interested in pursuing other activities only slightly further southeast.

For recreational activities such as canoeing, fishing, boating and camping, the authors identified areas suitable for such activities. From Haydenville to Hockingport, areas were identified to accommodate various outdoor activities along the river. The City of Athens might pursue restaurants, a night-club and other commercial investments involving riverfront entertainment. A detailed map showing various points of recreational and historical interest on the river must be developed (see map example - appendix 11).

Goal - Improve Communications Among and Between All Parties with an Interest in the Hocking River

Many people utilize the river for a variety of reasons. Likewise, many government agencies and institutions perform management functions on the river. These include water quality testing, flood control, wildlife law enforcement, and wildlife management. As often happens, communication between and among these groups and citizens is less than ideal because there is no organized forum for the sharing of information and the formation of a comprehensive management plan.

Objective - Form an Organized Planning and Policy-Making Body for the Hocking River - a Hocking River Commission

A Hocking River Commission can be formed under the auspices of the County Regional Planning Commission and would be given the tasks of formalizing a comprehensive plan for the river and of overseeing various projects along the riverfront. Commission members could be chosen from the following groups:

riverfront property owners, OEPA, ODNR, environmental organizations, the chamber of commerce, fishermen, boat owners, the Hocking Conservancy District, Ohio University, Hocking College, Soil Conservation Service, and local government agencies.

It is important that the River Commission possess certain attributes in order to simplify its many difficult tasks. Some of these attributes include:

* Autonomy - After its initial formation the Commission should be independent of any existing political body.
* Membership from outside Athens County - The Regional Planning Commission is a good choice of an agency to organize a river commission since its planning authority is regional and sometimes extends beyond County boundaries. Since the Hocking River flows through two other counties, commission representation must include residents from Fairfield and Hocking Counties.
* Structure - Bylaws and elected officers are essential.
* Form - The Commission should be organized as a non-profit entity so that donations it receives are tax exempt. Advice concerning its organizational form can be obtained from the County Prosecutor.

Project - Perform a programming function that includes formalizing the concepts in this paper and implementing all the specific action-oriented programs such as an erosion control plan and landscaping the river in Athens City. The

Commission's plan may pick one or two small projects to begin and after several successes move on to the bigger goals. Perhaps a canoe access could be developed first with major landscaping or erosion control programs to follow.

Goal - Protect People and Property Near the Hocking River From Periodic Flooding

Objective - Regulate Development in the Floodplain

Historically, man has chosen to live near a source of fresh water. Study results show that in recent years the image of riverfront property has improved from that of neglected, unkempt industrial and refuse sites to valuable assets for developers of commercial, residential and recreational facilities, thereby expanding the local tax base. A recent study done by biologist Dr. Karl Schurr, of Bowling Green State University, et al, on the channelized and natural course of the Portage River reveals that: (a) Homes built on a natural stream are assessed to be worth 133% more than those built on a channelized stream, and (b) Since excellent housing and a good tax base are vital assets to a community, natural streams can help to create quality living environments--resulting in higher property values or higher tax returns--which ultimately attract appropriate new industry to a region (Schurr, et al, American Rivers, pp. 6-7). Any development which does occur near the Hocking River must be planned well to insure that the river's natural and aesthetic qualities are maintained.

Project - Implement floodplain zoning. Athens County is in the process of adopting floodplain zoning for all unincorporated areas. This zoning will help prevent poorly planned development in flood prone areas. Proper administration of this program is crucial (see appendix 8 for floodplain information).

Quality development of these areas will be largely dependent on the owners' ability to preserve the river's natural heritage while carefully balancing the needs for economic development, job creation and retention, and public enjoyment. The emphasis cannot be made strongly enough that the Hocking River is a sensitive resource and that recreational development must favor passive forms that leave minimal impact.

Project - Continue to enforce subdivision regulations as they relate to development in flood prone areas. The subdivision regulations are an excellent tool for limiting development in the hazardous and environmentally sensitive floodplains.

Objective - Provide Information Concerning the Hazards of Developing in the Floodplain

Periodic media coverage of the flood hazard issue should be insured.

CONCLUSION

A study of the Hocking River was initiated by the Athens County Regional Planning Commission in early 1990. The study's purpose is to provide a plan which would assist local

decision makers with the use and preservation of the Hocking River as a natural resource. Increased use of the river for recreation, the flooding which occurred in 1990, and the growing importance of preserving our freshwater resources all point to the fact that a comprehensive planning approach for the Hocking River is essential.

Many agencies, institutions, and individuals have an interest in the river. As the County population grows and river use increases, the need for a planned and coordinated program is vital. This report has discussed river planning in general, a history of land use in the Hocking River watershed, and a series of goals, objectives, and specific projects for the Hocking River. The key element for implementation of the plan is the formation of a Hocking River Commission. The Commission's responsibility will be one of setting priorities for river projects and adding or deleting projects as it sees fit. The Commission will be action-oriented and its primary task will be one of implementing the plan.

The many people who enjoy the Hocking River share a commitment and energy to preserve and protect it. This can only happen with wise planning that listens to the needs and concerns of all residents in the river watershed. This report represents a first step in that process.