

2000
Annual Update

BLACK RIVER REMEDIAL ACTION PLAN



*Celebrating
Our Past -
Protecting
Our Future*

June 2001

The purpose of this Annual Report is to inform the watershed community on the progress of the Black River RAP. It provides background information on many of the projects being undertaken annually. If you would like more detailed information on any of the topics, feel free to contact the organizations referenced on page 21 of this report.

Cover Photos:



Cover Photos:
Photos courtesy Ohio EPA and the legacy of Seventh Generation.



AREA OF CONCERNS

Great Lakes Areas of Concern (AOCs) are severely degraded geographic areas within the Great Lakes Basin. AOCs are defined as “geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area’s ability to support aquatic life.” The U.S. and Canadian governments have identified 43 such areas - 26 in U.S. waters, including the Black River Area of Concern; 17 in Canadian waters (with five being shared between the U.S. and Canada on connecting river systems). Collingwood Harbour, in Ontario, is the first of these 43 sites to be delisted.

REMEDIAL ACTION PLANS (RAPs)

Remedial Action Plans (RAPs) identify specific problems in severely degraded Great Lakes Areas of Concern (AOC) and describe methods for correcting them.



Remedial Action Plan
Our River, Our Responsibility

2000 Annual Update

Table of Contents

Prepared by:
Black River Remedial Action Plan
Coordinating Committee

Black River RAP Secretariat
Provided by
Northeast Ohio Areawide
Coordinating Agency
1299 Superior Avenue
Cleveland, Ohio 44114

Commissioner Steve Hambley
Medina County
Governing Board President

Howard Maier
Executive Director

John Beeker
Director of Environmental Planning
Project Manager

Pamela L. Davis
Writer/Editor

Cheryl Onesky
Graphic Design

Message from the Chair	2
Web Links	3
A Progress Report Card: A Look At the Beneficial Use Impairments of the Black River	4
Flash Back: 1990-2000 Ten Years of Action on the Black River	6
Soil Erosion & Sedimentation: A Problem Then and A Problem Now	8
On-Lot or Off-Lot? How Well Do Home Sewage Disposal Systems Work in Lorain County?	10
Natural Resource Planning and Protection Initiatives in the Black River Watershed	12
Oberlin College: Providing Environmental Education to the Black River Watershed Community	14
Establishing New Partnerships: Wastewater Treatment Plants and the Black River Jointly Benefit	17
What's New In Wetlands Mitigation?	18
Local Stakeholders Work Together: the Lower Black River Water Quality Model Project	19
River Plans for 2001: Priorities of the Black River RAP	20
2000 Black River RAP Coordinating Committee Roster	21
RAP Contacts	Back Cover

MESSAGE FROM THE CHAIR

Ten Years! I am so very excited to be celebrating the tenth anniversary of the Black River RAP and proud to have continued to serve as the chair of the RAP Coordinating Committee since its inception in 1991. Over the last decade, I have been witness to and a participant in many efforts to protect and improve the water quality of the Black River that should be celebrated. Many of these efforts are highlighted in the timeline of watershed events depicted in this report.

The Black River Watershed Community directly benefited from the combined efforts of U.S. and Ohio EPA in addressing point source pollution through improvements to and enforcement of the National Pollutant Discharge Elimination System (NPDES) permitting process. These improvements drastically reduced the impacts from point source pollution by regulating and monitoring what was being directly discharged to the Black River. As a result, water quality and quantity problems related to nonpoint sources of pollution were uncovered.

Over the last few years, the Black River RAP Coordinating Committee

has actively worked to identify nonpoint source pollution contributors, identify remediation strategies for implementation. In 1997, the Committee adopted a Long Range Plan, which directly identified causes/contributing sources of nonpoint source pollution and some strategic actions. Many of the articles included in this annual report highlight activities that were undertaken during the last year to address, manage and minimize impacts from nonpoint pollution sources.

I truly believe that the last ten years have been tremendously beneficial to the overall environmental health of the Black River watershed. Some may argue that very little change has occurred in the watershed, that many of the river's beneficial uses are still impaired (for more information review "A Progress Report

"... the last ten years have been tremendously beneficial to the overall environmental health of the Black River watershed."

Card: A Look at the Beneficial Use Impairments of the Black River" on page 4). Substantial change takes time and in the case of the Black River, many water quality

improvements may not even become evident even in the near future. In addition, these improvements could be negatively impacted and even threatened by land use activities of the watershed community (see the article on Soil Erosion and Sediment Control on page 8). Please visit and explore the web sites listed below for additional information on the Black River.

Watershed education is very necessary in ensuring the future health of the Black River. The Black River RAP Coordinating Committee is committed to educating and communicating with the watershed community. In light of Seventh Generation's closing, education has become a core component of

the Committee's priorities for 2001, which are discussed in the final article of this annual report – Protecting Our Future.

Please join the Black River RAP Coordinating Committee and the River's Stakeholder Partnering Agencies in Celebrating Our Past and Protecting Our Future.

Ken Pearce

Chair, of the Black River RAP Coordinating Committee and Lorain County Health Commissioner

Black River Related Web Sites

Ohio EPA - Black River RAP

<http://www.epa.gov/glnpo.aoc/blackriver.html>

Ohio EPA - Explore Your Watershed

<http://www.chagrin.epa.state.oh.us/watershed/grp/group86.html>

Oberlin College - Black River Watershed Education Project

<http://oberlin.edu/-envs/projects/html>

International Joint Commission - Great Lake Water Quality Board

<http://www.ijc.org/boards/wqb/wqbrap.html>

NOACA - Remedial Action Plans

<http://www.noaca.org/Remedial Action Plans RAP/remedial action plans.rap.htm>

A PROGRESS REPORT CARD: A LOOK AT THE BENEFICIAL USE IMPAIRMENTS OF THE BLACK RIVER

How healthy or polluted is the Black River? In 1988, the Black River was identified as one of the Great Lakes 43 Areas of Concern (AOC) as a result of impairments to the "beneficial uses" of the river. Impairment to a beneficial use means a change in the chemical, physical or biological integrity of the river (and the Great Lakes)

Impairments			
Beneficial Use Impairments	Status of Black River Impairment	Progress Rating*	Comments
Fish and Wildlife Consumption	Restrictions on fish consumption	Fish - S Wildlife - UD	Brown bullhead catfish cancer rates have decreased Waterfowl may be contaminated, but a problem has not been documented, nor have any improvements. Bird tissue sampling is needed to clarify existing conditions
Fish and Wildlife Flavor	Unknown	UD	It is unknown if this beneficial use is impaired. Research is needed before an evaluation can be made.
Fish and Wildlife Populations	Fish - Degraded Wildlife - Unknown	Fish - R Wildlife - UD	18 fish species, which were historically present, were not found in last OEPA evaluation. Fish health in the mainstem has improved. It is unknown if this beneficial use is impaired. Research is needed.
Fish Tumors and other Deformities	Degraded	S	Recent research indicates a decline in tumors in the brown bullhead catfish in the mainstem and nearshore areas.
Bird or Animal Deformities or Reproductive Problems	Unknown	UD	It is unknown if this beneficial use is impaired. Research is needed before an evaluation can be made.
Benthos	Degraded	U	High turbidity and sedimentation appear to be the major causes of impaired benthos populations.
Dredging Activities	Restrictions	S	Contaminated sediments near the closed USS/Kobe coking facility resulted in dredging restrictions. Sediments are dredged annually. Further testing and sampling are planned for 2001.

*Progress Rating Key

S = Satisfactory Progress U = Unsatisfactory Progress
UD = Progress undeterminable due to lack of information
R = Progress facing regressive measures O = See comment section

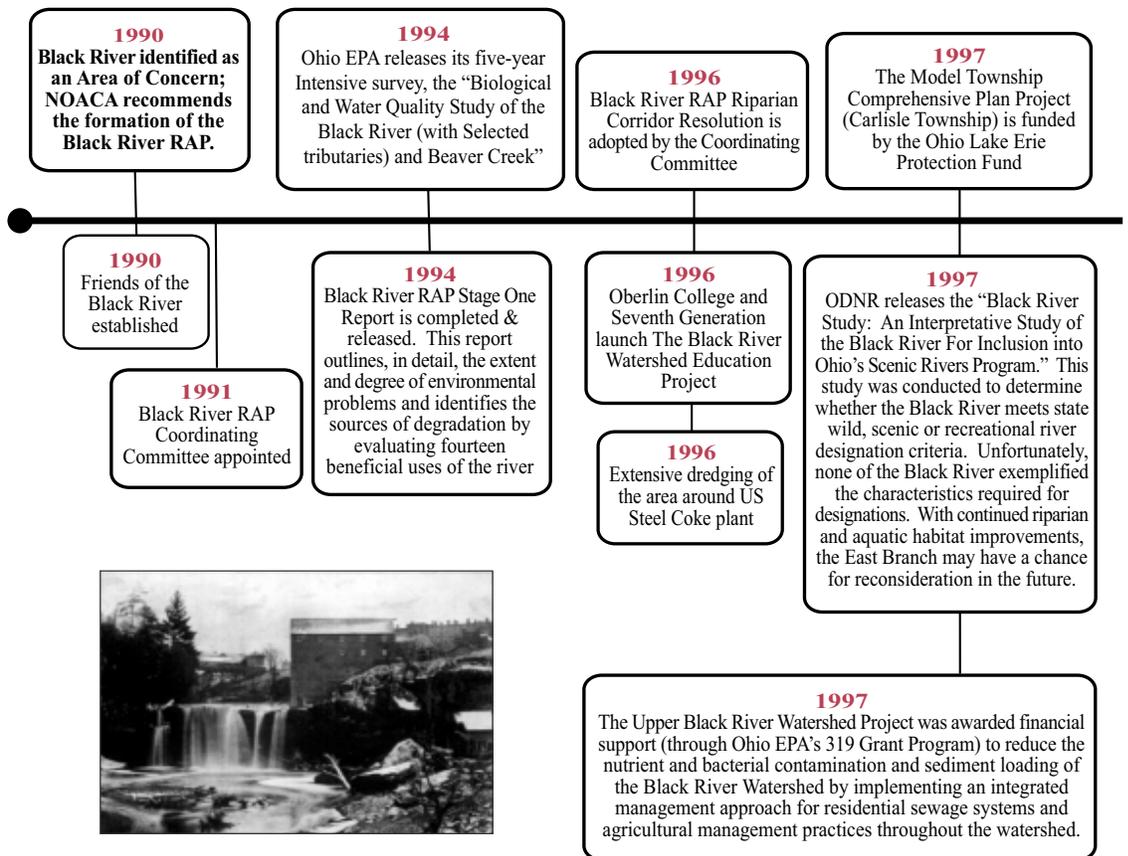
sufficient to cause a change in any of fourteen uses identified by the Great Lakes Water Quality Agreement. The Report Card shown below provides a visual representation of the status of the beneficial uses and progress being made in addressing the problems causing the use impairments.

Report Card

Beneficial Use Impairments	Status of Black River Impairment	Progress Rating*	Comments
Eutrophication or Undesirable Algae	Problematic	R	Increased nutrient loadings remain a problem throughout the watershed. Sources include: sewage treatment facilities, failing home sewage systems and agricultural runoff.
Drinking water Consumption, or taste and odor	Restrictions	R	There are no public water supply intakes in the mainstem, however, there are three communities that obtain their water from the Upper Black River watershed.
Beach Closings	Restrictions	R	High bacteria levels after storms periodically impair conditions when swimming is inadvisable. A Recreational Contact Advisory exists for the lower mainstem.
Degradation of Aesthetics	Impaired	U	Despite limited qualitative data, aesthetics are considered impaired throughout the AOC. Contributing sources include: stream bank erosion, natural debris, trash, detergents, solids and odors from failing sewage systems.
Phytoplankton and Zooplankton Populations	Unknown	UD	It is unknown if this beneficial use is impaired.
Added cost to agriculture and industry	No	O	There is low potential for impairment, based upon the Water Quality Standards for agricultural and industrial water use.
Fish and Wildlife Habitat	Degraded	R	Sedimentation, channelization, stream bank alterations and low level dams affect habitat conditions for both fish and wildlife.

Black River RAP and Coordinating Committee

It's hard to believe that ten years ago, the Black River Remedial Action Plan (RAP) Coordinating Committee was established and was instrumental in the initiation and development of the Black River RAP Stage One Report, which described the extent to which the Black River was impaired. The collective release of the Stage One Report and the issuance of local fish consumption advisories demonstrated to the watershed community just how extensive the water quality problems had become in the Black River. The timeline illustration below provides an overview of the remedial

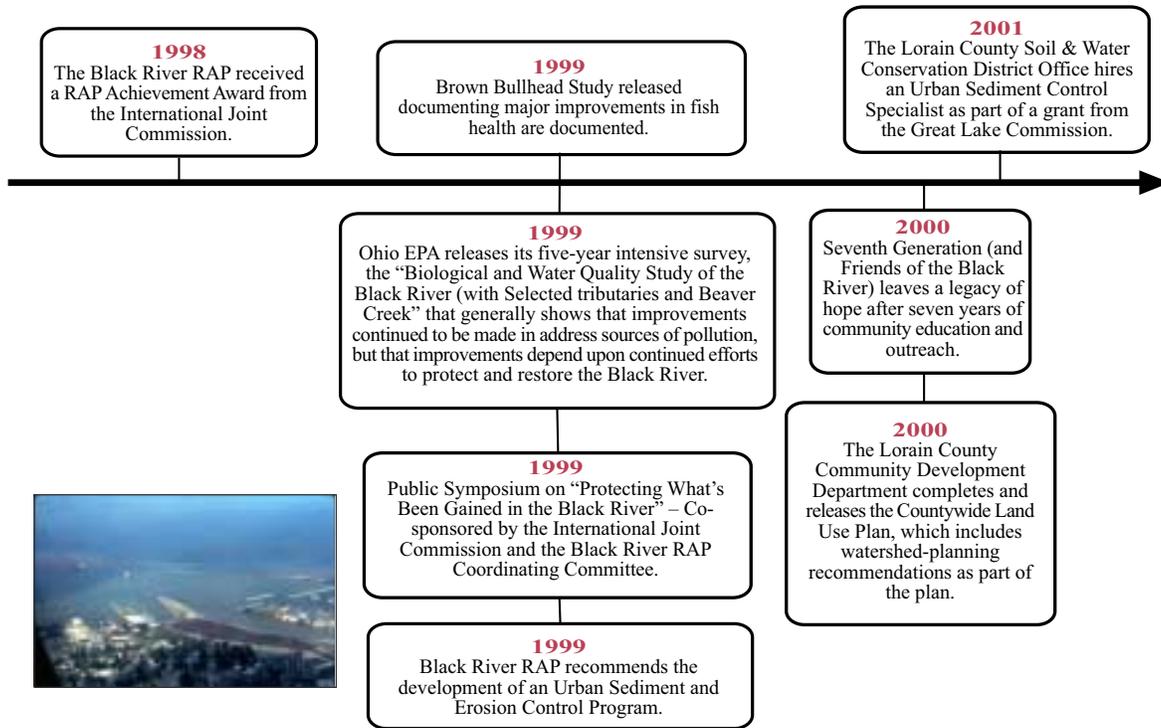


Photos Courtesy Seventh Generation

Flash Back: 1990 - 2000

Ten Years of Action on the Black River

action measures and education efforts undertaken by the Black River Coordinating Committee members and its partners throughout the last decade. This illustration also highlights progress made in cleaning up the Black River. While improvements take time to emerge, the watershed community should recognize that progress has been substantial and understand that the Black River will not achieve full restoration without the willingness of the watershed community to make a long-term commitment to the health of the Black River.



Photos Courtesy Seventh Generation

SOIL EROSION AND SEDIMENTATION: A CONTINUING PROBLEM FOR THE BLACK RIVER WATERSHED

The Problem

The Black River RAP Stage One Report identified impairments to fish communities as a result of the loss of streamside vegetation and the lack of adequate erosion controls on farms and construction sites. Throughout the RAP process, these sources have continually been identified as the largest contributors to sedimentation of the Black River. Soil erosion in the Black River basin is detrimental in many ways. Sediment deposited on stream bottoms interferes with the reproductive cycle of many fish species, thus reducing the diversity and numbers of species in the aquatic environment. Suspended sediments irritate and clog the gills of many fish species, while also reducing the amount of light available to aquatic plant species that provide habitat protection for fish and much of the macro-invertebrate (bug) community upon which they feed.



Photo Courtesy Seventh Generation

In land areas that are undisturbed by urban development, the laws of nature tend to accommodate storm water drainage. With human activity, though,

the situation changes. Lorain County is currently experiencing an increase in development and construction. Trends indicate that this will continue into the future. According to the U.S. Census Bureau and 2000 Census, Lorain County is experiencing a 12 percent increase in housing units in the past decade. The areas experiencing the most active development are located in Avon, North Ridgeville, Avon Lake, the south side of Elyria, the west side of Lorain, Amherst and Carlisle Township. It also appears that future development will have greater impact on streams located in the unincorporated areas of the county. This will lead to further problems related to water quality and water quantity downstream.

In 1998, the Black River RAP Coordinating Committee unanimously recommended implementation of a countywide urban sediment erosion control program in Lorain County. In making its recommendation, the Black River RAP concluded that as Lorain County continues to experience more urban development, runoff and soil erosion will worsen, further impairing efforts to restore fish populations and habitat in the Black River and other streams in the county.

The RAP believes that a Countywide Urban Sediment/Erosion Control Program is also an important component in the overall effort to address storm water issues in the county.

Addressing the Problem

In 1999, the Lorain County Commissioners accepted a grant for start up costs from the Great Lakes Commission to establish a countywide Urban Sediment/Erosion Control Program within the offices of the Lorain County Soil & Water Conservation District using county funds and matching state funds from ODNR. The goal of this program is to manage and prevent urban sediment/erosion control problems at construction sites in Lorain County. It was designed to be implemented in conjunction with the adoption of county regulations (pursuant to Ohio Revised Cod 307.79) under to authority of the Lorain County Commissioners. This program is a much-needed response to soil erosion and storm water management problems associated with much of the development activity occurring in Lorain County.

In the fall of 2000, an Urban Sediment Control Specialist was hired in anticipation of the adoption of these regulations. The Urban Sediment Control Specialist, Tige Brubaker, has begun developing relationships with developers. Mr. Brubaker is meeting with developers throughout all phases of construction. He is providing recommendations and suggestions regarding measures that will help to control and alleviate soil erosion/sedimentation problems, while also addressing storm water management issues.



The information being provided by Mr. Brubaker also helps the developers to comply with U.S. EPA's National Pollutant Discharge Elimination System (NPDES) permit requirements. Many of Mr. Brubaker's suggestions and recommendations are formally provided to the developer through the county Subdivision Review Process, where he acts as the reviewing agent of the county soil and water conservation district. In addition, Mr. Brubaker is working with municipalities to establish memoranda of understanding, which will also allow him to provide the same services to developers operating within their communities.

The success of Mr. Brubaker's activities, especially the working relationships he has developed with developers, is laying the groundwork for the eventual adoption of county regulations by the Lorain County Commissioners.

ON-LOT OR OFF-LOT? HOW WELL DO HOME SEWAGE DISPOSAL SYSTEMS WORK IN LORAIN COUNTY?

In Lorain County, when a toilet is flushed, the wastewater either travels miles through a sanitary sewer system to a wastewater treatment plant or it travels a few yards to an individual sewage disposal system. Do you know where your home's wastewater ends up? If you don't receive a sewer bill in the mail, chances are that your wastewater is being treated by an individual sewage disposal system on your property that is on the same land that your children or your pets play.

Now, the question is, Do you have an On-Lot system or an Off-Lot system? If you can answer this question, odds are that you pay enough attention to your



Photo Courtesy CT Consultants, Inc.

system to ensure that it is working properly and don't need to read this article. If you don't know what type of system treats your wastewater **KEEP READING.**

In 1994, the Black River Remedial Action Plan Stage One Report outlined sources

of pollution in the Black River. Home Sewage Disposal Systems were identified as a major contributing source of bacteria in the watershed. Subsequent local and regional studies continue to identify failing and malfunctioning sewage disposal systems as contributing sources of nonpoint source pollution problems throughout the Black River Watershed, Northeast Ohio and the Lake Erie Basin.

In 1999, the Northeast Ohio Areawide Coordinating Agency (NOACA) began a seven-county study to survey and evaluate the effectiveness of home sewage disposal systems (HSDS) and semi-public sewage disposal systems (SPSDS). That study focused primarily on assessing how well On-Lot and Off-Lot HSDS treat wastewater.

For those of you who have kept reading to find out what kind of system you have, here are some basic descriptive definitions, but please note that you should contact the Lorain County Health Department or local city health department for verification.

In Lorain County, two-thirds of systems are On-Lot systems that can be defined as a septic tank or aeration unit, which is sometimes followed by a filter that is followed by a leaching tile field (all of which is located on the homeowner's property). Off-Lot Systems make up one-third of the systems and are defined as a septic tank or aeration unit, which is sometimes followed by a filter, that directly discharges into a tile, ditch or stream near the homeowner's property.

NOACA's seven-county study found that at least one in eight and as many as one in five On-Lot systems had problems with surfacing effluent that should be treated by the soil and dispersed underground. Consequently, untreated wastewater was frequently found on top of the ground. The same study found that about half of all of the Off-Lot systems had mechanical problems; while between one-fifth and one-third of these systems were discharging visibly poor and/or odorous effluent. One might think that clear effluent could be an indicator of a system working properly, but water quality tests have shown that clear effluent doesn't guarantee that the effluent will meet current water quality standards.

In an effort to address the water quality problems associated with these malfunctioning and failing home sewage disposal systems, the Lorain County Health District is investigating the locations of known and suspected problem HSDS in the Black River watershed. Under a grant from Ohio EPA, the county health department is inventorying and tracking problematic systems. Existing records are being searched, systems are being inspected, and bacteriological sampling of stream water is being performed to verify if systems are failing to meet water quality standards.

The county project completion date is slated for sometime in 2001. Initial results strongly support the need for a local maintenance & inspection program and the need to education homeowners and system operators.

Since you have made it this far, you are obviously concerned about this problem

and would like to know what you can do to assist the Lorain County Health Department and improve the performance of your own system. Below are a few simple suggestions:

- Know where your home sewage system is located;
- Have the local health department inspect your system if you suspect something is wrong;
- Have your tanks pumped at least every three to five years – Keep a record of this maintenance;
- Don't dump solids into the systems that won't biodegrade, i.e. cigarette butts, feminine hygiene products, etc.;
- Reduce water usage by installing low flow fixtures – Understand that the less sewage created the better;
- Keep all of your mechanical components, including aerators, operating properly;
- Keep an eye on your system; there is something wrong with your systems if you notice any of the following:
 - Wet spots in the lawn or any unusual plant growth near the leaching tile field
 - Temporary backing up of sewage, especially at floor drains
 - Any unusual odors
 - Discharging off color and/or odorous sewage;
- Know that preventive maintenance will save money in the long run; and
- Most importantly, understand that home sewage disposal systems in Lorain County have a maximum life and will eventually need to be replaced – so, budget accordingly.

NATURAL RESOURCE PLANNING AND PROTECTION INITIATIVES IN THE BLACK RIVER WATERSHED

Planning agencies serving Lorain County and the Black River Watershed focused on issues of natural resource conservation and protection during the year 2000. NOACA, which serves as the region's water quality management planning agency, recently completed a major update to the regional water quality plan, which focuses on conservation of water resources. The Lorain County Community Development Department focused on the conservation of soil resources, especially the conservation of the county's farmland, in its Farmland Retention Report.

NOACA's Clean Water 2000 Plan

NOACA's plan, **Clean Water 2000**, includes an assessment of development conditions likely to affect water quality over the next twenty years and addresses water quality planning issues ranging from sewer planning to home sewage disposal systems management to control of non-point sources. The planning area for Clean Water 2000 encompasses five watersheds in five counties including the Black River and Rocky River watersheds in Lorain and Medina Counties. The NOACA Board adopted **Clean Water 2000** in November of 2000.

Clean Water 2000 concludes that there will be increased stress on natural and water resources as a good deal of the region's population shifts to the outer fringes of the metropolitan area.

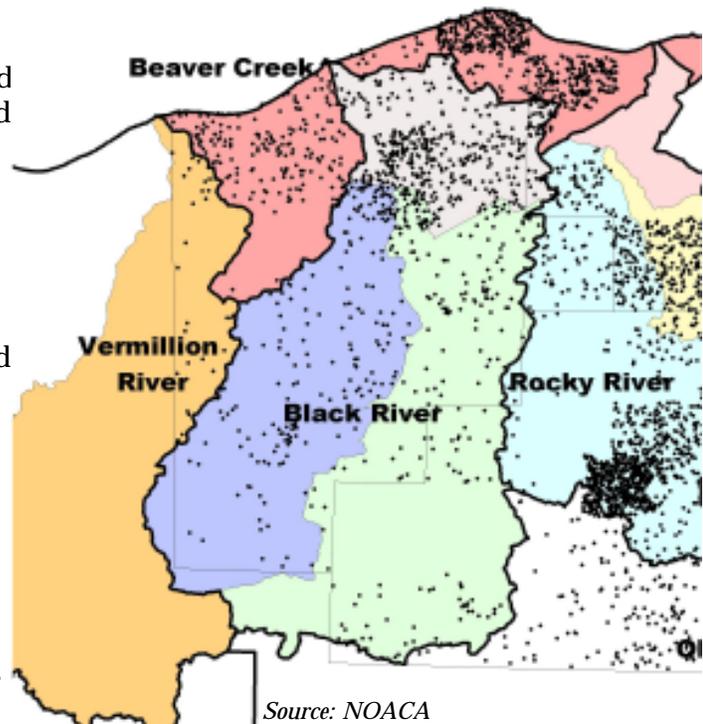
When people move to previously undeveloped areas, a chain of events occurs that can significantly impact water quality. New residences are built. Roads, stores and parking areas

are constructed to conveniently serve the population. New wastewater treatment facilities must be built or municipal sewer systems extended to accommodate sewage needs. These building activities strip undeveloped areas of vegetation and create runoff that eventually makes its way into the region's rivers and streams.

NOACA expects that over the next 25 years much of the region's population will move to areas with the highest quality water resources, thus creating cause for concern. Protecting these sensitive water sources, as well as effectively managing sewer construction, home sewage systems, storm water runoff and other indirect sources of pollution, form the core of **Clean Water 2000**.

Projected Population Growth in Black River and Adjacent Watersheds

1 Dot = Gain of 30 Persons



Source: NOACA

Lorain County's Farmland Retention Initiative

The Community Development Department, on behalf of the Lorain County Board of Commissioners, received an Ohio Small Cities Community Development Block Grant Formula Allocation Program Grant from the Ohio Department of Development to produce a Farmland Retention Report. The retention of farmland is critically important to the economic stability and viability of Lorain County.

Agriculture and agri-businesses have long held a deep commitment and appreciation for natural resources, serving as stewards for the protection of these important natural resources. Through the years, family farms have maintained our nation's traditional values and stability.

Agriculture is presently in a state of transition. The Lorain County Farmland Committee identified three Agricultural districts within the county in 1999. In simple terms, the Committee identified three tiers of priorities of farmland retention within Lorain County. The Lorain County Agricultural District map below clearly delineates among the three retention priority levels.

Northern Lorain County is identified as an *Urbanized Agricultural District* (yellow). This is an area where the cost per acre to acquire land would be very expensive. Therefore, the success of a farmland preservation effort when compared to money spent, would be limited.

The centrally located townships are

identified as a *Transitional Agricultural District* (orange). This area has been identified as an area experiencing the greatest level of development pressures. Land prices are rapidly increasing.

The southern portion of Lorain County is identified as the *Rural Agricultural District* (red). This is the area where farm production is still the primary industry. Land prices in this district remain the lowest with the County. Farming will most likely continue and be the primary industry for a longer period of time. A successful farmland preservation effort can be completed within this area with the least amount of up front expense while maintaining the greatest number of farm acres for farming.



Source: Lorain County Community Development Department

OBERLIN COLLEGE: PROVIDING ENVIRONMENTAL EDUCATION TO THE BLACK RIVER WATERSHED COMMUNITY

Over the last decade, Oberlin College has provided valuable education not only to its students, but also to members of its watershed ecosystem community. The College has encouraged its students to become part of the community through volunteer opportunities from Stream Clean-ups to jointly participating in watershed planning curriculums with teachers and environmental activists. Oberlin College has become an environmental leader in Lorain County and Northeast Ohio.

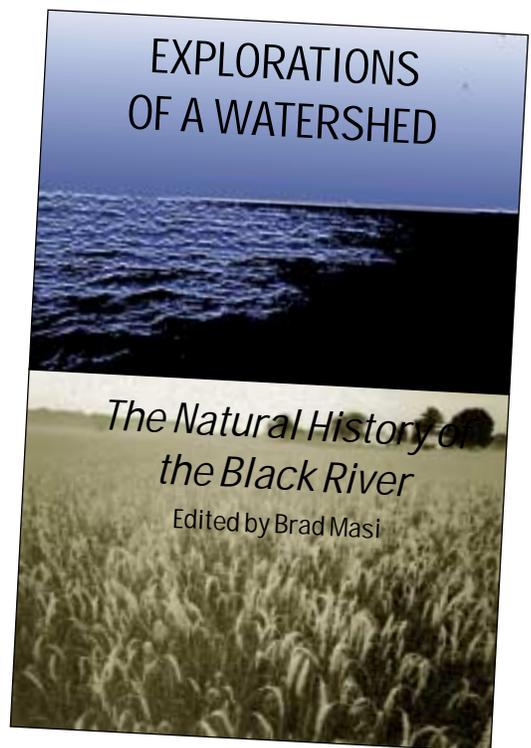
Local Teachers and College Students Learn Together

Local K-12 school teachers and Oberlin College students are jointly benefiting from The Black River Watershed Education Project Partnership (WEPP), which is a watershed-based environmental education project. For the first time since the project's inception, local teachers and students can be enrolled in Oberlin College's class offering of ENVS 490, Introduction to the Black River Watershed. The teachers are offered optional graduate credit for participation in the class, and this provides an opportunity for Oberlin students to plan and implement environmental curriculum units that have been designed with input from the classroom teacher. The use of college students to implement environmental activities, has been found to improve K-12 attendance, minimize discipline problems and raise proficiency examination scores, while also fostering a greater appreciation for and connection to the local environment. The Ohio

Environmental Education Fund and the nationally based Orion Society and Adopt-a-Watershed organization provide support for this effort.

A Natural History of the Black River Is Now Available

Explorations of a Watershed: The Natural History of the Black River – A natural history, a text book, a community-college project, a story that needed telling. This publication was produced as part of the Watershed Education Project Partnership (WEPP) as a means to provide a basic textbook for the Introduction to the Black River Watershed class offered to local schoolteachers and Oberlin College students. The WEPP strives to develop a place-based approach to environmental learning that directly connects the student with an understanding of his/



her local place. The first section of this book describes the natural history of the entire Black River Watershed. The final chapter in the first section relates to contemporary challenges confronting the Black River. The second section focuses on “Explorations” through the watershed, beginning at the headwaters and traveling to the mouth of the river as part of a literary canoe ride.

“Overall, this book is intended to be an ecological literacy handbook for the Black River Watershed. It uncovers the stories of the Canesadooharie through the secrets in the stones, the legends of the ice, the tales of water, the origins of life, the legacy of human activity, and the strands of hope” (*Editor Brad Masi, Explorations of a Watershed: The Natural History of the Black River, p. 12*).

Oberlin College Utilizes Ecological Design in Designing New Building

Oberlin’s Environmental Studies Program has a new home in the Adam Joseph Lewis Center for Environmental Studies. Believing that surroundings matter as much as course content, the Lewis Center was designed by William McDonough, a nationally respected green building visionary, and built as a working laboratory for environmental education. It is one of the most advanced examples of ecological architecture in America. It is a laboratory where stu-



Photo Courtesy Al Fuchs, freelance photographer

dents and faculty evaluate components of the building, test new ideas in technology, and will – in the future- retrofit the facility to improve its environmental performance. The building’s ecological design principles include energy conservation in lighting, heating and cooling the building; maintaining indoor air quality; recycling of materials; alternative sewage disposal treatment; gray water reuse; use of sustainably grown or developed building materials; indigenous landscaping materials, landscape design that is sensitive to site conditions, etc.

The Living Machine: An Alternative Wastewater Treatment System

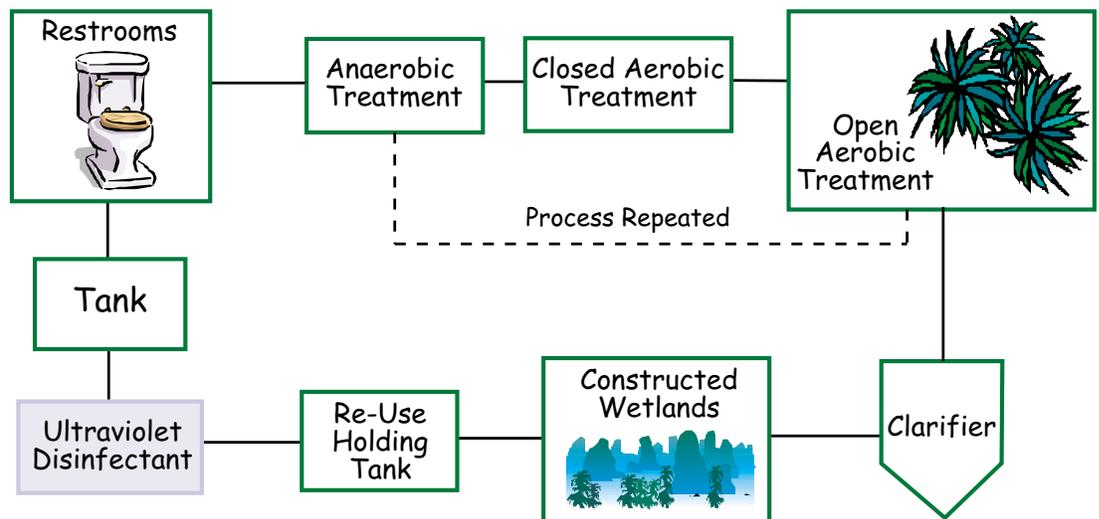
The Adam Joseph Lewis Center for Environmental Studies includes a greenhouse, which houses the building's wastewater treatment facility. This sewage treatment system combines elements of conventional technology with the accelerated purification processes of natural ecosystems. When a toilet is flushed in a bathroom, waste first travels to an underground anaerobic digester at the east end of the building. The solids settle out and the wastewater then enters the first aerobic tank inside the door of "the Living Machine."

Plants are a core component of the Living Machine and are suspended in a tray to allow the roots to grow down into the wastewater, providing a habitat for waste-digesting microbes. The wastewater cycles through the three open aerobic tanks – the most visible components of the Living Machine – and then goes to a clarifier before being sent to a perforated pipe buried in the east end of the floor. The tanks and gravel are actually one meter deeper than the

surface of the floor. The wastewater travels across the stones and plant roots in the floor, which serves as a wetland that further cleanses the water. The water is then collected at the west end of the floor and sent through an ultraviolet disinfection unit, ensuring that any remaining pathogens are eliminated. A pressurized holding tank collects the water after this step, which is then used for flushing the building's toilets and urinals. The diagram below provides an illustration of the wastewater treatment process of the Living Machine.

The Living Machine undergoes a series of daily tests to ensure that it is treating the wastewater as the system was designed. In addition, students and staff conduct research projects in the Living Machine. The Lewis Center's Living Machine is a marvelous example of how wastewater can be ecologically treated here in the Black River watershed. More information can be obtained by visiting www.oberlin.edu/newserv/esc/Default.html

The Living Machine



ESTABLISHING NEW PARTNERSHIPS: WASTEWATER TREATMENT PLANTS AND THE BLACK RIVER JOINTLY BENEFIT

Under a new funding initiative from Ohio EPA's Division of Environmental & Financial Assistance (DEFA), wastewater treatment plant owners and the Black River can jointly benefit from necessary infrastructure investments. Under the Water Resource Restoration Sponsor Program (WRRSP), loan interest from any municipal/county DEFA loan project for a wastewater or collection system improvement may be utilized to fund an eligible stream restoration project at no additional cost to the loan applicant. This means that if a WWTP in the Black River watershed borrows money for improvements in its system, the Black River could reap the benefits.

Under this program, stream restoration projects that are eligible for loan interest-repaid funds include:

- Land Conservancy Easements
- Stream Bank Re-Stabilization
- Riparian Restoration
- Dam Modification
- Sediment Remediation Project
- Source Water Protection Plans
- Watershed Action Plans

These projects must either by themselves or in conjunction with other projects being undertaken, complete protection or restoration of impaired aquatic habitat to a level that is sufficient to meet or protect the streams designated use as defined under the Ohio Water Quality Standards.

In addition, a restoration project may be performed by the loan applicant, or the funding may be directed to a third party

sponsor, such as a park district, land conservancy, or a soil and water conservation district. For more information or assistance in developing a project, contact Ted Conlin, the Ohio Black River RAP Coordinator, @ (330) 963-1131.

Village of Lodi

This proposed WRRSP project consists of the acquisition of land parcels; the preservation of high quality riparian habitat; the restoration and enhancement of wetland and riparian upland habitat; and the restoration and stabilization of stream banks on the East Fork East Branch Black River. A constructed wetland will provide wildlife habitat and filtration of runoff and treated effluent from Lodi's wastewater treatment plant. The restored wetlands, stream corridor and associated upland habitat will be integrated into a new park, the East Fork Nature Preserve, and permanently maintained by Medina County Park District.

WHAT'S NEW IN WETLANDS MITIGATION?

Four county metro park districts in northern Ohio have joined forces to address restoration and enhancement of wetlands and streams under mitigation regulations of the Clean Water Act. The Lorain County Metro Park joined Metro Park Districts from Medina, Erie and Sandusky counties, in establishing the North Coast Regional Council of Park Districts in 1999. The Council was formed to work cooperatively on projects, including collaboration on a bikeway and wetland mitigation projects in 1999 and 2000.

Mitigation includes “in lieu” sites, bank sites, and the Cleveland Hopkins Airport expansion project. As a result of mitigation required as part of the airport expansion project,

Lorain and Medina counties are restoring wetlands and stream sites in the Black River.

In addition, the Council recently received approval from the Army Corp of Engineers on a regional wetland mitigation plan involving planning from all four counties. This plan includes a variety of restoration projects, which are involving different classes of wetlands. The Council coordinates activities between each county. The complete plan is currently available at the following test site www.nevadaweb.com/wawa.

For more information on the North Coast Regional Council of Park Districts, please contact Dan Martin @ jdm@loraincountymetroparks.com.



Photo Courtesy Lorain County Metroparks

LOCAL STAKEHOLDERS WORK TOGETHER: THE LOWER BLACK RIVER WATER QUALITY MODEL PROJECT

During the last year, four stakeholder agencies of the Black River RAP Coordinating Committee embarked on a very important water quality study in the lower Black River area. The Cities of Lorain, Elyria and North Ridgeville have partnered with Republic Technologies International and will work in conjunction with Limno-Tech consultants. The consultants will organize the study and produce a computer model that will determine the cause or causes of the impacts to dissolved oxygen in the lower river, particularly in the sections of the river dredged for navigation.



Photo Courtesy Ohio EPA

Ohio EPA's 1997 intensive study of the Black River identified problems of low levels of dissolved oxygen in the navigation channel. Adequate dissolved oxygen is necessary for good water quality. Oxygen is a necessary element to all forms of life. Natural stream purification processes require adequate oxygen levels. Oxygen levels that remain below 1-2 mg/l for a few hours can result in large fish kills.

The partnering agencies are also concerned over the low levels of dissolved oxygen because the levels may indicate that the assimilative capacity (the ability of the river to naturally purify itself) of the navigation channel may have been reached. If true, this may limit future upgrades or expansions of wastewater treatment plants or allowable loadings in discharge permit limitations. Levels of dissolved oxygen and the resulting assimilative capacity will have to be addressed in Ohio EPA's new Total Maximum Daily Load surveys that are being conducted in the near future in the Black River watershed.

The development of the computer model will help determine the best course of action to alleviate those impacts and help to restore the river. The goal of the Lower Black River Water Quality Model is "to develop short and long term plans for the restoration and maintenance of designated aquatic life and enhancement of recreational uses to the extent feasible given the historical and current uses of the River, including historical anthropogenic modifications of the river channel."

RIVER PLANS 2001: BLACK RIVER RAP PRIORITIES

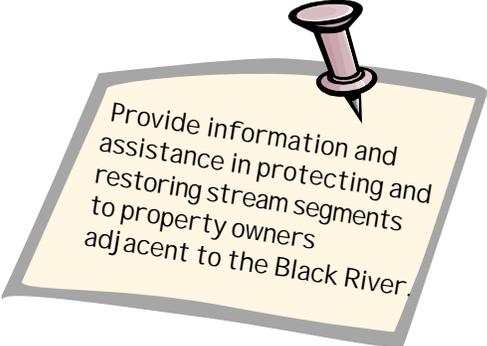
The Black River RAP Coordinating Committee, as a group of watershed stakeholder agencies, has identified a slate of priorities to focus on in 2001. These priorities will act as a basis for decision-making by the committee and as a guide for projects throughout the upcoming year and planning for 2002.



Help the Lorain County Health Department in developing and implementing an education program for Home Sewage Systems Owners.



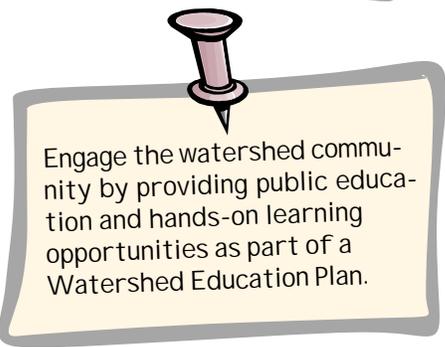
Encourage the development of a countywide stormwater management plan.



Provide information and assistance in protecting and restoring stream segments to property owners adjacent to the Black River.



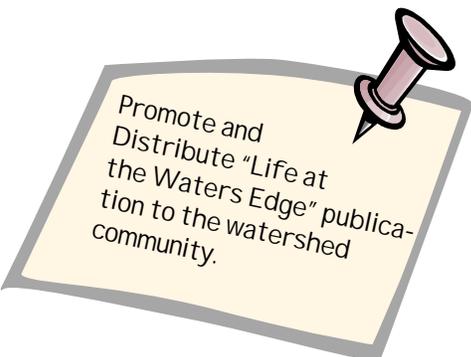
Develop a media communications strategy to promote the Black River and the work of the RAP and Coordinating Committee.



Engage the watershed community by providing public education and hands-on learning opportunities as part of a Watershed Education Plan.



Promote the new Lorain County Urban Sediment/Erosion Control Program.



Promote and Distribute "Life at the Waters Edge" publication to the watershed community.



Support and participate in the Lorain County Community Development Department's farmland conservation planning & open space protection activities.

2000 BLACK RIVER RAP COORDINATING COMMITTEE MEMBERS

Local Jurisdictions

Lorain County
General Health
District
Chairman, Black
River RAP
Coordinating
Committee
Ken Pearce

Lorain County
Board of
Commissioners
**Commissioner
Betty Blair**

Lorain County
Community
Development
Department
Ron Twining

City of Lorain
**Mayor Joseph
Koziura**

City of Elyria
Greg Worcester

Lorain County
Municipalities
**North Ridgeville
Mayor Deanna
Hill**

Lorain County
Townships
**Mary Beth
Derikito**

Lorain County
Soil and Water
Conservation
District
**Timothy
Abraham**

USDA/Natural
Resource
Conservation
Service (NRCS)
Karl Schneider

Lorain County
Metro Parks
Daniel Martin

NOACA
**John Beeker,
Secretary**

Medina County
Board of
Commissioners
John Hocker

State/Federal Agencies

Ohio EPA
Ted Conlin

ODNR
Jeff VanLoon

OSU Sea Grant
David Kelch

U.S. EPA
Phil Gehring

Industry/ Commercial

Republic
Technologies
International
Beth Zajkowski

Lorain Chamber
of Commerce
**Frank Detillo,
President**

LTV Steel
Larry Szuhay

Lorain County
Port Authority
**Rick Novak,
Executive
Director**

Lorain County
Farm Bureau
Julie Hruby

Lorain County
Alliance
**Mike Whitmore
(deceased);
Rebecca Gray**

Community Representatives

Seventh
Generation
**George Espy,
Cheryl Wolfe
and Lillian
McPherson**

BLACK RAP CONTACTS

Lorain County Community Development Department

226 Middle Avenue
Elyria, Ohio 44035
440-329-5544

Lorain County General Health District

9880 South Murray Ridge Road
Elyria, Ohio 44035
440-322-6367

Lorain County Metro Parks

12882 Diagonal Road
LaGrange, Ohio 44050
440-458-5121

Lorain County Soil & Water Conservation District

42110 Russia Road
Elyria, Ohio 44035
440-326-5800

Medina County Soil & Water Conservation District

803 E. Washington St.
Medina, Ohio 44256
330-722-2628

Northeast Ohio Areawide Coordinating Agency

1299 Superior Avenue
Cleveland, Ohio 44114
216-241-2414

Ohio Environmental Protection Agency Northeast District Office

2100 Aurora Road
Twinsburg, Ohio 44087
330-963-1200



This document has been prepared with a grant received by NOACA from Ohio EPA under Section 604 (b) of the Clean Water Act and from contributions of local public jurisdictions within the NOACA planning area.