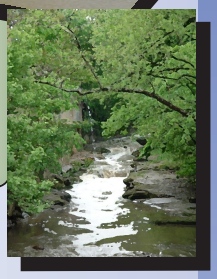
CUYAHOGA RIVER
REMEDIAL ACTION PLAN
STATE OF THE RIVER REPORT
&
PROCEEDINGS OF THE OCTOBER 25, 2001 SYMPOSIUM

JANUARY 2002



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The Cuyahoga River Remedial Action Plan (RAP)

Prepared by

Cuyahoga River
Remedial Action Plan Coordinating Committee

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The following contributed to the preparation of this report:

John Beeker, Northeast Ohio Areawide Coordinating Agency
Kelly Danczak, Cuyahoga River Community Planning Organization
Kelvin Rogers, Ohio Environmental Protection Agency

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January 2002

Dear Friend of the Cuyahoga River

We are pleased to present to you this Report on the State of the Cuyahoga River which includes the Proceedings of the Symposium on the State of the River held at the Happy Days Visitors Center in the Cuyahoga Valley National Park on October 25, 2001. Almost two hundred people attended that event which featured speakers who discussed the ongoing work on the river being done by the RAP and its stakeholders.

This report highlights our progress in restoring of beneficial uses of the Lower Cuyahoga River. Thirteen years ago the Cuyahoga River RAP began the quest to promote the restoration of the Cuyahoga River through a program of planning, public education, scientific research and collaboration with river stakeholders. We are proud of what the community has accomplished toward achieving this goal in the intervening years and we are proud of our role in it. In his keynote address at the October 25, 2001 Symposium Plain Dealer reporter Steven Litt, reflecting on the aftermath of September 11, spoke about the impact that many people working together and with determination a bucket at a time can make a difference. In July 1998 the President of the United States recognized the river recovery work of this community by naming the Cuyahoga River an American Heritage River. This year we mark another milestone with the release of the Report on the State of the Cuyahoga River.

Production of the Symposium and publication of this report was made possible by grants from the U.S. Forest Service, the Cleveland Foundation, the George Gund Foundation, the GAR Foundation and technical support from the Northeast Ohio Areawide Coordinating Agency for which we are very grateful. We are also grateful for the contributions of program presenters whose work is reported herein, the members of the public who actively participated, and the RAP staff whose efforts made the day a success.

Sincerely

Edward W. Rybka, Chairman
Cuyahoga River Remedial Action Plan Coordinating Committee

Section 1.2:
State of the Cuyahoga River

John Beeker, NOACA
Kelvin Rogers, Ohio EPA

Introduction

The Cuyahoga River has made substantial progress over the ten years since the Cuyahoga River RAP released its first state of the river report. That document, with the monumental title of "Stage One Report: Impairments of Beneficial Uses and Sources and Causes in the Cuyahoga River Area of Concern," described in great detail the environmental problems in the lower Cuyahoga River and the reasons for those problems.

Major issues identified in the 1992 Stage One Report included concerns about the health and habitat of fish and other aquatic organisms, limited recreation and public access opportunities to the river and harbor areas, and human health and socio-economic concerns.

Six Key Issues of the Cuyahoga RAP

In 1992, the RAP identified sources and causes of pollution in its Stage One Report. There were 14 "beneficial use impairments" (ways in which the use and health of the river have been adversely altered) identified in this report, which was updated in 1995. The Stage One Report grouped the 14 beneficial use impairments into the following 6 key issues:

1) Human Health: problems resulting from the consumption of contaminated fish, wildlife, or drinking water, or direct bodily contact with contaminated water.

2) Fish & Aquatic Organisms: reduced populations; increased incidences of tumors or external deformities; loss of aquatic habitat.

3) Wildlife: reduced populations; increased incidences of birth defects or deformities; loss of wildlife habitat.

4) Recreation: elevated bacteria levels lead to contact advisories and periodic beach closings.

5) Socio-Economic Uses: lack of public access and recreation opportunities; degraded aesthetics; contaminated sediments; undesirable algae; potential added costs to industry and agriculture to use river water.

6) Public Awareness: need for building a greater awareness among the general public, local officials and stakeholders about watershed and pollution issues and what actions can make a difference in water quality

The 1992 report also described a complex of sources contributing to these problems ranging from toxic contaminants in river sediments, nonpoint source pollution from the urban and suburban landscape, pollution from combined sewer overflows, degraded streamside land uses, the presence and maintenance of a federal navigation channel in the lower six miles of the river and an underlying negative public attitude toward the river.

During the past ten years a great deal has been done by the Cuyahoga River RAP and its stakeholder organizations to better understand conditions in the river and to continue the process of river restoration. This process has had many manifestations from investments in pollution and storm water control, acquisition of lands for parks and recreation, business investment in riverside properties, stream side restoration, public education and community clean up programs, and research and planning for the river environment.

This past October the Cuyahoga River RAP hosted a one-day symposium to discuss the State of the River and to hear from various stakeholders in the river restoration process who discussed their efforts to achieve progress. Those in attendance learned about the progress that is being made in understanding the river's persistent environmental problems and what is being done to address them.

This report summarizes the work reported on in the October 25, 2001 State of the Cuyahoga River Symposium. It is offered as a benchmark in the ongoing process of educating the public and building public support for the restoration of the lower Cuyahoga River.

About the Cuyahoga River RAP

The RAP is a community-based effort aimed at restoring the environmental quality of the Cuyahoga River. It focuses on restoring beneficial uses of the lower 45 miles of the Cuyahoga River and ten miles of the Lake Erie shoreline. The RAP is comprised of three integral parts: the Cuyahoga Coordinating Committee (CCC), a 39 member multi-stakeholder committee that is the principal planning body of the RAP. Its members are appointed by the Ohio EPA Director; the Cuyahoga River Community Planning Organization (CRCPO), a non-profit 501©(3) organization formed for the purpose of supporting the planning, research, public education implementation projects of the RAP with staff and financial resources. RAP partners include businesses, government agencies, community groups and individuals with interests in the Cuyahoga River. RAP partners collaborate in planning and carrying out programs focused on restoration of the lower Cuyahoga River.

Area of Concern

The Cuyahoga River RAP focuses its attention on an Area of Concern which encompasses the Cuyahoga River watershed from the City of Akron to the river mouth in the City of Cleveland and from Edgewater Beach on the west side of Cleveland to Wildwood Park roughly nine miles to the east. This area encompasses much of the urban and industrial heartland of northeast Ohio and includes the Cuyahoga Valley National Park midway between Akron and Cleveland. The Cuyahoga River Area of Concern is one of 43 designated areas of persistent industrial and urban pollution in the Great Lakes.

Remedial Action Plan Process

The Remedial Action Plan (RAP) process is outlined in the Great Lakes Water Quality Agreement between the United States and Canada. It is a multi-stage effort to assess impairments to beneficial uses in Areas of Concern and plan for their remediation. The Ohio EPA was designated lead agency for the RAP process in Ohio and the Ohio EPA in turn charged the Cuyahoga RAP Coordinating Committee with the responsibility for overseeing implementation of the RAP process.

Fourteen Beneficial Uses

The Cuyahoga RAP began with the understanding that certain beneficial uses in the Area of Concern have been impaired by years of pollution. The Great Lakes Water Quality Agreement lists fourteen beneficial uses to be restored in each of the 43 Areas of Concern in the Great Lakes.

Progress in Restoring Beneficial Uses in the Cuyahoga River

The following summary tables take into account new information including that presented at the 2001 State of the River Symposium. These tables are divided into six categories; Aquatic Life, Recreation, Socioeconomic Factors, Wildlife, Human Health and Public Awareness corresponding to Six Key Issues of the Cuyahoga RAP.

The purpose of these tables is to provide a summary of the progress that has incurred over the past 12 years of the RAP presence in the restoration of the beneficial use impairments. These improvements can be attributed to the RAP and RAP stakeholder partner actions and activities that have been completed, are ongoing, or are currently underway.

An impairment is declared "<u>known</u>" if evaluation criteria or standards are unambiguous and sufficient data exists that meet generally accepted scientific standards. An impairment is declared "<u>probable</u>" if unambiguous standards are

not available but there is a consensus of best professional judgement and sufficient scientifically creditable data exist. An impairment is declared "possible" if scientifically creditable data are limited but there is a consensus of best professional judgement. An impairment is declared "unknown" if neither condition holds.

The impairment status is considered "BETTER" if conditions have improved since the original evaluations (but may still be impaired). An impairment status is considered "MUCH BETTER" if conditions have significantly improved to the point where they may be close to be considered "NOT IMPAIRED". These status evaluation criteria are based on recent scientific creditable data and/or a consensus of best professional judgement.

CUYAHOGA RIVER RAP BENEFICIAL USE IMPAIRMENTS

AQUATIC LIFE	**CURRENT STATUS**	**INDICATORS**
Degraded fish populations Previously considered "IMPAIRED"	MUCH BETTER, *but still impaired in some places*	Fish populations have improved significantly with over 70 species now found, including many pollution sensitive species such as smallmouth bass; fishing is now common along the lakefront and riverfront sites; in the 2000 OEPA survey fish communities in some portions of the Cuyahoga mainstem between Akron and Cleveland were found to be in PARTIAL or FULL attainment with fish community indices in 6 of 8 sites; RAP larval fish study found 32 species spawning upstream of the navigation channel or migrating through it; *however, fish community indices do not meet Ohio EPA criteria in many stream segments.*
Degraded benthos populations Previously considered "IMPAIRED" In places.	MUCH BETTER, *but still impaired in very few places*	Aquatic insects populations have returned to the Cuyahoga, including pollution sensitive species like mayflies. Benthic macroinvertebrate community indices now meet Ohio EPA criteria in nearly all stream segments; *however navigation channel and Lake Erie nearshore areas still have poor benthic communities - although no State criteria apply.*
Fish tumors & other deformities Previously considered "IMPAIRED"	BETTER, *but still impaired in a few places*	Reductions to background tumor levels have been noted in most areas; *however some sites still harbor bullheads with high tumor levels, particularly in the navigation channel.*
Degraded phytoplankton and zooplankton populations Previously considered "POSSIBLY	BETTER, *but further study needed to determine degree of*	Toxic effluent and oxygen demanding pollutant discharges have been reduced or eliminated, resulting in improved plankton communities.

IMPAIRED" (phytoplankton) or "UNKOWN" (zooplankton)	*impairment*	
<u>Loss of fish habitat</u> Previously considered "NOT IMPAIRED" in mainstem; "IMPAIRED" in navigation channel	BETTER, *but more good habitat is needed to continue improvements in fish communities*	12,391 linear feet of streambanks have been restored by plantings & soil bioengineering techniques to provide improved fish and aquatic habitat; *however rapid wetland loss and urbanization contribute to future flooding, erosion problems, and poor water quality; lack of adequate habitat in navigation channel due to steel bulkhead and dredged depths contributes to low dissolved oxygen levels and depressed fish communities.*

RECREATION	**CURRENT STATUS**	**INDICATORS**
<u>Elevated bacteria levels</u> Previously considered "IMPAIRED PERIODICALLY"	BETTER, *but still impaired after rain events*	Concentrations of fecal coliform bacteria meet Ohio EPA standards during dry periods and frequency of beach closings has decreased; *however combined sewer overflows and nonpoint sources cause elevated bacteria levels during and after rainfall events, leading to contact advisories and periodic beach closings.*
<u>Public access & recreation impairments</u> Previously considered "IMPAIRED" in navigation channel and in nearshore Lake Erie, mainstem considered "NOT IMPAIRED"	BETTER, *but could be improved in some areas – future plans to extend Towpath Trail and Lake Erie Bikeway should help to reduce impairments.*	Millions of people enjoy the Cuyahoga River and Lake Erie nearshore: the Flats, the Stadiums, Rock & Roll Hall of Fame, Great Lakes Science Center and other North Coast Harbor attractions have made Cleveland a top tourist destination; bikers and hikers along the Towpath Trail have made the Cuyahoga Valley National Park one of the most visited in the nation; Cleveland MetroParks and MetroParks serving Summit County host thousands of annual visitors; *however direct access to the river and Lake Erie is very limited in the navigation channel and Cleveland lakefront.*

SOCIOECONOMIC FACTORS	**CURRENT STATUS**	**INDICATORS**
Degradation of aesthetics Previously considered "IMPAIRED"	BETTER, *but still degraded after rain events*	Over 50 tons of garbage and litter have been collected to date from area streams by volunteers; several tons of floatable debris is removed annually by combined sewer overflow nets; *however woody debris, litter, oily runoff from industrial and urban areas, and storm sewer & CSO outfalls still contribute to aesthetic problems after rainfall events.*
Eutrophication / undesirable algae Previously considered "UNKNOWN" in mainstem; "POSSIBLY IMPAIRED" in navigation channel; "IMPAIRED" in nearshore Lake Erie	BETTER, *But problems may still occur in a few areas*	The amount of algae in Lake Erie has decreased significantly in response to phosphorus bans, adequate flow conditions preclude river algae blooms; *however elevated nutrient levels in municipal wastewater and nonpoint source discharges may contribute to some localized eutrophic conditions along river and lakefront.*
Restrictions on Dredging Activities Previously considered "NOT IMPAIRED" in mainstem, "IMPAIRED IN PLACES" in naviigation channel; "IMPAIRED"	NO CHANGE	Disposal of dredged material from navigation channel still requires disposal in confined facility.
Added Costs to Agriculture or Industry Previously considered "NOT IMPAIRED"	NO CHANGE	No increases in costs to treat river water for use are known.

WILDLIFE	**CURRENT STATUS**	**INDICATORS**
Degraded wildlife populations Previously considered "UNKNOWN"	MUCH BETTER, *possibly not impaired, additional research is needed to confirm degree of impairment*	Breeding populations of Great Blue Heron and Bald Eagle sentinel species have returned to the AOC; successful wild turkey and Canada geese reintroduction efforts, deer and beaver populations have naturally increased; *however pollution sensitive river otters have not been re-established.*
Bird or animal deformities or reproductive problems Previously considered "UNKNOWN"	MUCH BETTER, *possibly not impaired, additional research is needed to confirm degree of impairment*	No reports of any problems noted; dramatic increases in Great Blue Heron populations observed, several heronries now located within AOC, Bald Eagle nest established within AOC.
Tainting of fish and wildlife flavor Previously considered "UNKNOWN"	MUCH BETTER, *possibly not impaired, additional research is needed to confirm degree of impairment*	No occurrences of fish or wildlife flavor problems known and presence of chemicals typically associated with tainting is low.
Loss of wildlife habitat Previously considered "IMPAIRED IN PLACES"	MUCH BETTER, *but urban sprawl may cause future problems*	Over 30,000 acres of the AOC is now protected in the Cuyahoga Valley National Park, 7,000 in MetroParks Serving Summit County, and 15,000 in Cleveland Metroparks; Cuyahoga and Summit SWCDs conservation easement programs protect over 100 acres in AOC.

HUMAN HEALTH	**CURRENT STATUS**	**INDICATORS**
Restrictions on fish consumption Previously considered “IMPAIRED”	NO CHANGE, *still impaired*	Many sports fish can now be caught in the river and Lake Erie nearshore areas; *however - consumption advisories still exist for some species.*
Restrictions on wildlife consumption Previously considered “UNKNOWN”	MUCH BETTER, *possibly not impaired, additional research is needed to confirm degree of impairment*	No wildlife consumption advisories are in place, limited tissue studies indicate no consumption problems.
Restrictions on drinking water consumption, or taste & odor problems Previously considered “UNKOWN” in mainstem, “NOT APPLICABLE” in navigation channel and nearshore Lake Erie.	NO CHANGE, *No drinking water supplies are within the AOC*	Amount of algae in Lake Erie has decreased in response to lakewide phosphorus bans and zebra mussel invasion -creating fewer drinking water taste & odor problems; no consumption advisories in place.

Fish Consumption Advisory sign posted along Cuyahoga River in 2001. Now that fish populations have increased in the river, many are being caught and consumed. Certain species contain pollutants that require limitations on how many meals should be eaten each month and what populations may be at risk.

PUBLIC INVOLVEMENT AND EDUCATION	**CURRENT STATUS**	**INDICATORS**
<u>Lack of public awareness of watershed issues</u>	MUCH BETTER, *but more public education and citizen involvement is needed as a long term solution to eliminating river and lake problems*	Over 2000 school-aged youth have participated in watershed education events, storm drain stenciling, and river cleanup projects; 80 volunteers have implemented streambank restoration projects; 10 volunteers actively monitor 5 miles of stream for aquatic organism health; over 4000 people in civic groups, schools, libraries, special interest groups, and community organizations have attended presentations about watershed issues; local elected officials have participated in workshops on adoption of wetland and riparian protection mechanisms; successful stream stewardship programs have been initiated in Big Creek and Yellow Creek subwatersheds; annual RiverDay events held around entire Cuyahoga River watershed; numerous media coverage of Cuyahoga River issues, projects, and educational events; *however <u>more</u> education and local legislation is required to adequately address the remaining nonpoint sources of pollution and habitat restoration/protection needed to restore the beneficial uses of the mighty Cuyahoga River.*

Sign representative of the grossly polluted condition of the Cuyahoga River in the 1970s.

Recent sign noting size requirements for steelhead trout caught in the Cuyahoga River at the S.R. 82 dam – a definite sign of improvement!!

Although much improved, more work remains to restore all of the beneficial uses of the river.

Section 2: Proceedings of the Cuyahoga River Symposium

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2. Keynote Address
3. Ohio EPA's Year 2000 Cuyahoga River Intensive Survey
4. Challenges and Benefits of Stream Restoration
5. State of Combined Sewer Overflow Projects
6. Warming Up to Public Access
7. Fired Up About Fish
8. Question and Answer Session

Section 2.1:

Symposium Overview

The State of the Cuyahoga River 2001 symposium was held on October 25, 2001 at the Happy Day's Visitor Center in the Cuyahoga Valley National Park. The day of research and participation was an overwhelming success. There were 190 attendees, approximately 40 university students, and 5 media sources: The Plain Dealer, The Akron Beacon Journal, WCPN 90.3 National Public Radio, WKSU radio, The Beat Channel 50 Cable station. The agenda included a morning session featuring a variety of reports regarding the current river research and implementation programs and an afternoon breakout session.

This symposium was designed to provide a forum for the exchange of ideas pertaining to Cuyahoga River watershed management. Recent improvements in water quality conditions in the river was discussed as well as what remains to be done in terms of future actions. Topics included the Ohio EPA's most recent water quality survey of the Cuyahoga River, urban stream restoration, combined sewer overflow projects, public access issues and larval fish research. The Breakout sessions provided a forum to facilitate interaction between Cuyahoga River RAP members and concerned citizens on specific issues related to the protection and rehabilitation of the Cuyahoga River watershed.

It should also be noted that a student scholarship program was in place to assist area student participation. Approximately 40 students participated in the symposium representing Case Western University, Baldwin Wallace College, The University of Akron Wayne College, Cleveland State University, Highland High School and Old Trail School.

Section 2.2: Keynote Address:

Restoring the Cuyahoga River with Big Moves and Patient Labor: Keynote Address to State of the River Symposium

Steven Litt, Cleveland Plain Dealer

I have to confess that before I sat down to finish preparing my remarks for today, I started leafing through the newspapers I saved from September 12, the day after the terrorist attacks on New York and Washington that left us all in a state of shock.

I couldn't help it. I am drawn again and again, in spite of myself, to contemplate these images of absolute horror - the fireballs exploding from the World Trade Center towers, the people running in terror, the clouds of dust and ash that enveloped lower Manhattan, the black pall rising from the Pentagon.

When I was thinking about what to say today, I thought at first, "How can I talk about Sept. 11?" And then I thought, "How can I not?"

It seems like just yesterday. And yet so much has happened since Sept. 11. We're living a lot of history in a very short amount of time. Every day we read about Anthrax, about bombing runs over Taliban targets, about postal workers dying, about a war with two fronts: one in Afghanistan, and one right here at home.

As the fresh editions of the newspapers pile up, and as one momentous development layers itself atop another, it's important, I think, to remember the shock, the anger, the full range of emotions from Sept. 11. Because the depth of those emotions will help us to carry on, to make a better world. For that is truly a mission for all of us, whether we work to put out a newspaper, to pick up the pieces left after Sept. 11, or to bring a great American river back to life.

Like all of you, I imagine, I was moved to tears by the stories of firemen running up the stairs of doomed buildings in the hope of saving lives. And I was astonished by stories of the passengers on United Airlines Flight 93, who voted to rush the cockpit, to take the controls away from the hijackers and, apparently, to crash the plane in the Pennsylvania mountains, rather than let it continue on to do more damage in Washington.

But there was one small story about heroism in response to Sept. 11 that you may have missed. It was a small piece in The New York Times Magazine on Sept. 30 by a writer named Verlyn Klinkenborg.

In it, he describes the new respect New Yorkers discovered for the common laborers who gathered at ground zero in the days after the attack to sift through a pile of rubble that was six stories high and as big in area as the entire site where Cleveland Browns stadium is located.

Armed with nothing more than five-gallon plastic buckets, these workers began the tedious, backbreaking work of clearing the site, bit by painful bit. They didn't have advanced degrees. They weren't symbolic analysts who traded futures in the commodities markets or who wrote contracts for corporate mergers. They were construction workers who sought to begin healing the city through the work of their hands.

As Klinkenborg wrote: “Like firefighters and police officers, the men and women in the construction trades went immediately to the cynosure of ground zero. Every one of them knows the meaning of hard manual labor, and every one is a gradualist, someone who understands that patient application to small tasks accomplishes great things.”

Well, when I read that paragraph, quite frankly, I thought of all the people who have worked so hard for so many years to give us back the Cuyahoga River, and perhaps, one day, to give us back the shores of Lake Erie.

Let me hasten to say that I don’t mean to overdraw the comparison, or to trivialize in any way the magnitude of what happened on Sept. 11.

So let me be precise here. The industrialists who defiled our environment for more than a century were nothing like terrorists who attacked our nation. The robber barons were creators, not destroyers. They were brilliant people of business. They amassed great fortunes and created great cities. They endowed us with superb cultural institutions, established great charitable endeavors to share their wealth.

But they left behind many legacies. The one we struggle with today is an environment poisoned and defiled by decades of heedless profit-seeking. As we all recognize, this is a huge liability. It scars the image of our community. It prevents us from living a full life in balance with nature. It may even threaten the future existence of Cleveland and other communities in Northeast Ohio.

But this need not happen. If we can heal the wounds left behind by the industrial revolution, we can make this a better place to live - a greater community with a real future. And that is why, when I came to speak to you today, I thought of Verlyn Klinkenborg's statement about construction workers at ground zero.

Because, in a way, we are facing the aftermath of an environmental disaster. It didn’t happen in an instant, like the attacks of Sept. 11. No, the environmental

debacle happened in slow motion, over decades. To fix it, we need gradualists who understand what Klinkenborg called “the patient application to small tasks.”

The river cannot be reclaimed in a day. But through gradual effort, over generations, great things can be accomplished. And believe me, even though our nation is at war, I think nothing could be more important than continuing to fight for the reclamation of our waterways and the discovery of a new way to live in harmony with nature on this continent.

In the history of the world, American cities are relatively recent creations, and our nation is not that old. For two centuries, we have had a vast territory to conquer and claim. We live in motion, shifting from town to town and from city to city, rarely learning enough about the places in which we live to care about them, to love them and to learn about how to live in harmony with them.

We have connected our cities to a vast system of highways that has enshrined the automobile as our primary mode of transportation. And yet because the highway makes it so easy to zip from place to place, it has also demolished the unique and special characteristics that make one place different from another. We travel about madly in search of the next best place, only to find when we get there that it’s pretty much like the homogenized landscapes we left behind.

In Northeast Ohio, we have tragically walled ourselves off from our rivers and valleys. We have erected concrete barriers between ourselves and the lake. And so we forget why we came to Ohio in the first place. We forget why our cities were built where they were. We suffer from geographic amnesia.

Like the robber barons, we are heedless too.

Lewis Mumford, perhaps our greatest critic of architecture and urban development, understood all of this perfectly. In a 1958 essay called, “The Highway and the City”, he predicted that the interstate highway system, then recently approved by Congress, would have “the same result upon vegetation and human structures as the passage of a tornado or the blast of an atom bomb.”

For this, he blamed the mentality of the traffic engineer, whose task is to improve the flow of automobiles at the expense of any other priority.

As Mumford wrote, “Since the engineer regards his own work as more important than the other human functions it serves, he does not hesitate to lay waste to woods, streams, parks, and human neighborhoods in order to carry his roads straight to their supposed destinations. As a consequence, the cloverleaf has become our national flower and wall-to-wall concrete the ridiculous symbol of national affluence and technological status.”

Now, as symbols of national affluence go, the highways don't rank with the World Trade Centers. Bridges, perhaps. The Golden Gate Bridge, definitely.

But in a general sense, I think Mumford got it exactly right. By building a wildly unbalanced transportation system, we have hitched ourselves to the automobile, built our cities in a way that reinforces our dependence. We are required to drive, to spend thousands of dollars a year maintaining automobiles and filling them with gasoline.

We consume far more energy that we produce. This is bad for the planet. And it has made us especially dependent on oil from the Middle East, which is one reason why we are at war now. The presence of American troops in Saudi Arabia, made necessary by the imperative to keep the peace after Desert Storm, is cited by the terrorists as one reason for their anger against us.

If The New York Times and the Wall Street Journal are correct, we have propped up a corrupt and repressive regime in Saudi Arabia, feeding resentments that have enflamed hatreds that now threaten to engulf the world.

I don't mean to suggest that the root cause of our present troubles is simply that too many of us drive SUV's. Nor would I suggest that if we can reclaim a few rivers, we'll solve all our problems. But I do think it's time for us as Americans to confront the tragic inequities in the distribution of global wealth and to try to live on our own continent in a way that's more thoughtful and more sustainable.

If we can do that, we might discover whole new green economies that can create wealth based on living in harmony with nature, rather than paving everything in sight. And, perhaps, we can use our wealth to pay greater attention to the world, instead of waiting for the world to rush in upon us as it did on Sept. 11.

Part of our task, I think, is to create cities and towns that are designed on a sensitive, thoughtful and beautiful pattern that can be sustained for generations, so they are worthy of our devotion and love. We have yet to discover those qualities in places like Cleveland and Northeast Ohio.

But we're trying. We are trying to undo the damage Mumford predicted we would inflict on ourselves.

In a way, it's hard for me to speak to this group because there's nothing I can tell you that you don't already know about the importance of waterfronts in northeast Ohio. Why is that? Because you have taught me. Last year I spent five months exploring the northern Cuyahoga valley, speaking with planners, members of the RAP, and community leaders about the importance of the Ohio & Erie Canal National Heritage Corridor.

I see the corridor project in particular as the big gesture that can unite the efforts of all the patient gradualists in the watersheds of our region. It's the big design, the quilt in which everybody gets to embroider a single square, the blueprint that will let each of us swing a hammer with the confidence that the nail will go in the right place.

Best of all, by reintroducing Northeast Ohioans to our history and geography, the heritage corridor can build a political base for preservation and wise development throughout the region. And what I love about the project is that it begins with a trail system - a thin green thread of public space - that can knit our cities and towns and counties together.

But just as there is a time for gradualists to do the patient labor of making a better world bucketload by bucketload, there is a time and place for the big moves that can shape entire landscapes in a single stroke.

In New York, this moment will come when architects and planners sit down to design the new development that will replace the World Trade Center.

And in Cleveland, another such moment is upon us, although I'm not quite sure we realize it yet.

The Ohio Department of Transportation is getting ready for a massive re-do of the Inner Belt, the ganglion of roadways, bridges and ramps that leaps over the Cuyahoga River and connects three interstate highways around Cleveland.

This is the highway system that cut Tremont in half, that walled off the northern end of the valley and which put eight lanes of concrete between Clevelanders and their lakefront.

At minimum, even if ODOT did nothing more than simply repave what they've already built, the project would cost at least $200 million, most of which would come from the federal government. And that's not all. ODOT is also paving the way, pardon the expression, for a new Flats transportation system that could parallel the northern end of the Cuyahoga River and funnel truck traffic south from Whiskey Island to the highways system via I-490. That little item could cost another $150 million or more.

These are big, big chunks of urban infrastructure. They could perpetuate the damage done to Cleveland in the 1950s and 60s, and freeze the city in its current industrial pattern for another half century or more. Or, if Clevelanders can capture the design process and open new pathways to the river and the lake, these highway projects could actually be an enormous boon to the city and the entire region.

In this case, there is no time for gradualism. Cleveland desperately needs a new city planning effort. And it needs to be based on a new civic paradigm. It should not be a repeat of the top-down, public-private partnerships that proved successful in the creation of tourist attractions such as the Rock and Roll Hall of Fame and Museum.

Highways are public investments, and they call for a massive mobilization of public will. We need an entirely new system to involve the entire region in reconceiving the lakefront and the riverfront at Cleveland. And we need to do it in a way that is uniquely our own, one that announces to the world that Cleveland values its waterways and waterfronts, and knows how to design beautifully around them.

I see no reason why this can't be done through a highway planning process. But first, Greater Clevelanders have to capture the design process and dictate to ODOT very clearly what the region desires.

My own view is that it's time to open up the river and lake with a system of linear parks that connect the hinterlands upstream to the population center of the region with a continuous network of trails, historic sites and museums.

This can become the new framework for revitalization of urban neighborhoods, and the creation of new wealth based on the rediscovery of our geography. I believe this can happen because public amenities create value.

Ask any developer. Views sell. Waterfront properties sell. You build it and the people will pay handsomely for it. And that translates into the kind of wealth that can be redistributed to benefit everyone, not just the people who have a front row seat on the waterfronts.

But there are even more important reasons to reclaim our waterfronts around a vision of public space. One is that it will make Northeast Ohio a cleaner and healthier place to live. Once more people can see and use their waterfronts, citizens will become a political force for good stewardship.

Parks also make for better democracies. They are not elitist. It should be the birthright of any Northeast Ohioan to see the sun set over Lake Erie. Sadly, today, that privilege is owned by the lucky homeowners whose backyards face the lake, or the owners of boats moored at the private yacht clubs that lease public land along the lake. That needs to change.

Finally, if we hope to foster the industries of the future, we have to make Northeast Ohio a better place to live. Knowledge workers in high-tech industries can live wherever they want. High-tech communications make it possible for software designers and computer technologists to pick and choose among

desirable locations. If we can't make Northeast Ohio more desirable, we won't be able to adapt as our manufacturing industries fade and new industries arise.

Believe me, the highway project in Cleveland is pivotal to any of this. If we blow the ODOT design process and miss the opportunity to improve our connections to the water, we're going to make a 50 or 100-year mistake. And that we cannot afford to do.

So how can we plan for a better future?

There are so many good examples to follow in American urban history. From where we stand, it's easy to envy the Chicago lakefront. But it's more important to understand how Chicago got its lakefront. It didn't happen because government wanted it to happen. It happened in spite of government.

The lakefront was the result of generations of civic activism in which people sued the city to prevent construction of museums in Grant Park, or chained themselves to trees to stop bulldozers in Jackson Park.

Today, the spirit of activism is alive and well on Chicago's lakefront. The Friends of the Parks recently agitated successfully for a redesign of Lakeshore Drive, in which the northbound lanes of the highway got flipped from one side of the Field Museum to the other, like a garden hose. In a single stroke, this created a whole new unit of public space on the lakefront around the city's museum campus.

We could do something similar at Gordon Park in Cleveland, if only I-90 could be flipped over the CEI power plant, so the two halves of the park could be reunited.

Another example to consider is the Riverlife Task Force in Pittsburgh. This is a two year-effort, masterminded by Mayor Tom Murphy and a host of civic leaders. What made it different from the top-down methods of previous plans in Pittsburgh is that the entire vision was shaped in public meetings.

Over the past two years, the task force held more than 100 public sessions, building a broad consensus over the shape of future development on the riverfronts. Their work was just completed earlier this week, and you can read about it on the internet at the Pittsburgh Post-Gazette website.

Of course, we have our own home-grown planning efforts on which to build. The Ohio & Erie Canal National Heritage Corridor is the outcome of 15 years of steadfast activism and public involvement. And I think, finally, elected officials in Cleveland and Cuyahoga County are beginning to understand the significance of the project.

Building upon that central spine, the Cuyahoga County Planning Commission has prepared the vision for a new county Greenprint, which would create a vast

new system of trails and parks connecting the county's three great rivers - the Rocky, the Cuyahoga and the Chagrin - to each other, and building a web of pathways that could inspire revitalization and renewal.
During the past year, I've witnessed many positive steps in the larger effort to reclaim our rivers and streams. Just to name a few:

- A film documentarian is preparing a program about the Cuyahoga River, to be aired nationally on PBS.

- Last April, four nationally-known architects and landscape architects came to Cleveland for a weekend-long charrette to create concepts for the future of Canal Basin Park, which would be the northern terminus of the National Heritage Corridor. The Kent State University Urban Design Collaborative in Cleveland played a key role in organizing this event, along with Ohio Canal Corridor.

- Last month, one of those designers, a Columbia University professor named Stan Allen, brought his students back to Cleveland to work on a landscape plan for the entire northern section of the valley. Their work will be done in December.

- Next winter or spring, if all goes well, the Canal Basin charrettes will go into a second phase.

- Schmidt Copeland Parker Stevens, the Cleveland architecture and landscape firm, has been hired by Cuyahoga County to create a detailed design for the northernmost section of the towpath trail, leading into Canal Basin.

- Cleveland State University is planning a yearlong series of public forums on the future of our lake and waterways, with the stated goal of building community consensus.

- Case Western Reserve University's new master plan calls for the daylighting of Doan Brook and a redesign of the university's ugly cliff wall of buildings facing Martin Luther King Jr. Drive in University Circle.

- The Cleveland Museum of Art has chosen Rafael Vinoly as the architect for its renovation and expansion, and Vinoly has publicly stated that he understands the importance of giving the museum a new frontage on Doan Brook and Rockefeller Park.

- The Ohio Department of natural Resources is about to start a public master planning process for Dike 14, the 88 acres of new landfill on the Cleveland lakefront.

Despite all this good news, there's a long way to go in Cleveland and Northeast Ohio. There are still active construction and demolition debris landfills along the Cuyahoga. In Valley View, the community is degrading the quality of the towpath trail by building truck routes right next to the canal and the bike path. We need to continue redoing our sewer systems, to keep waste from pouring into streams and rivers after heavy rains.

If we build next to our waterways, we need the highest quality urban design, architecture and landscape architecture - and that goes for every community in the watershed, not just Cleveland. We need a green web connecting all our communities, helping pave way for new economy. We need to make Northeast Ohio a place known for its incredible beauty. We need to undo forever the image of the burning river.

We can do all this one bucket at a time, like those heroic workers at ground zero. And we can do it in a big stroke, by making sure that when the highways are done this time, they're done in the best possible way.

If we can devise the right ways to plan, and hire the best designers money can buy, I have no doubt we can become a beacon for the entire nation and reclaim our greatness as a city and region.

Thank you.

Findings of the 2000 Cuyahoga River Intensive Survey

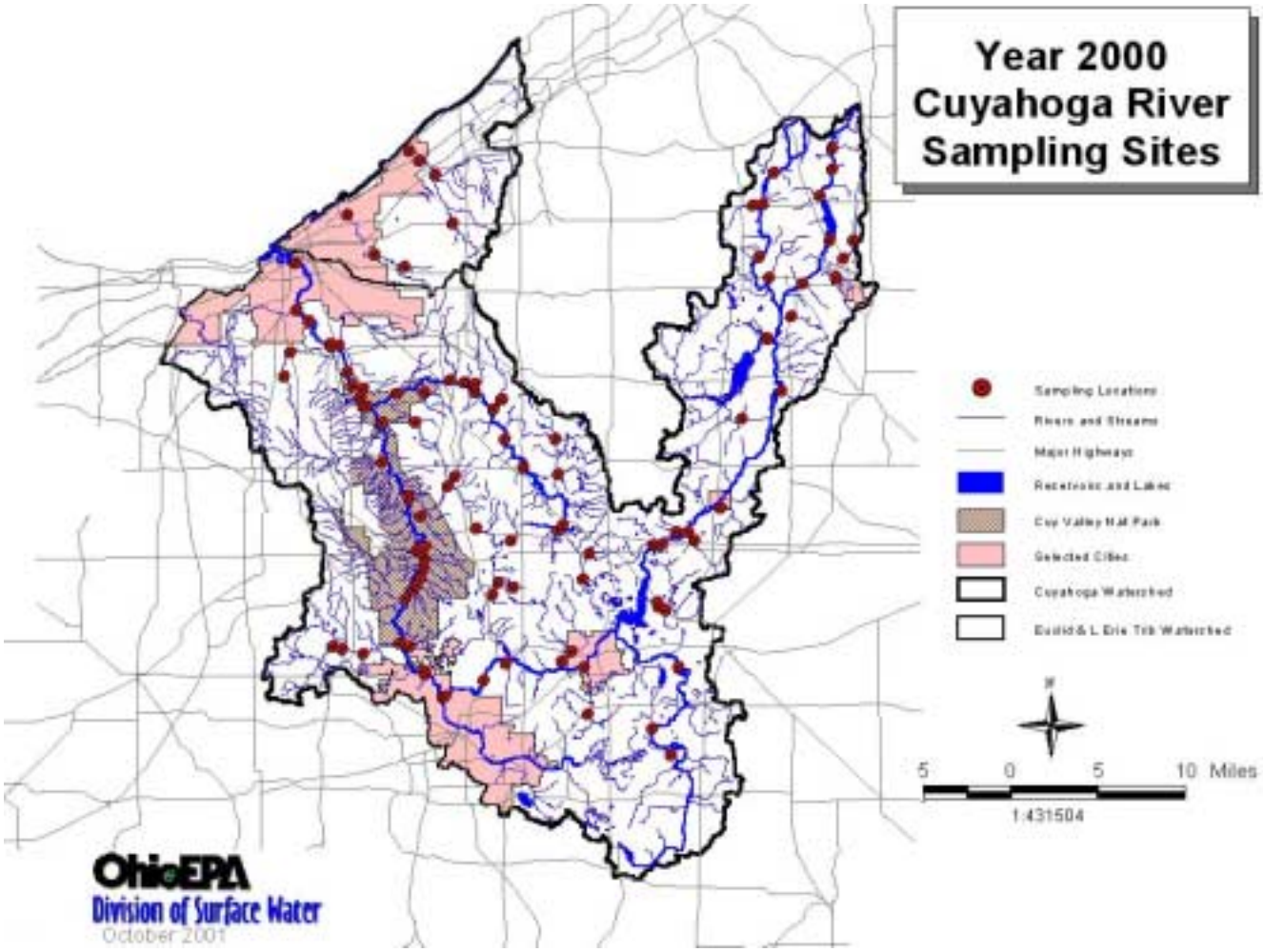
Steve Tuckerman, Ohio EPA

Ohio EPA has been monitoring environmental conditions in the Cuyahoga River watershed since 1973 as part of its ongoing water quality management responsibilities under Public Law 92-500, also known as the Clean Water Act or CWA. The CWA requires the evaluation of the Nation's waters in order to determine progress towards protection and restoration of chemical, physical and biological integrity of the Nation's waters, which are the objectives of the Act.

This paper summarizes preliminary findings of the most recent monitoring effort by Ohio EPA. This information on the health of our streams will be provided to the general public and will be utilized in the development of Total Maximum Daily Load or TMDL reports for streams within the Cuyahoga watershed not in attainment with CWA goals. The TMDL approach requires a quantification of both point and non-point discharge sources to these degraded streams, along with appropriate remedial measures that need to be implemented to resolve them.

In 2000 the Ohio EPA conducted an Intensive Survey of the Cuyahoga River watershed. Over 100 sites were sampled for biological, chemical, and physical integrity. Figure 1 shows the sampling locations. Although not all of the biological samples have been analyzed to date, several generalizations of the current health of the Cuyahoga River can be made based on preliminary data.

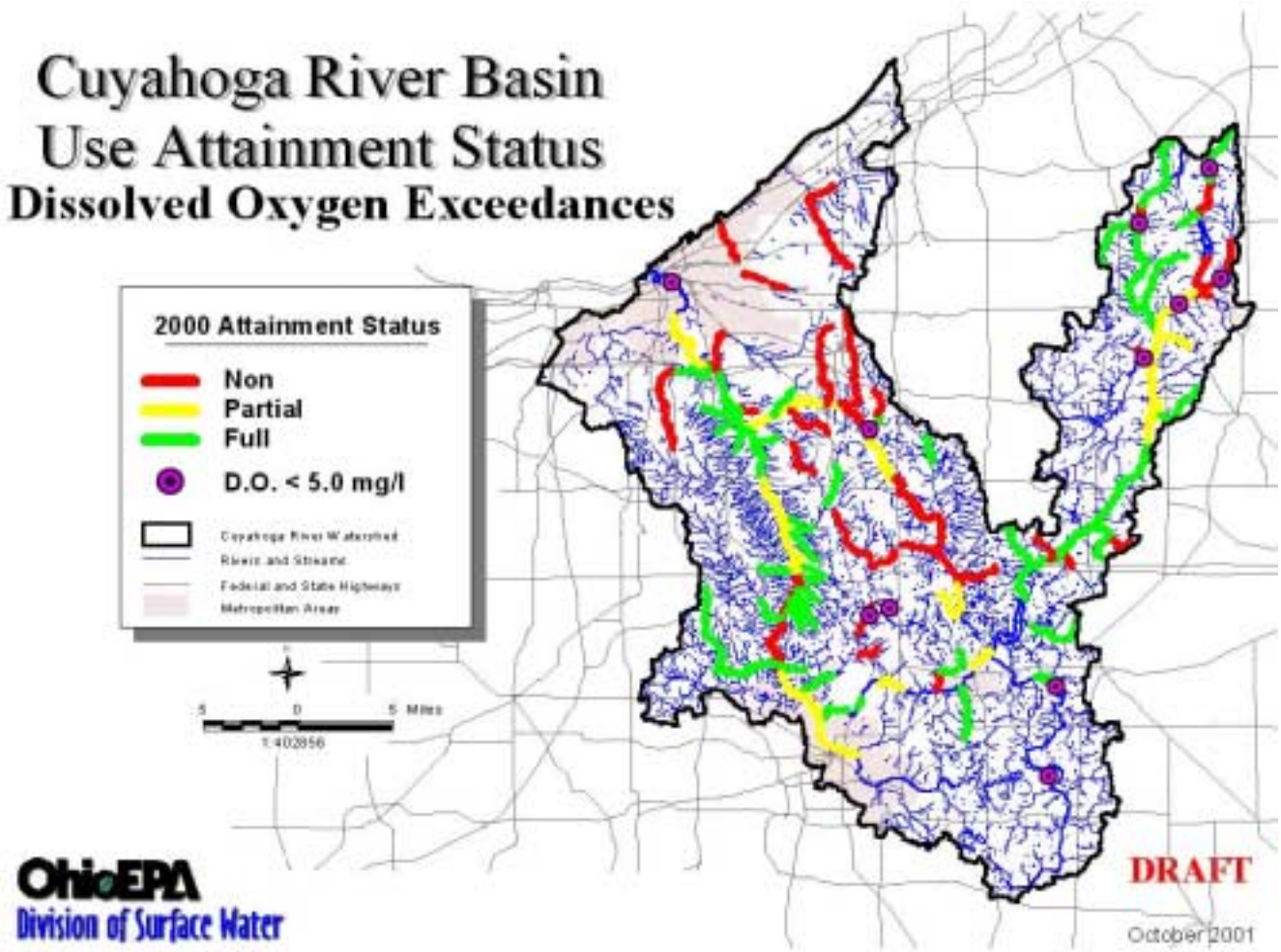
Figure 1



Generally, the chemical and physical water quality criteria for Warm Water Habitat (WWH) are being met throughout the watershed. WWH is the aquatic life habitat use designation for most of the streams and rivers in northeast Ohio. Other use designations may be given when the physical attributes of the streams are of significantly higher or lower quality.

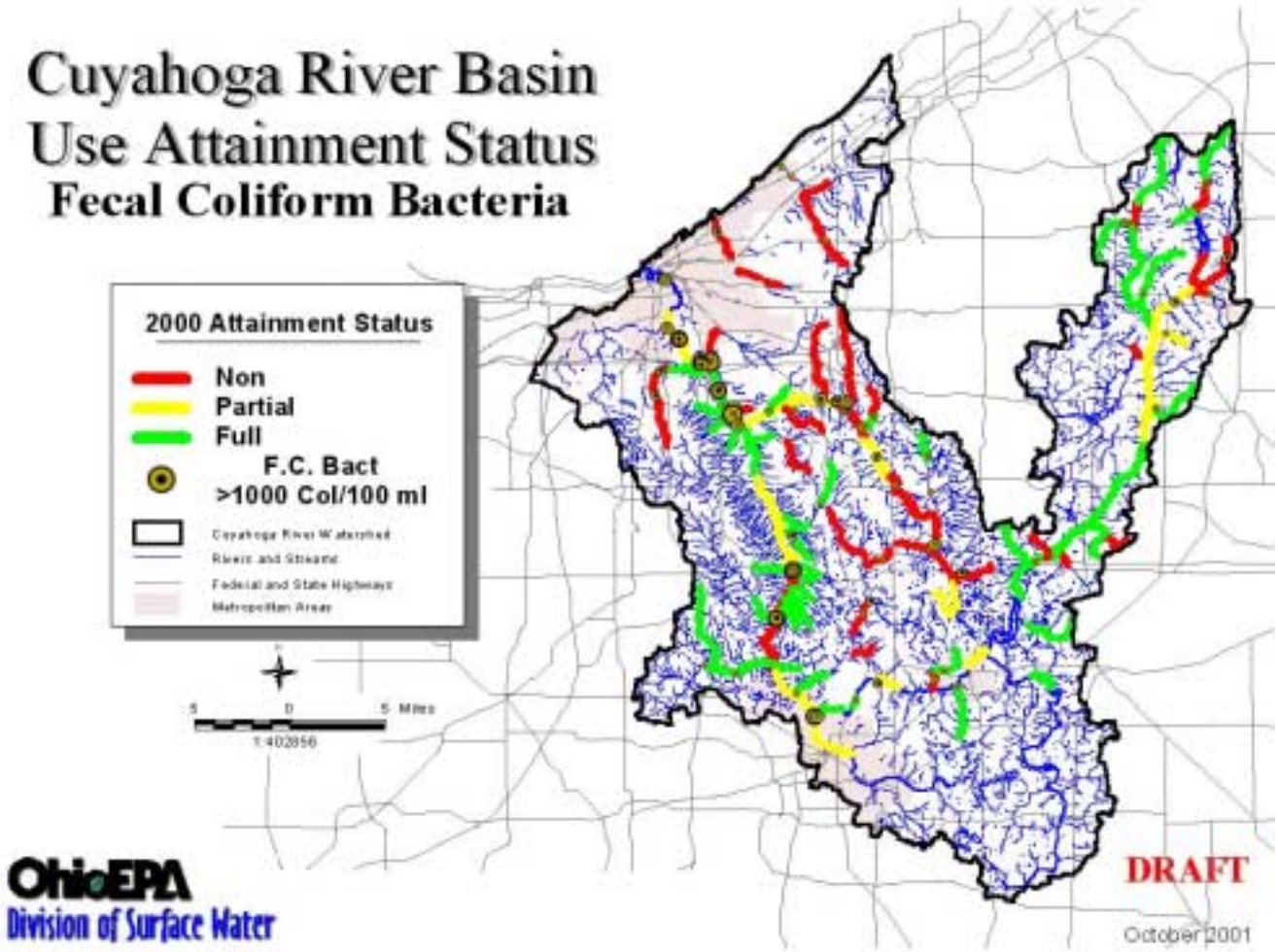
Continuing to be of concern are low dissolved oxygen (D.O.) concentrations less than 5.0 mg/l found at various locations throughout the watershed. These low levels are caused by elevated nutrients or other oxygen demanding substances from inadequately treated sewage, fertilizers, and non-point source runoff. Low flow conditions such as those found in the upper watershed wetland areas and in the navigation channel also contribute to low D.O. concentrations.

Figure 2



Also of concern are elevated fecal coliform bacteria levels (greater than 1000 colonies/100 ml) found primarily in the lower Cuyahoga River. These bacteria are normally found in the intestines of warm-blooded animals, including humans. Sources of fecal coliform bacteria include combined sewer overflows, failing home septic systems, and contaminated storm water runoff from urban and agricultural areas. Elevated levels of these bacteria are usually found during and after storm events, and are the cause of bathing beach and recreational body contact advisories along Lake Erie and in the Cuyahoga Valley National Park.

Figure 3

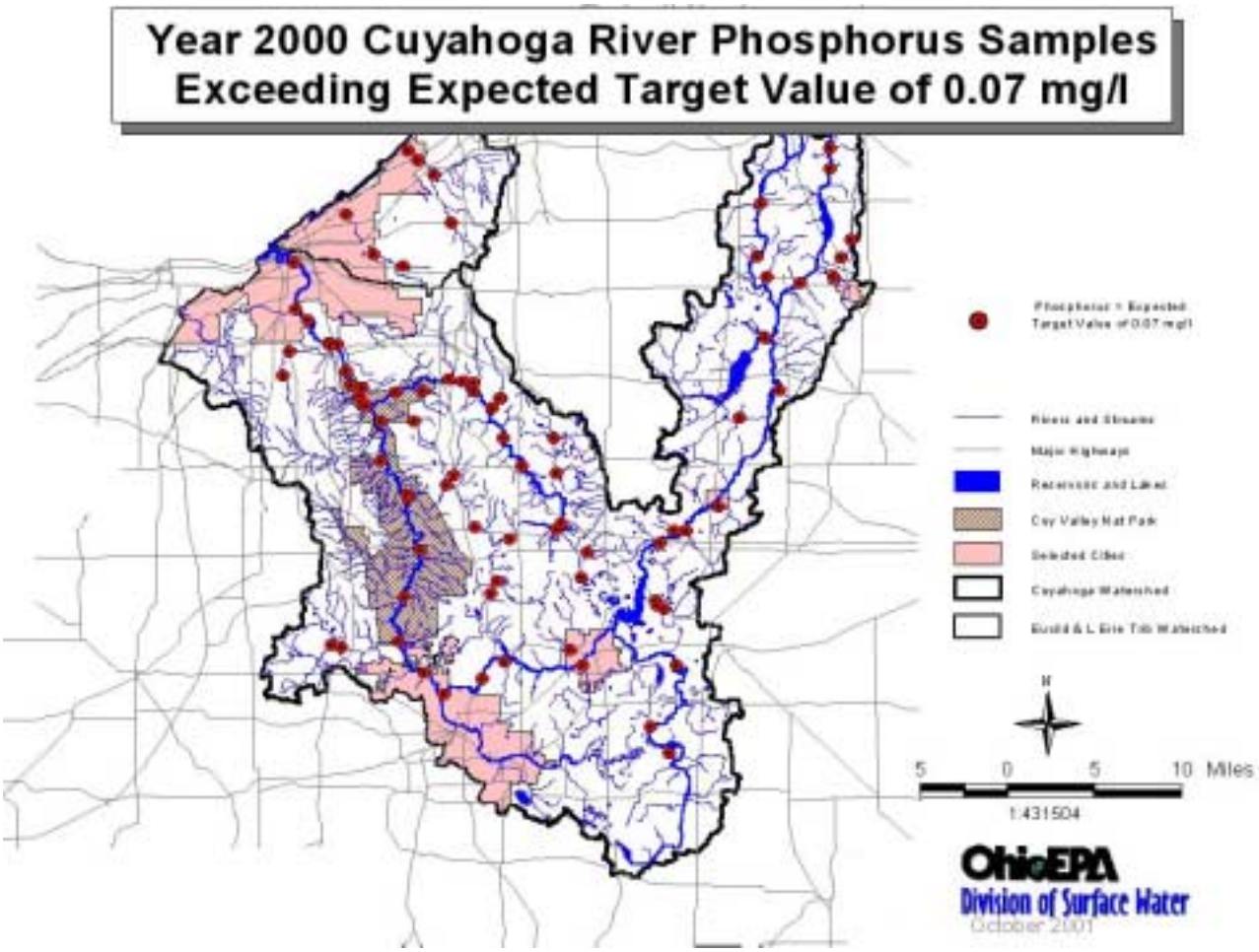


Levels of heavy metals such as copper, lead, and zinc, which were major contributors to poor water quality conditions in the past, have been reduced significantly through industrial and municipal wastewater treatment strategies. Only two exceedences of water quality criteria for heavy metals in the main stem between Akron and Cleveland were noted in the 2000 survey and are believed to be the result of construction site runoff from the West Creek watershed.

Nutrient levels of ammonia, phosphorus and nitrate/nitrites have also significantly declined in response to environmental regulations and treatment technologies. However, elevated levels of nutrients continue to persist throughout the watershed. Contributing to this potential problem are sanitary wastewaters from combined sewer overflows and failing home septic systems, as well as non point source storm water runoff.

Figure 4 illustrates the widespread nature of elevated phosphorus levels found in the Cuyahoga River watershed. Increases in levels of nutrients such as phosphorus may cause algal blooms resulting in degraded aesthetics and potential taste and odor problems in drinking water supply reservoirs and lakes and contribute to wide fluctuations in D.O. concentrations.

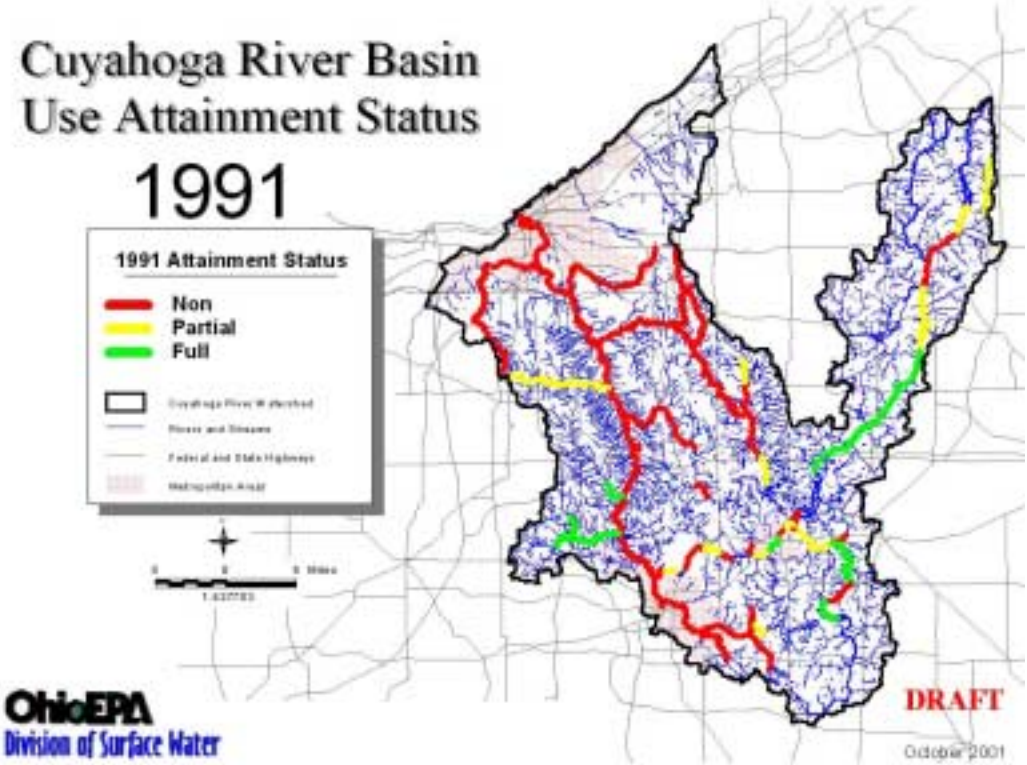
Figure 4

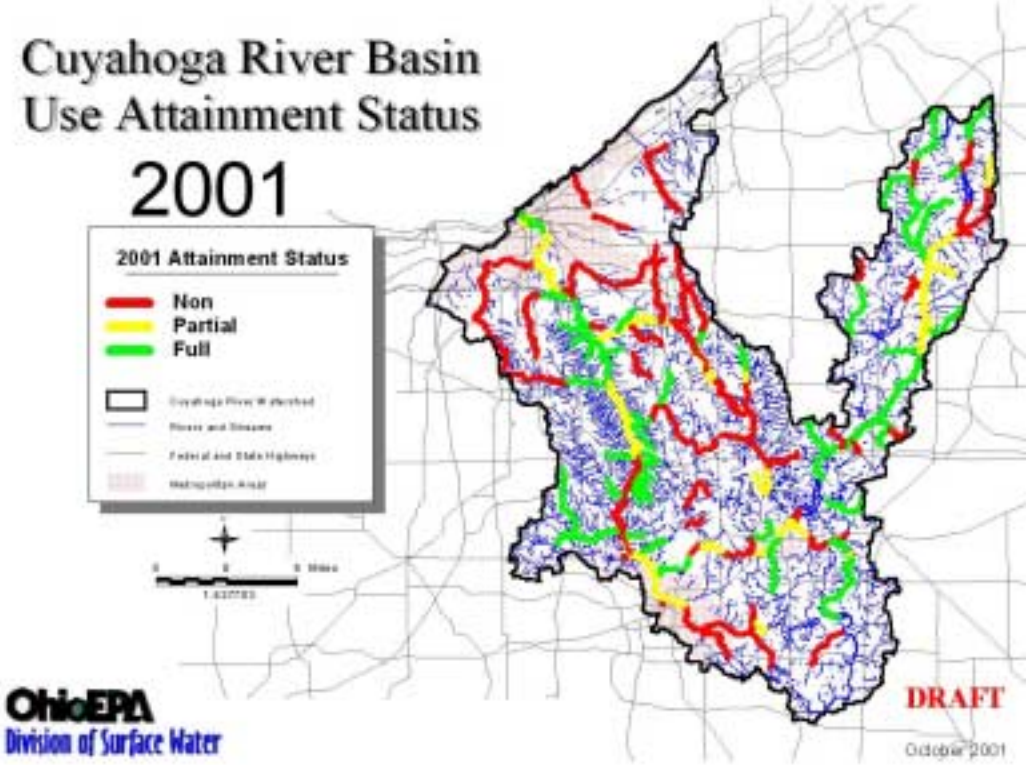


As noted in the following two figures, a distinct trend of continued improvement has occurred in the Cuyahoga River watershed in the past 10 years. The mainstem of the Cuyahoga River is now considered in Full Attainment of the WWH standards downstream of the Ohio Edison Dam to the confluence with the Little Cuyahoga River, at Hillside Road, and is probably in Full Attainment from the Station Road (SR-82) Dam

to the confluence of Mill Creek. Partial Attainment with WWH standards is probably being achieved downstream from Bolanz Road to the SR-82 Dam. Non Attainment of the mainstem downstream of Mill Creek may be attributed to a large sanitary sewer break discharging into Mill Creek during the sampling survey.

Figure 5





For the first time, several small Cuyahoga River tributaries in the Cuyahoga Valley National Park were sampled, with most found to be in Full Attainment. Some of these tributaries may be candidates for Cold Water Habitat (CWH) designation because of their high quality biological communities. It was also noted that the mouth of West Creek may be in Full Attainment, and the mouth of the Little Cuyahoga may be in Partial Attainment of the standards. Please note that these determinations are preliminary and are awaiting verification with other samples and information yet to be analyzed. However, when compared to sampling information and determinations made during past sampling surveys, we can see a significant improvement in the chemical and biological quality of the Cuyahoga River and its tributaries.

The Cuyahoga River at Hillside Road in the Cuyahoga Valley National Park. Now considered to be in Full Attainment of Ohio Warmwater Habitat standards based on 2000 Ohio EPA Survey Data.

Section 2.4: The Challenges and Benefits of Stream Restoration:

1. Yellow Creek Watershed and Bath Township,
Maia Peck, Davey Resource Group
2. Chevy Branch of Big Creek,
Mark Link, Northeast Ohio Regional Sewer District

A major focus of the RAP has been on encouraging stream protection and restoration through local government regulation and through implementation of bio-engineering practices to stabilize stream channels and banks. This panel discusses stream protection regulations recently adopted by Bath Township in the Yellow Creek watershed of Summit County, Ohio and the implementation of a bioengineering approach to an urban tributary of the Big Creek watershed in Cuyahoga. County Ohio.

Yellow Creek Watershed and Bath Township

Laura DeYoung, Author
Maia Peck, AICP, Environmental Planner, Presenter
Davey Resource Group

As we pave over and develop the landscape, fewer natural areas are left to provide public health and safety functions, making those remaining areas with high ecological integrity more critical. When it comes to protecting these natural areas, there are three tools: acquisition and conservation easements; land use controls; and public education of best management practices to encourage land owners of private property to be good stewards. As we look to protect the last of our natural areas, it is important to recognize the public's understanding of the importance of natural areas and to understand the legal issues. Preserving ecological health and function of natural areas depends on more people having more knowledge.

Yellow Creek Watershed and Bath Township

INTRODUCTION

Yellow Creek is one of the most pristine tributaries flowing to the Cuyahoga River. Yet, Yellow Creek is facing threats from development pressures and non-point source pollution.

A large portion of the Yellow Creek watershed is within Bath Township in Summit County. This case study illustrates one Township's successful efforts to protect its resources - its watersheds and riparian corridors - through careful comprehensive planning and creative land use measures backed by solid scientific study.

HISTORY

Bath Township, in Summit County, Ohio, was founded in 1818. In the last half of the 20th century, the township began to be urbanized. The nearby cities of Akron and Fairlawn annexed parts of Bath, and many of the township's lands were converted to residential and commercial uses. Today, Bath Township's goal is to remain a rural-like residential community and protect its important natural resources, including Yellow Creek.

In the summer of 1996, a planning committee was formed and a comprehensive plan was developed for the township. Bath Township wanted a legally defensible plan for growth management based on public interest and environmental analysis. Some of the key components of the Bath Township Comprehensive Plan (1998) included a greenway concept plan for open space and potential development areas/land use policy parameters.

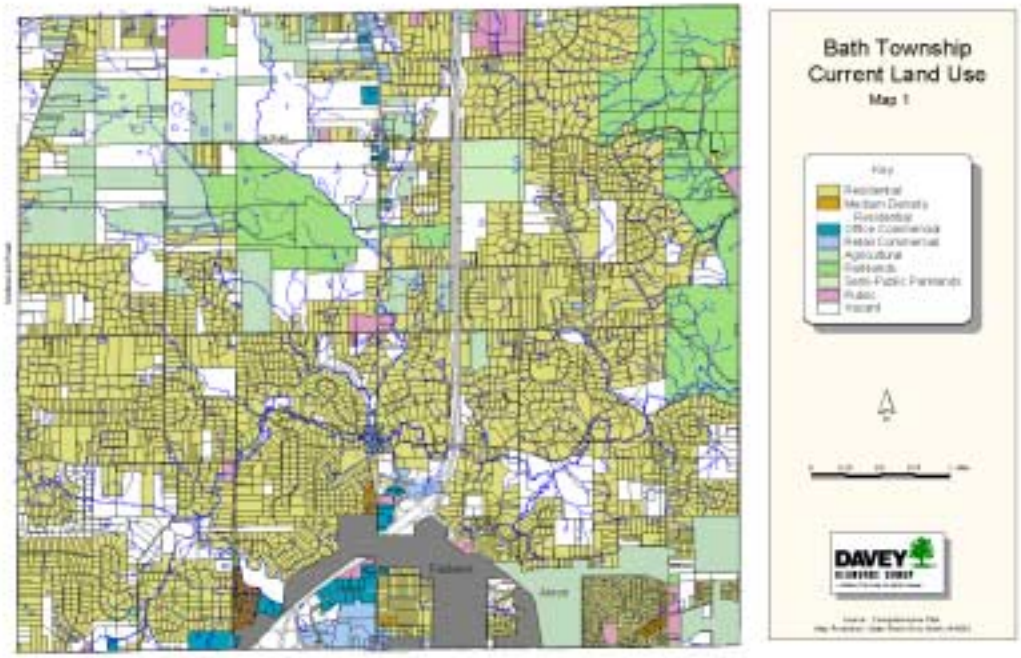
In 1999, the Bath Township Natural Resource Protection Study was conducted as an effort to advance the goals and objectives of its comprehensive plan. It also represents an effort to further knowledge of the natural resources of Bath Township. The decision to invest in this study was driven by a desire to provide local elected and appointed officials (and private landowners) with the information needed to make wise land use decisions. Completion of this report preceded the development of updated zoning resolutions for Bath Township and was considered necessary to arrive at sound land use regulations.

Demonstrating public health and safety functions of habitats allowed land use controls to be created to preserve open spaces, riparian corridors, and steep slopes. Use of these controls had become critical as the amount of impervious surface increased, along with increases in water quality problems, flooding, and erosion. Fewer natural resources remained to provide valuable public health and safety functions, making those remaining features more critical to preserve.

As a result of Bath's efforts, they received the national Smart Growth Sustainable Planning Award - Honorable Mention from the American Planning Association's American Society of Consulting Planners for their open space subdivision regulations, riparian corridor overlay district and streambank buffers, and steep slope regulations. In addition, they have been recognized for their scenic byway designations and parkland acquisitions.

To meet these goals, Davey used a multi-step examination process involving secondary source review, remote sensing, field evaluation, ecoquantification analyses, and GIS (geographic information system) mapping. In addition, public participation was key to writing the

comprehensive plan and land use controls. Bath provides a case study that shows how focus, facts, and analyses are essential for defining realistic solutions and for effectively preserving critical lands, providing a rationale for conservation, and setting guidelines for restoration. The data collected were critical to identify impacts on ecosystems, anticipate problems, and make proactive decisions about land use.



COMPREHENSIVE PLAN

The Bath Township Comprehensive Plan represents a vision for overall development of the township over a period of two decades. In recent years, concern had surfaced regarding the loss of open spaces, changes in the rural character, and the impact that new development was having on environmental quality.

Urban sprawl was a key issue for Bath Township.

The purpose of the comprehensive plan was to provide a framework within which informed spending and regulatory decisions could be made to determine the future character of the community. Such decisions involve the proper location and nature of future development, the need for public facilities or infrastructure, and a determination of scenic, environmental, and historic resources that should be afforded a measure of protection as development occurs. A well prepared plan should delineate the implementation mechanisms required to make the plan a reality.

The plan represents a collective vision regarding the factors that should be considered when such decisions are made. The plan provides guidance to parties that will be interested in developing within the township. The existence of an adopted plan provides a valuable basis of legal support when such decisions are questioned.

First, a substantial effort was made to provide opportunity for public involvement in developing the plan. Secondly, a process of data collection and analysis was undertaken to provide baseline information that could be used for planning purposes. As part of the planning process, citizen committees established an overall policy direction that guided the development of the plan. Some of the key components of the plan included: a greenway concept plan for open space; transportation planning; potential development areas/land use policy parameters; and infrastructure policies.

The comprehensive plan found that Bath was experiencing increasing development pressures. If the township was to maintain the quality of its natural areas, as well as its semi-rural atmosphere, natural resource protection zoning was needed. Although Bath Township supports protection of the environment and sustainable development, measures towards these goals can be derailed due to takings legislation, individual property rights, and the limitations of townships to enact zoning regulations. It was important for Bath to have scientific data demonstrating the public health and safety benefits associated with protecting the township's significant natural resources.

A land use concept plan was developed.

NATURAL RESOURCE STUDY

Scientific data was need to identify and prioritize conservation efforts. A Natural Resource Study was conducted by Davey as a continuation of Bath Township's efforts to advance the goals and objectives of its comprehensive plan. This study was conducted to articulate the manner in which proposed zoning legislation, including the Riparian Corridor Overlay District, Steep Slope Regulations, and Open Space Residential Subdivision zoning standards, promotes the general health and safety of Bath Township's citizens. To further support the drafting of these codes, the Natural Resource Study delineates the boundaries of riparian corridors and identifies other significant natural resources. The Natural Resource Study was part of a multi-step examination process comprised of secondary source review, remote sensing, field evaluation, and ecoquantification analyses. Completion of this report preceded development of the final draft of an updated zoning resolution for Bath Township and was considered necessary in order to arrive at scientifically-premised, legally-enforceable land use regulations.

Review of Secondary Source Materials

Secondary data analysis undertaken for the purposes of this study included the compilation and review of available maps and documents related to watersheds, aquatic features, floodplains, riparian corridors, wetlands, woodland resources, wildlife corridors, parklands, groundwater resources, soils, species, and existing topography in Bath Township. Given analysis of secondary source material, Davey identified a number of key issues and suggested a variety of recommendations to Bath Township.

Bath Township's watersheds and aquatic features were found to be of good to exceptional quality and are of significant environmental value to Bath Township. The largest public health and safety threat to the quality of these resources is non-point source pollution. A great deal of non-point source pollution can be easily reduced or prevented from reaching these natural resources through best management practices such as reducing erosion and sedimentation into water bodies. In order to encourage the protection of these resources, Davey has suggested public education campaigns encourage the use of best management practices, the verification of stormwater pollution prevention plan into site design process, limited use of lawn chemicals, and maximizing vegetative cover and pervious areas along riparian corridors.

Secondary source review of riparian corridors indicated that the quality and extent of these corridors can be significantly threatened by development pressures. Protection of existing natural riparian corridors was viewed as critical to the long-term health of streams and downstream receiving waters. Flooding, erosion, sedimentation of surface waters, increased stormwater runoff, loss of wetlands and riparian areas, increased pollution, and wildlife habitat losses are some of the problems that Bath could be facing if riparian corridors were not protected. If the riparian area is developed to the water's edge, water quality degradation may be occurring at that site and for some distance downstream. Vegetated streambanks were found to help prevent soil erosion and filter pollutants from runoff entering the stream. Davey suggested the incorporation of the ***Riparian Corridor Overlay District*** as an effective means through which to protect existing riparian corridors in the face of ever increasing development pressures. In addition, ***Steep Slope Regulations*** were used to protect vegetated slopes of the riparian corridors and other sensitive natural features.

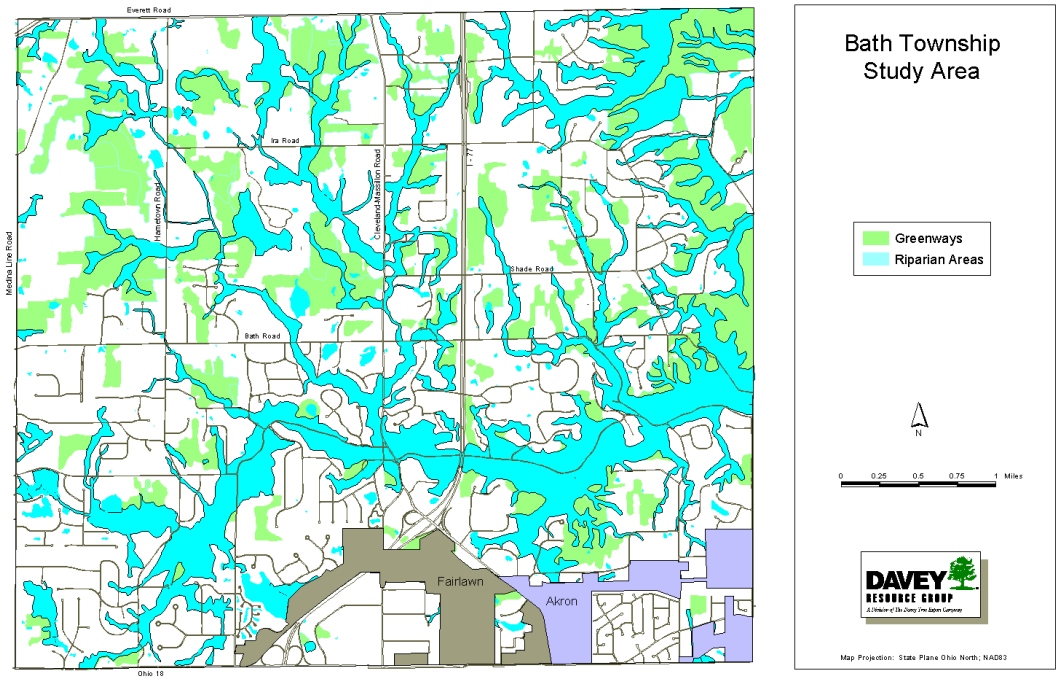
BATH TOWNSHIP KEY ISSUES AND RECOMMENDATIONS

KEY ISSUES	RECOMMENDATIONS	RATIONALE	IMPLEMENTATION
Protection of watersheds and aquatic features from nonpoint source pollution	Public education Include verification of stormwater pollution prevention plan (SWPPP) in the site design process Maximize vegetative cover and pervious areas Prohibit or limit use of lawn chemicals	To encourage individuals to prevent non-point source pollution To prevent sedimentation of surface waters To decrease amount of pollutants in runoff and slow the flow of the runoff	• Ensure the site design review includes a SWPPP to specify best management practices and structural controls to minimize erosion and transportation of sediment. • Require retention basins and certain percentages of vegetative cover in newly developed areas • Public education of best management practices
Degradation of stream habitat	Restore stream systems	Protection of surface waters	• Biomonitoring of streams • Bioengineering of streams • Public education and use of in-lieu-fees from mitigation projects
Protection of riparian corridors	Riparian Corridor Overlay District	Protection of riparian corridors, floodplains, riparian wetlands, steep slopes, and critical habitat	• A full inventory, definition, and assessment of resources
Protection of riparian corridors as wildlife corridors, recreation areas and other natural areas	Develop greenway linkages and open space plans that provide multi-use functions and enhances the sense of community	To serve the community's active and passive recreational needs	• Map contiguous open spaces and other potential corridor linkages • Develop a strategy for acquisitions or easements
Protection of wetlands	Include verification of wetlands permits in the site design process	To conserve wetlands systems	• Ensure the site design review addresses wetlands issues, including the creation of buffer areas
Protection of urban and community forests	Develop tree preservation and protection resolution as part of subdivision regulations Develop a historic/heritage tree program	Canopy cover provides numerous public health and safety benefits, serves as habitat for wildlife, and promotes biodiversity	• Require developer to prepare tree preservation and protection plans
Preservation of woodlands and open space	Open Space Residential Subdivisions	Limit development in environmentally sensitive lands	• Map and prioritize undeveloped lands based on ecological evaluation
Protection of aquifer system	Develop a groundwater protection policy Develop a community outreach and education program regarding groundwater resources Conduct a pollution source inventory Limit amount of impervious surface	To protect the aquifer system	• Expand delivery systems of sewers, community education, UST program
Unsuitability of soils for septic	Require regular inspection, maintenance, and pump out of septic systems	Public health and safety and protection of groundwater resources	• Charge homeowners a maintenance fee that is used for inspection, maintenance, and education
Development compatible with natural resource protection	Require environmental site design review process	Avoid adverse impacts on sensitive environments	• Map and prioritize undeveloped lands based on ecological evaluation

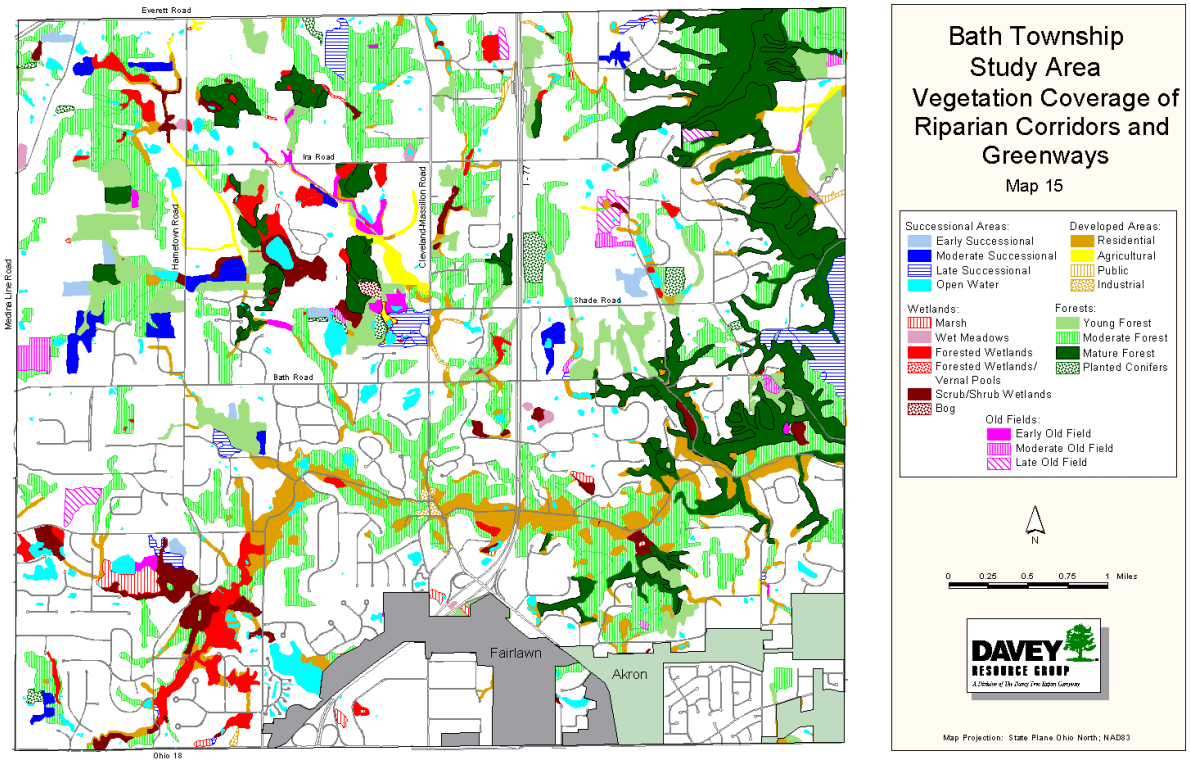
Additional highlighted natural resources of concern in Bath Township include wetlands, woodlands, and aquifer systems. These resources provide for a variety of public health and safety functions to the citizens of Bath, including the protection of drinking water and prevention of flooding. Recommendations include the institution of ordinances, including the ***Open Space Residential Subdivision*** zoning code, which will limit the type of development throughout the various environmentally sensitive lands throughout the township. Davey also suggested that Bath Township require regular inspection and maintenance of septic systems as a means through which to protect groundwater resources. Development compatible with natural resource protection was highlighted as a means through which to avoid adverse impacts on sensitive environments.

Natural Resource Study Area and Mapping

The study area for this project was determined based on mapping riparian corridors, their adjacent wetlands, and sloping terrain that forms the valleys. The mapped riparian corridor depicts the area that is hydrologically and ecologically linked to adjacent streams and rivers. Stream morphology, stream size, and geologic features were determinants of the riparian corridor. The riparian area includes the floodplain, adjacent valley slopes, and any adjacent wetlands directly connected with the riparian area. The riparian area studied was 3,206 acres, 22 percent of the township. In addition, undeveloped connectors, often with significant woodland resources, were identified as potential greenway links to the riparian areas, parks, and public open spaces. These greenways comprised an additional 2,821 acres.



Davey Resource Group performed remote sensing analysis to evaluate and map significant natural resources that comprise the study area. The natural resources in the study area were qualitatively evaluated with regards to ecological importance. Terrestrial vegetation communities were identified, described, and mapped using aerial photographs, topographic maps, and field checking. Vegetative communities were evaluated for wildlife habitat based on species diversity and ecological complexity. Land use was evaluated and coded for developed areas in riparian corridors. Vegetation cover types and wetlands were classified and mapped.



Numerous large, contiguous areas with a variety of cover types were field-checked by foot within all parts of the township. Selection of areas was based on size, natural features present, and permission from landowners. In addition, all other areas were field checked from existing roadways without entering private property.

The Environmental Health Matrix, a numerical index, was used in this study to ecologically evaluate, rate, and eco-quantify land areas for planning purposes. Using stereoscopic aerial photointerpretation, GIS technology, and field reconnaissance, data were gathered and integrated into the index in order to demonstrate the degree to which natural resources contributed to public health and safety functions. As a composite, this metric measured the public health and safety, ecological health, greenway potential of land areas throughout Bath Township. For planning purposes, the Environmental Health Matrix values can be used to determine which areas to preserve and which areas could be restored. High value areas should be preserved whenever possible. Low value areas could provide an opportunity for restoration or development, depending on the situation.

Remote sensing specialists delineate natural areas and riparian corridors.

Field Scientists verify the vegetation coverages and gather data on public health and safety functions and ecological integrity.

To evaluate public health and safety issues that are related to environmental functions, the following metrics are used:

- erosion hazard and prevention
- flooding hazard and prevention
- surface water quality protection
- groundwater protection
- air quality protection
- storrmwater mitigation

Ecoquantification Results

Public Health and Safety Values

Values were assigned to each ecosystem based on a variety of functions the land currently provides, including flood abatement, erosion control, water quality protection, environmental functions such as storm water retention, and functions of the vegetation such as oxygen production, carbon sequestering, and capture of airborne particulates. Individual and composite maps of these public health and safety functions were created for planning purposes. The composite map can be used to provide scientific data and rationale to justify land use control and to defend the township against takings legislation.

The study found that flooding hazards within Bath Township are limited to floodplains and wetlands areas. In general, the widest floodplains occur along Yellow Creek. Numerous wetlands areas also have a high flooding potential. Most of the residential development is low density, with each house surrounded by natural vegetation that does not appear to greatly increase the amount of surface runoff. Bath Township is noted for relatively steep topography, a scenic feature which increases the potential for erosion hazards. The steepest areas occur in the eastern part of the township, particularly in the northeast. Little erosion is now occurring because most of the steep slopes are thickly forested. Forests and sapling/shrub thickets are most effective as waterway buffers. These areas trap surface water runoff and sediment from developed areas, as well as provide a critical transitional zone attractive to wildlife.

Ecological Health

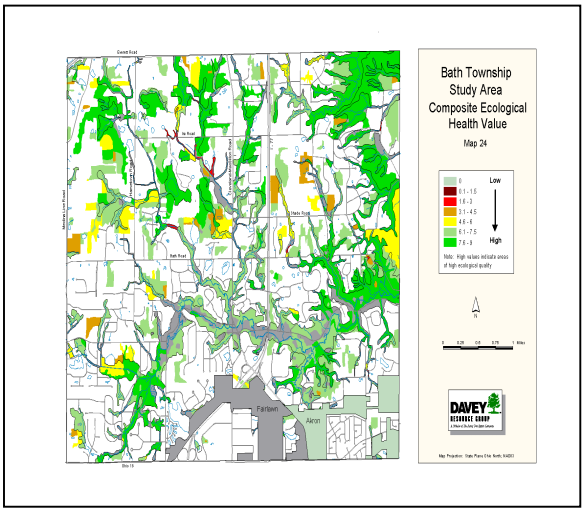
The Environmental Health Matrix measures ecological health variables that can be used to prioritize lands for acquisition and for protection as open space dedications. By adding a relative ranking of each ecosystem based on ecological integrity, more information is available to make decisions regarding acquisition and protection.

Each land cover polygon is scored for several distinct ecological health criteria called metrics:

- level of disturbance
- uniqueness of habitat
- species diversity
- impact on adjacent areas
- hydrology
- water quality
- percent canopy closure
- percent vegetated permeable surfaces

A composite of all of these values is mapped for planning purposes. This map can be used as a general guide to prioritize land acquisition and for open space preservation. It can also be used to prioritize restoration efforts based on environmental degradation.

These data create a benchmark so that, when re-measured, ecosystems can be evaluated to determine if policies and efforts have improved, maintained, or degraded ecological health.



The study found that the most diverse large areas within the township occur mostly within large wetlands and mature forests. The largest concentration of high species diversity areas occurs in the northwestern and north central portions of the township. Unique habitats are scattered throughout Bath Township. Most riparian areas along waterways within Bath Township are relatively undisturbed.

Open Space Subdivision Regulations

Bath had considered many alternatives to allow for open space subdivisions in zoning. Elsewhere, the most common alternatives include Planned Unit Development (PUD) and conditional use. But the drawbacks to PUD and conditional use approaches include: 1) the uncertainty and delay which most developers try to avoid; 2) both approaches are optional; and 3) there is no guarantee that anyone will ever do an open space subdivision.

Bath really wanted open space subdivisions to be the easiest way to develop property. It did not make sense to mandate hearings, potential delays, and uncertainty for a proposed open-space subdivision.

In Bath, it was decided that major subdivisions (as defined by the Co. Sub. Regs.) would be regulated in the following way: 1) open-space subdivisions would be the permitted uses and 2) conventional subdivisions would be the conditional uses.
Bath specifically required that open space subdivisions save 50% as open space and specified clear priorities for what areas to make open space (conservation of riparian corridors, woodlands, naturally vegetated sloping land, and wetland buffers). Davey conducted a study based on the ecological health of remaining undeveloped lands, mapping and prioritizing where the open space dedications should be. General design guidelines were developed. The new zoning code promotes creative design

by not specifying a minimum lot size for open space subdivisions.

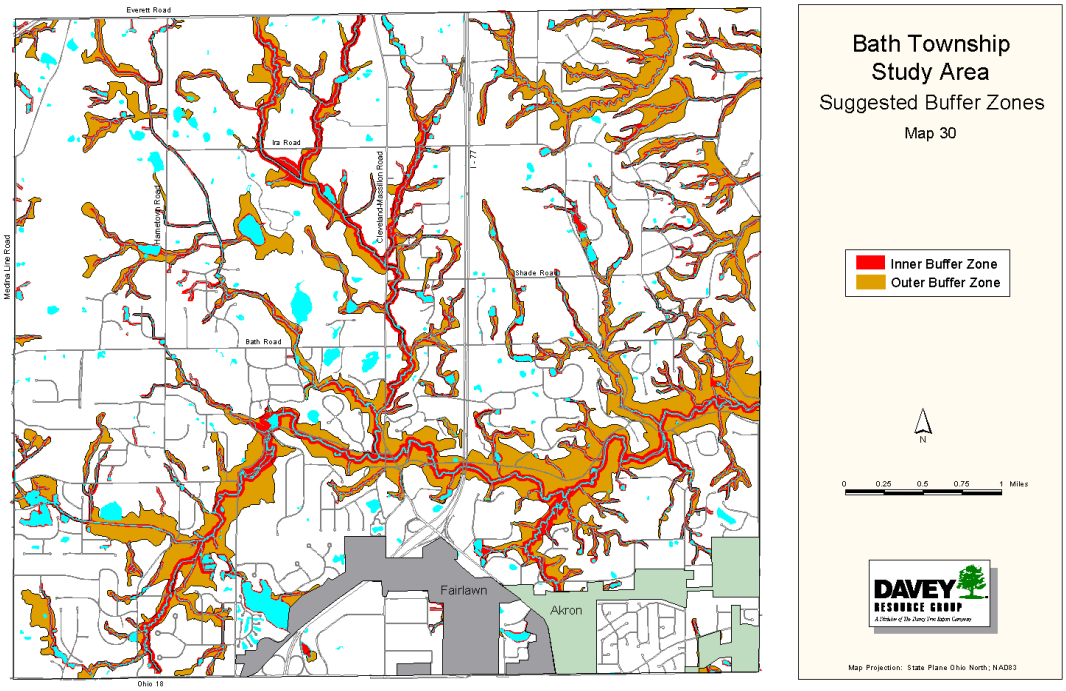
The Open Space Residential Subdivision code (Sec. 301-7) can be found in the Bath Township Zoning Resolution on Bath Township's Web Page (www.bathtownship.org) under the Zoning Department.

Riparian Corridor Overlay District

A riparian corridor protection study was used to support the drafting of a riparian corridor overlay district. Completion of this study preceded development of a zoning resolution and was necessary in order to arrive at scientifically premised, legally enforceable land use regulation.

The riparian corridors were characterized using the previously described Environmental Health Matrix, which evaluated the natural resources in the riparian zone and the public health and safety functions that they provide. Land use was also mapped and evaluated for developed areas in riparian corridors. A riparian corridor overlay district was then established based on the delineated boundary of the riparian zone in which limited development can be allowed. Within the district, buffer setbacks were enforced to adequately protect the ecological integrity of the riparian zone and its ability to perform public health and safety functions.

The Riparian Corridor Overlay District code (Sec. 411) can be found in the Bath Township Zoning Resolution on Bath Township's Web Page (www.bathtownship.org) under the Zoning Department.

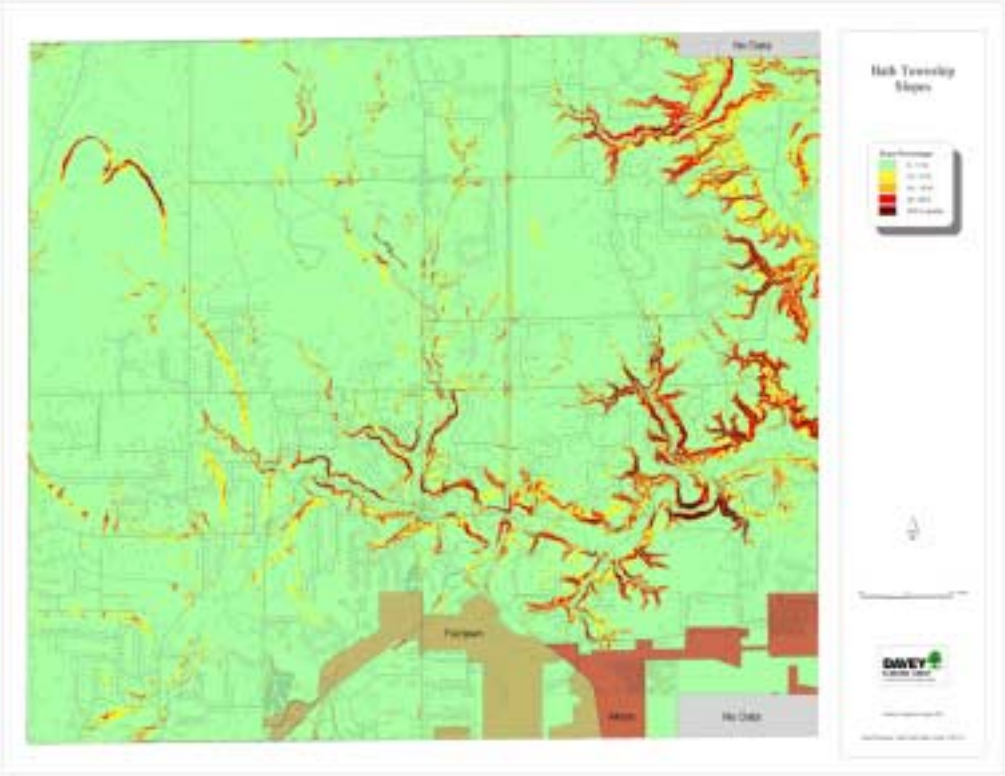


Steep Slope Regulations

Bath Township has steep topography, a scenic feature that increases the potential for erosion hazards. Little erosion is now occurring because most of the steep slopes are thickly forested. Development in this area has been limited due to inaccessibility; however, as we approach build out, developers are currently looking to these lands for development. Protection of naturally vegetated slopes from erosion is also critical to protection of water quality and the riparian areas. If erosion is not controlled, property will also be threatened with the loss of structures.

Bath Township has made any construction of a principal use on property with natural slopes greater than 18 percent a conditional use. Conditional use approval from the BZA should be predicated on the applicant demonstrating that concern over both environmental and structural issues are addressed. Applicants must address the immediate effects of development as well as the long-term cumulative impacts associated with the proposed eventual land use.

The Steep Slope Regulations code (Sec. 412) can be found in the Bath Township Zoning Resolution on Bath Township's Web Page (www.bathtownship.org) under the Zoning Department.



Lessons Learned:

Traditional land use measures contribute to resource degradation by requiring geometric, often sprawling land use patterns that often encroach on natural features and result in great amounts of impervious surfaces. Even common approaches to promote environmentally sensitive development, such as Planned Unit Developments and open space subdivision regulations, may continue to promote the same land use patterns as under traditional regulations, due to the uncertainties and delays involved in the review process. Furthermore, townships are limited in their ability to enact regulations, which must be grounded in protecting the public health and safety.

Bath Township has demonstrated that communities can regulate land use in such a way as to protect sensitive resources. Key to success are:

- Grassroots efforts and a commitment to resource protection by decision makers and citizens;
- Strong natural resource protection element and policies in the community's comprehensive plan;
- Demonstration of build-out scenarios under different land use control measures.
- Scientific understanding and mapping of the community's natural resources and the public health and safety functions they provide;
- Land use controls that discourage traditional development patterns and encourage environmentally sensitive development;
- Clear priorities for land acquisition and set-asides based on the most environmentally sensitive areas.

For more information:

For more information on the Bath Township case study, Davey's environmental services, Environmental Health Matrix, or *Livable Directions*, our new sustainable development approach, please contact:

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Kent, OH 44240-5193
330-673-5685 ext. 32
800-828-8312
or visit our web site at www.Davey.com/resourcegroup/environmental

Restoration on the Chevy Creek of Big Creek

Mark A. Link, Northeast Ohio Regional Sewer District

Introduction

Evaluating the success of an individual stream restoration project might be more difficult than determining what the problem is to begin with. How do we determine project "success"? Does a reduction in further stream bank erosion or a reduction in sediment released to the stream determine success? Do we try and measure if the natural stream functions were truly restored or in-stream habitat improved? Is it a success if the techniques used are still intact and doing what they were designed to do after the first major storm event? Monitoring these improvements could take years before measurable results were noted. Perhaps success can be measured in terms of what was learned during the restoration process and can be carried forward to future restoration efforts.

The purpose of this summary is to discuss a number of issues that were encountered during the restoration of a 220-foot section of the Chevy creek in Cleveland. As much as we feel that the project was a success in terms of bank stabilization and improved carrying capacity, there was a greater success in learning what we didn't know prior to the project and what will be of value to us in future restoration projects.

Background

The Northeast Ohio Regional Sewer District (District), an independent subdivision of the State of Ohio, assumed the operation and management of the wastewater collection and treatment operations in 1972 that currently serves 54 member communities in the Cleveland Metropolitan area. In addition to its wastewater operations charge, the court order that formed the District also made a requirement that an evaluation study concerning regional stormwater management be developed. The Regional Plan for Sewerage and Drainage (RPSD) began in 1998 to initiate the process of this evaluation and since then the District has been working with its member communities, providing knowledge and guidance in wastewater and stormwater management concerns.

As part of its community outreach and environmental stewardship position, the District has assumed an active role in stream water quality and flooding issues, initiating a number of stormwater management studies through their facilities planning studies related to wastewater improvements. Without being in the "stormwater business", the District has advised member communities that have

concerns with the deplorable condition and flooding problems associated with urban streams.

In 1998, employees from the District participated in a series of stream assessment and restoration design workshops that were developed to give participants a technical education in the use of soil bioengineering and natural channel design techniques. The workshops included a mix of technical information lectures and practical field assessment exercises. The final workshop required project teams to perform field measurements and an assessment of a potential stream restoration and create a conceptual restoration design using natural channel design techniques and soil bioengineering practices.

Several District employees participated on a team that initiated a project on the Chevy branch of Big Creek flowing through the Westpark neighborhood of Cleveland. The Chevy branch has been the focus of a modeling study where the streams insufficient carrying capacity was identified as being one of the factors compounding flooding problems. The potential for a successful restoration of this workshop-initiated project attracted the attention of other partners and the project received grant money and in-kind matches to fund final design and construction services. The “success” of this initial project has led to other restoration efforts along the Chevy branch. As we tackle these additional restoration efforts, we have learned more about both the technical and institutional considerations that go into urban stream restoration projects.

Technical Considerations

Development has severely impacted the hydraulics of many streams through changes such as eliminating valuable floodplain area, increasing imperviousness, culverting stream sections, and implementing “hard” engineering fixes. These factors tend to reshape the urban hydrograph; creating higher peak flows and lower than normal low flows. Restoring an urban stream to its natural condition is both physically and economically unfeasible. However, some sense of natural stream function can be restored to the current hydraulic conditions by looking at the changes in stream variables and channel geometry that have taken place in the drainage area.

There are a number of technical variables have been studied in reference to having a direct influence on the morphology of a stream, including stream discharge, sediment supply, stream width and depth, channel slope, roughness, velocity, and sediment size that all play an important role in stream channel formation. The goal is to achieve a dynamic equilibrium where a stable stream channel cross-section is maintained due to equal rates of erosion and deposition. Stream geometry is a key technical component for determining current channel conditions and also for redesigning a stable channel that will meet changing urban hydrologic influences.

These technical considerations are the “known” factors of our restoration. However, there are various “unknown” factors that we have learned about throughout these projects. These are the institutional considerations that are not normally found in an ecological restoration textbook.

Neighborhood Planning Charrettes

Safety is a serious concern throughout the neighborhoods in the Chevy branch area. Many of the residential blocks form community groups that work with the local police districts and City Hall to address various safety issues. Most urban streams are viewed as a neighborhood liability due to the safety concerns they possess. These neighborhood groups see the densely vegetated riparian area that we view as critical to a healthy stream ecosystem as a haven for crime and drug activities. Although some residents would prefer to let the vegetation grow so the stream is hidden, others would prefer a clear line of sight through the stream corridor, hoping to deter these illegal activities.

It was during the final design phase of our first stream restoration project when we realized there were institutional issues that we were not considering when designing this project. Regardless of what the textbooks were saying was good for the stream ecosystem, the residents were telling us that there were issues of safety that were not good for their neighborhood. It was at this point that we realized neighborhood input would be critical to any successful stream restoration project.

Our current format for restoration efforts now involves facilitating a neighborhood charrette, once the technical design is complete. Whenever possible, we consider all the different technical alternatives, however, there are situations when, hydraulically, there is only one option and the project must be designed as such. We have found that the more input we get from residents in a design, the better our chances are for stakeholder buy-in. The charrette format allows for an open exchange of ideas and it encourages participants to be creative. We were able to learn a lot about the various institutional issues that need to be addressed in restoration projects through the format of these planning charrettes.

Institutional Considerations

The projects that we have completed to this point have mainly dealt with institutional issues that are safety concerns. Since we’ve been working on City owned property, we have not had to face the issues that impact working with private landowners. However, we are beginning to see more institutional issues that deal with projects on private property and they’re being considered in future restoration projects. Two of the key institutional considerations that have come out of the planning charrettes have dealt with the dense vegetation along the stream banks, within the riparian corridors, and around the road culverts.

Successful stream management has taught us that streambank and riparian vegetation is good for a healthy stream ecosystem. We have found that we need to find a balance between a dense growth of streamside vegetation and public safety. As mentioned earlier, residents and the police department have concerns with areas of dense vegetative growth adding to the criminal element in the neighborhood. They have more of a concern with eliminating hiding places than they do with having stable streambanks and cooler stream temperatures, and rightly so. The challenge has been to provide a clear line of sight through the project but at the same time provide the critical root mass and shade protection along the stream to create a stable system.

Unfortunately, the road culverts not only serve the purpose of carrying vehicles over the stream, but they also serve as a drug-dealing conduit. As we have found, the drug dealers favor the culverts where the vegetation has grown up and offers suitable hiding space. The dealers are able to hide their product along the stream and retrieve it when a customer comes by.

Final Project Design

Within the final project designs, we have been working to incorporate a variety of low growing, low maintenance shrubs and hardy tree species that require little maintenance. So far, the projects we have worked on have been on property owned by the City of Cleveland so a lack of maintenance has not been a real concern. We have worked with the Division of Parks to encourage them to trim the trees to maintain a high canopy and maintain a buffer along the stream that does not require mowing. The plants used in the soil bioengineering techniques are low growing and we determine, during final design, how far above bankfull that we can plant based on their height at maturity. The objective is to maintain that line of sight through the project without diminishing the effectiveness of the vegetation on the stream.

Stacked rock walls have been incorporated around the culverts, which addresses two concerns. If a culvert is in need of repairs or replacement, the rock is much easier, and cheaper, to remove and replace than a technically designed bioengineered structure. The rock walls also eliminate vegetation around the culverts, which helps to control the drug dealing activity. It's not our intention to eliminate the drug dealing – that is best left to the police. As we understand, that would just push the activity into another neighborhood. Our intention is to make it less desirable for dealers and to give police a better opportunity to control the situation.

Future Considerations

As we move upstream to additional restoration projects, we are obviously forced to deal with problems on private property. This brings to light some additional

institutional concerns. For a government entity leading a restoration effort on private property, how does one address the access issue? Should considerations be made for just construction easements or are permanent easements necessary? Could this be construed as takings? There are also issues dealing with maintenance responsibilities, financing long-term maintenance, and design liability, to name a few. If we want to continue to tackle these projects from a holistic watershed approach, these are issues that can not be ignored. Hopefully, by maintaining an open line of communication and developing collaborative relationships with neighborhood stakeholders, we will continue to identify both the technical and institutional issues and address them in well-designed, successful restoration projects. Maybe we should leave the question of "success" up to those property owners most impacted by these restoration efforts?

Section 2.5: State of Combined Sewer Overflow Projects:

1. Combined Sewer Overflows: Cleveland's Plans and Progress,
Betsy Yingling, Northeast Ohio Regional Sewer District
2. CSOs: Akron's Plans and Progress,
Dave Crandell, Akron Public Utilities

Combined sewer overflows constitute the major remaining sources of pollution in the Cuyahoga River Area of Concern. This panel discusses the requirements of the federal Clean Water Act concerning combined sewer overflows and the progress being made in Cleveland, Ohio and Akron, Ohio to address this problem.

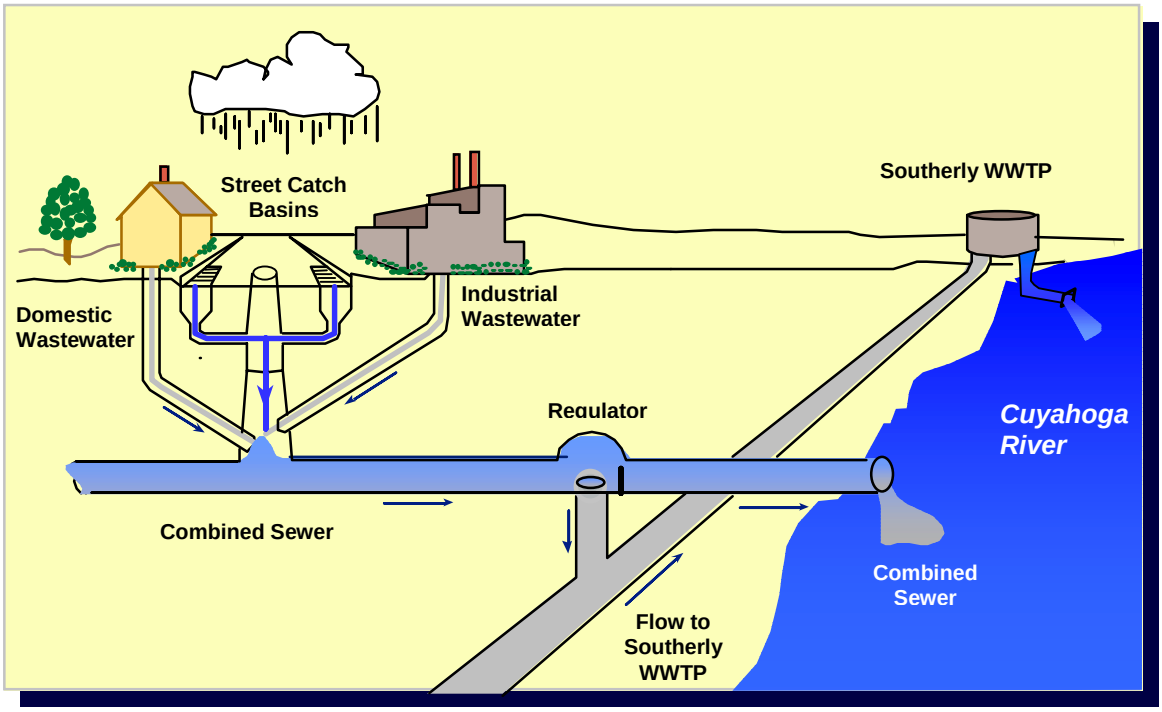
COMBINED SEWER OVERFLOWS: CLEVELAND'S PLANS AND PROGRESS

Betsy Yingling, Northeast Ohio Regional Sewer District

What is a CSO?

The first sewers built in the Cleveland area were constructed as "combined sewers". Combined sewers carry wastewater from homes and businesses, as well as storm water. In dry weather, wastewater is directed to the wastewater treatment plants for processing to remove pollutants. During rainstorms, storm water flows into the same sewer pipes, creating a "combined" flow. The combined sewers are designed to overflow into nearby waterways when the combined volume exceeds the capacity of the pipes. The points at which these flows enter a nearby stream or lake are known as combined sewer overflow outfalls, or CSOs.

Combined Sewer System During Wet Weather



What regulations apply to CSOs?

The U.S. EPA published its final CSO Control Policy in April, 1994. The policy implements a national strategy to assure that permittees, regulators, and the public engage in a comprehensive and coordinated planning effort to achieve cost-effective CSO controls that meet appropriate health and environmental

objectives. The policy requires implementation of the **Nine Minimum Control (NMC**) technologies, which are listed in Table 1 below.

Table 1. Nine Minimum Controls from U.S. EPA CSO Control Policy

1	Proper operation and regular maintenance programs for the sewer system and the CSOs
2	Maximum use of the collection system for storage
3	Review and modification of pretreatment requirements to assure CSO impacts are minimized
4	Maximization of flow to the WWTP for treatment
5	Prohibition of CSOs during dry weather
6	Control of solid and floatable materials in CSOs
7	Pollution prevention
8	Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts
9	Monitoring to effectively characterize CSO impacts and the efficacy of CSO control

The CSO Control Policy also establishes a planning and implementation process for developing **Long-Term Control Plans (LTCP)** by evaluating a range of CSO control alternatives that comply with water quality standards and protect designated uses. General requirements for developing a LTCP in conformance with the federal policy are listed in Table 2.

Table 2. U.S. EPA Requirements for a Long-Term Control Plan

Characterization, monitoring and modeling of the combined sewer system
Public participation
Priority for protection of sensitive receiving waters
Evaluation of alternatives that achieve a range of CSO control levels
Cost/performance considerations
Development of operational plans to maximize use of facilities for CSO control
Maximizing treatment at the WWTP
Phased implementation of projects
Post-construction compliance monitoring

Under the 1994 National CSO Policy, plans for long-term CSO control and compliance with water quality standards (WQS) can be developed by using either a “presumption” or “demonstration” approach. Under the **presumption approach**, compliance with WQS is presumed if one of the following performance criteria is met:

1. No more than an average of four overflow events per year on an annual average basis, with up to an additional two overflow events per year (six total) that may be allowed by the permitting authority.

2. Elimination or capture for treatment of no less than 85 percent by volume of the combined sewage collected in the combined sewer system on a system-wide annual average basis.
3. Elimination or reduction of no less than the mass of pollutants that would be eliminated or captured for treatment for the volume in #2 above.

Under the **demonstration approach**, compliance with WQS is confirmed through the CSO control planning process. Instead of using specific performance criteria as with the presumption approach, this approach relies on assessment of receiving waters and impacts of CSO discharges and other sources of wet weather pollutants on water quality. Under the demonstration approach, the control program must be adequate to meet WQS and protect designated uses, unless standards or uses cannot be met as a result of natural background conditions or pollution sources other than CSOs. Where standards and uses are not met in part because of natural background conditions or pollution sources other than CSOs, a total maximum daily load (TMDL) allocation should be used to apportion pollution loads.

The State of Ohio implemented a CSO Strategy in March, 1995. In general, the Ohio EPA CSO Strategy is modeled after the major provisions of the U.S. EPA CSO Policy. Permittees must implement the Nine Minimum Controls, as well as develop Long-Term Control Plans. The requirements for Long-Term Control Planning are similar to those set out by U.S. EPA, and Ohio EPA also recommends consideration of either the presumption or demonstration approach.

COMBINED SEWER OVERFLOWS: CLEVELAND'S PLANS AND PROGRESS

The Northeast Ohio Regional Sewer District (NEORSD) is the permittee responsible for CSOs in the greater Cleveland area. The District's current CSO permit, which became effective for a five year period on April 1, 1997, includes requirements to comply with the U.S. EPA CSO Policy and Ohio EPA CSO Strategy regarding Nine Minimum Controls and Long-Term Control Planning.

Nine Minimum Controls

In order to comply with Ohio EPA permit requirements for Nine Minimum Controls, NEORSD submitted a Combined Sewer Operational Plan in 1998, which was subsequently approved by the Agency. The report documented NEORSD's activities that relate to compliance with the NMCs. The report documented the fact that most of the NMCs were being met, and made a few specific recommendations for future consideration:

- For NMC2 – Maximize In-System Storage:
  1. Evaluate and optimize existing automated regulators

2. Evaluate diversion of overflows to less sensitive water bodies
3. Investigate trunk sewers for in-line storage

- For NMC4 – Maximize Flows to the WWTP:
  4. Consider additional improvements, including plant improvements

- For NMC5 – Prohibit CSO Discharges During Dry Weather
  5. Consider modification or elimination of combined sewer pump stations

- For NMC6 – Control of Solids and Floatables:
  6. Evaluate CSO outfalls for control technologies

In response to recommendation 6, as well as specific permit conditions, the District completed a Floatables Control Study in 1998. The study's recommendations led to the construction of 5 **floatables control structures** at the following CSO locations:

- Kingsbury Run (CSO 040)
- Lakefront east of E. 9th Street, near the USS COD (CSO 094)
- Lakefront at Forest City Yacht Club (CSO 201)
- Lakefront at East 55th Street (CSO 202)
- Shaw Brook, southeast of I-90 and Eddy Rd. (CSO 232)

The floatables control structures consist of either in-line (in the pipe) or floating (at the end of the pipe) nets that trap floating debris. They are emptied on a regular basis with the use of a truck-mounted crane. The facilities have been operating since 1999, and have demonstrated 90-95% removal efficiency.

Kingsbury Run End-of-Pipe Netting Facility for control of floatables.

The remaining recommendations for compliance with the Nine Minimum Controls are being addressed as part of the Long-Term Control Planning process.

Long-Term Control Planning

In fulfillment of the conditions for Long-Term Control Planning, the NEORSD has been in the process of conducting **CSO Facilities Planning Studies** since 1995. For the purpose of conducting these studies, the District's combined sewer service area has been broken up into four areas: Mill Creek, Westerly, Easterly (including the Doan Brook), and Southerly. Each of these study areas is discussed below, and is shown on Figure 2.

Mill Creek

The Mill Creek Watershed Study was conducted in the area served by the Mill Creek Interceptor from 1995-1997. This area of approximately 17,000 acres contains 30 CSOs, and drains to the Southerly WWTP. The study resulted in a plan for a 43,000 foot long conveyance and storage tunnel, as well as other modifications to specific outfalls and improvements to the existing sewer system. The estimated cost of the entire plan is $150 million.

The Facilities Plan has been submitted to Ohio EPA and approved. Construction began on the first contract of the Mill Creek Tunnel in 1998. Construction is currently underway on contract 2, which consists of 13,000 linear feet of 20-foot diameter tunnel. Most of the tunneling work should be completed in 2005, and the entire Mill Creek CSO project should be completed in 2008.

Westerly

The Westerly CSO Facilities Planning area consists of the entire service area for the Westerly WWTP. This area is approximately 10,000 acres in size, and contains 25 CSOs. The planning study was conducted from 1997-1999, and resulted in recommendations for several new CSO storage and conveyance tunnels, several underground storage facilities, expansion of the existing CSO Treatment Facility at the Westerly WWTP, and other improvements to the existing sewer system. The estimated cost of the proposed plan is $126 million.

The Facilities Plan has been submitted to Ohio EPA and approved. Work has begun on some of the improvements to the local sewer system which were identified as "early action projects". The schedule for construction of the major plan elements such as tunnels and storage facilities will be determined after completion of the Southerly CSO Facilities Plan (see below).

Easterly/Doan Brook

The Easterly CSO Facilities Planning area consists of the combined sewer portion of the service area tributary to the Easterly WWTP. This area is approximately 20,000 acres in size, and contains 45 CSOs. The District initiated a long-term CSO control facilities planning study for the Easterly District in late 1997. CSO alternatives for the Doan Brook area, which is a part of the Easterly service area, were evaluated under the Doan Brook Watershed Study, which began in early 1998. The work for the Doan Brook area paralleled that of the Easterly CSO Study, and the CSO alternatives for Doan were incorporated into the overall solution for the Easterly area.

Both studies will be completed by the end of 2001, and the CSO plan will be submitted to Ohio EPA. The recommendations for CSO control include several new CSO storage and conveyance tunnels, a new pump station to dewater the tunnels at the Easterly WWTP, and numerous relief sewers and other improvements to existing sewers and pump stations. The estimated cost of the proposed plan is $519 million.

Work will begin in the next few months on some of the improvements to the local sewer system which were identified as “early action projects”. Preliminary design will also begin on the major tunnel systems recommended in the plan. The schedule for construction of all the plan elements will be determined after completion of the Southerly CSO Facilities Plan (see below).

Southerly

The Southerly CSO Facilities Planning Study is being conducted in the area served by the Southerly and Big Creek Interceptors. The study was begun in 2000, and will be completed in 2002. This area of approximately 17,000 acres contains 25 CSOs, and drains to the Southerly WWTP. Data collection for this project has been completed, and computer models have been developed. Alternatives for CSO control are currently being evaluated.

Since this is the final CSO Facilities Planning Study to be conducted by NEORSD, the water quality modeling and analysis will be able to take into consideration the cumulative effect of reduction of CSOs from the entire combined service area including Westerly, Easterly, and Southerly. Computer models that have been developed for the Cuyahoga River and Lake Erie will be able to predict the improvements to those receiving waters when all District facilities have been constructed. The project team

has also been charged with the development of a long-term schedule for construction of CSO control facilities. The recommendations from each of the facilities plans will be considered, along with the construction costs for all of the elements. The District will develop priorities to determine the order in which the facilities will be constructed, and the overall time frame.

CSO Control Benefits

Each of the recommended control plans will result in a significant reduction of CSO to the respective receiving waters. Typical reductions are on the order of 80-90%. The table below shows the volume of CSO removed for the facilities plans completed to date.

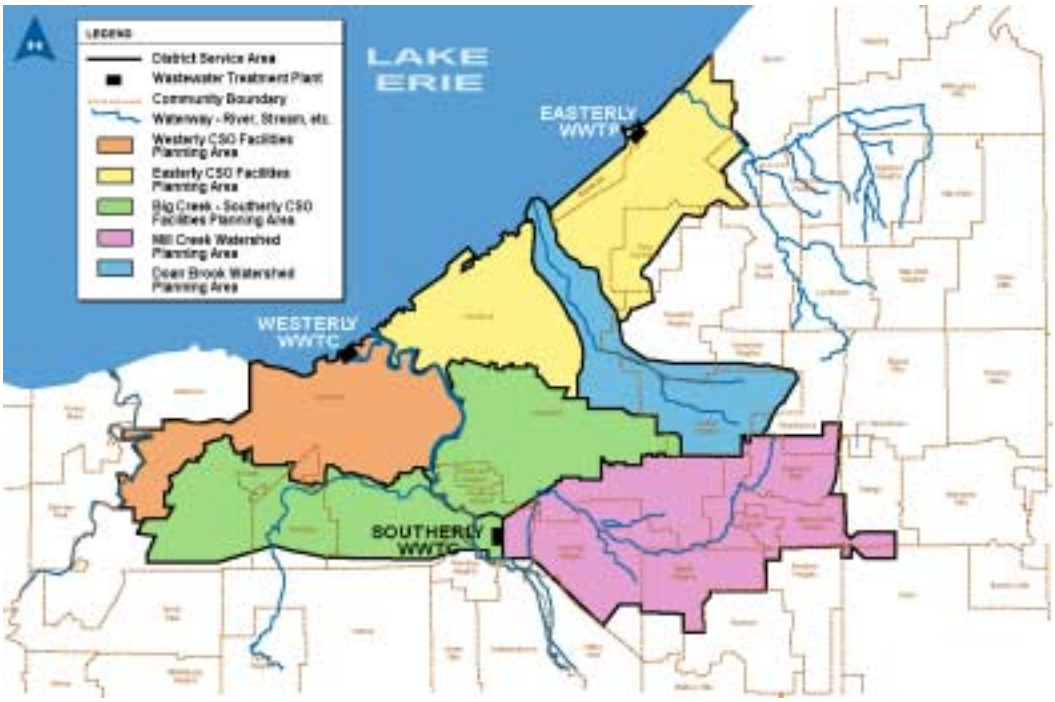
Table 1. Overflow volume reductions by Facilities Plan

Planning Area	Baseline CSO Volume (MG)	Recommended Plan CSO Volume (MG)	% Reduction of overflow
Mill Creek	515	20	96%
Westerly	417	89	79%
Easterly	2,560	455	82%

Water quality modeling in each of the studies indicates that even after the CSOs are controlled to four overflows per year, separate storm sewers are still a significant source of bacteria. Therefore, although the peak levels of bacteria will be reduced in the receiving waters after the construction of the CSO facilities, local streams and rivers still will exceed the bacteria standards during wet weather.

Figure 1. NEORSD Combined Sewer Service Area

Figure 2. CSO Facilities Planning Areas



Combined Sewer Overflows: Akron's Plans and Progress

Dave Crandell, Public Utilities Bureau

Introduction

The City of Akron Public Utilities has a planning area of 183 square miles incorporating parts of 5 cities, 4 villages and 7 townships. The service area has a population of 356,000 and is served by the Akron Water Pollution Control Station (WPCS). This facility utilizes activated sludge processes to treat an average of 71.6 million gallons a day (mgd) of sanitary wastewater and a peak flow of 250 mgd. The sewer collection system encompasses 94 square miles and contains 1,165 miles of sewers; 638 miles of separate sanitary sewer, 246 miles of storm sewer, and 188 miles of combined sewer with 37 combined sewer overflows (CSOs). These CSOs discharge to the Cuyahoga River, Little Cuyahoga River, Camp Brook, and the Ohio Canal within the City of Akron.

Left – Akron WPCS discharge to Cuyahoga River.

Right – Outlet structure with CSO outlet on the left, storm sewer outlet on the right.

CSO Strategy

Akron has implemented a CSO Operation and Maintenance Plan that incorporates the Nine Minimum Control (NMC) technologies to decrease the severity and length of CSO events in their collection system. NMC projects that have been completed include construction of CSO rack improvements (including enlarging openings on CSO rack grates for less overflow), initiating daily CSO monitoring and maintenance, replacing the Rack 16 CSO grates with a screen, annual cleaning of the Northside Interceptor, and separating CSO Rack 39 to eliminate overflows. In addition, numerous field monitoring studies and the development of a field verified computer model of the collection and treatment system and the river have been undertaken to develop the CSO Long Term Control Plan (LTCP) for the WPCS treatment and collection system improvements at a cost of over $11 million. Expenditures for improvements of the Akron treatment plant and the collection system have respectively totaled over $83 million and $74 million since 1987.

Multiple WPCS improvements, including a Computerized Distribution Control System, has increased treatment and treatment capacity, and caused a 43% reduction in secondary bypass (equivalent primary treatment).

Facilities Plan 98

The City of Akron initiated the update for their water pollution control facilities and sewer collection system by reviewing the previous plan, collecting data from the treatment plant and collection system, analyzing current conditions, and convening a Technical Advisory Group to review the data/modeling results and evaluate treatment system improvement alternatives. This group consisted of representatives from local government entities, the county and national park systems, local environmental groups, industries and the city.

Alternatives for improvements at the WPCS that were reviewed by the group included construction of additional storm retention basins, a septage receiving station, tertiary treatment, effluent pumping, disinfection improvements, and post aeration. Four alternatives for additional storm retention basins were evaluated, with the selected alternative being to locate the basins after preliminary and primary treatment. Disinfection improvements would help increase efficiency during storm events, and installation of post aeration would help eliminate minor dissolved oxygen violations.

CSO alternatives were also considered by the group. Alternatives that were reviewed included sewer separation, detention facilities, additional treatment, tunnel storage, and express sewers. Each alternative was evaluated on cost effectiveness, limitations, and benefits. Combinations of these strategies, or integrated alternatives, were then evaluated with the assistance of decision making computer software. The ultimate integrated plan selected by the group consists of the construction of sewer collection system storage tunnels in the Ohio Canal and Northside Interceptors, 7 sewer separation projects, 6 detention and 5 treatment facilities. Also, 40 million gallon detention tanks and other treatment facilities at the WPCS are included.

Estimated (1998) costs of construction are approximately $248 million with $2 million annual operation and maintenance costs. Akron estimates that it may require over 30 years to complete the project without significant additional funding from outside sources. Completion of this project would result in a 94% capture of the CSO currently being discharged, a 90% overall reduction in CSO discharge events, and an overall 44% reduction in the volume of CSO discharged.

Summary of Benefits of Akron CSO Control Project

- **Improve Water Quality, both Chemical and Biological, of the receiving streams**
- **Significantly Reduce the Number and Volume of Combined Sewer Overflows**
- **Provide screening, Floatable Control, and Disinfection on ALL CSOs**
- **Provide for Watershed Projects, including a Cuyahoga River Re-aeration Pilot Study and Restoration of the Little Cuyahoga River**
- **Water Pollution Control Station Improvements, including Expanded Disinfection and Additional Equalization**
- **Further the Goals of the Clean Water Act**

Section 2.6: Warming Up to Public Access:

1. Extending the Towpath Trail to Downtown Cleveland,
Jim Kastelic, Cuyahoga County Planning Commission
2. Interpreting Our American Heritage River,
Steve Davis, River Navigator
3. Tying Cleveland's Recreation Future to the Cuyahoga River,
Tim Donovan, Ohio Canal Corridor

The Cuyahoga River RAP identified the absence of public access to the Cuyahoga River as a significant barrier to the restoration of public uses of the river. This panel discusses the progress that is being made to restore public access to the banks of the Cuyahoga and enhance public awareness of the Cuyahoga as a recreational resource.

Extending the Towpath Trail to Downtown Cleveland

Jim Kastelic, Cuyahoga County Planning Commission

The Towpath Trail has become a defining feature in the Cuyahoga Valley landscape. Constructed 175 years ago as part of the Ohio & Erie Canal, it was a simple dirt path on which to lead animals pulling canal boats. When the economically unprofitable canal finally ceased to be used after the 1913 flood, the towpath survived as a silent witness to an earlier era.

The rediscovery of the towpath began with the establishment of the Cuyahoga Valley National Recreation Area (now Cuyahoga Valley National Park) in 1974 as a unit of the National Park Service. One of the major projects completed by the National Park Service was the conversion of approximately 20 miles of the towpath into a shared use trail. The success of this segment of towpath, which has over 1.7 million users per year, has sparked a campaign to extend the Towpath Trail to over 100 miles as a continuous journey through the federally designated Ohio & Erie National Heritage Corridor.

Cleveland Metroparks has completed an additional segment of the Towpath Trail in its Ohio & Erie Canal Reservation, which is situated immediately north of the Cuyahoga Valley National Park. With the completion of a final segment in 2002, the Metroparks will have completed approximately six miles of trail. The northern terminus of the Towpath Trail will then be at Old Harvard Road.

In 1999, the Cuyahoga County Planning Commission (CPC) published *Linking the Corridor: A Plan for the Towpath Trail in the North Cuyahoga Valley Corridor.* This document is a guide plan for the future design and construction of the approximately five-mile long trail.

Following completion of the *Linking the Corridor* study, CPC began an effort to secure funding for the next phase of the project, which consists of final alignment and schematic design. To this end, a total of $225,000 was raised from several sources, including the Ohio and Erie Canal Association; the Cleveland Foundation; The George Gund Foundation; Cuyahoga County; the Cleveland Metroparks System and the City of Cleveland. In the summer of 2001, the CPC retained the services of a consulting team led by Schmidt Copeland Parker Stevens to undertake the project.

This study will focus on four major themes:

- Finalization of the potential trail route and determination of cost estimates
- Identification of connecting routes which would link the main trail with surrounding neighborhoods
- Identification of areas adjacent to the trail route which could be utilized for economic redevelopment and/or publicly accessible open space
- Examination of potential opportunities for interpretive exhibits and environmental restoration

The study's biggest challenge will be to determine a specific route for a pedestrian and bicycle path through a heavily industrialized and densely developed area. Other issues will include dealing with changes in elevations, barriers such as railroad crossings, pipelines and truck routes, poor aesthetic quality in many areas and environmental contamination.

The completion date for this phase of the project is anticipated to be February of 2002.

North of Harvard Rd. on Cuyahoga River west bank.

Looking east from the West 14th at Jennings Freeway

Looking north from Tremont Ridge.

Final leg Towpath Trail Extension

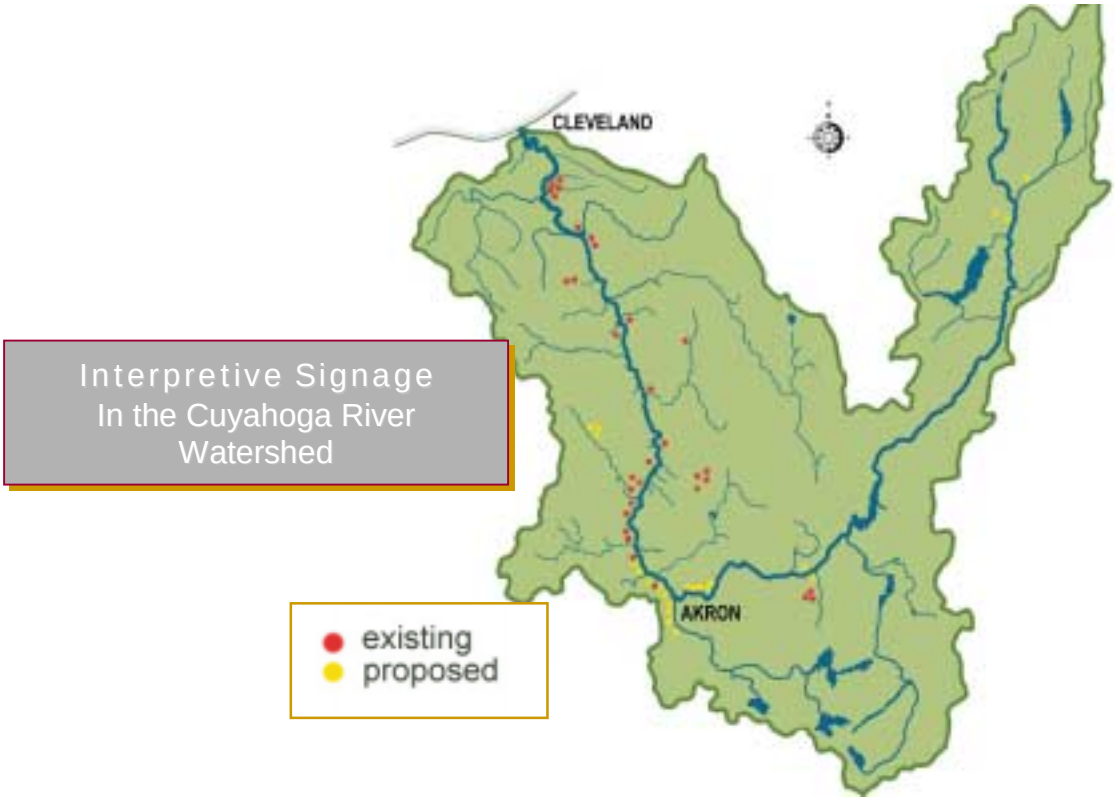
Interpreting Our American Heritage River

Steve Davis, Cuyahoga American Heritage River Navigator

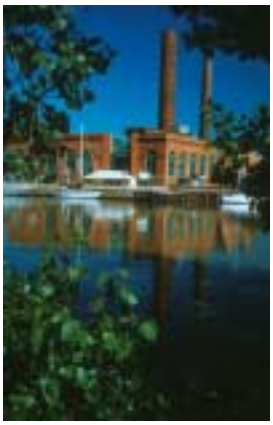
Throughout the Cuyahoga River Watershed there are many interpretive installations - from museums to visitor centers to trails and waysides – sponsored by many different organizations, each with it's own flavor and unique perspective. Each of these installations is an integral part of a larger whole and a bigger story that is the watershed. The American Heritage River (AHR) Program is in the unique position of being able to help tell that bigger story.

The AHR Program has contracted with Heritage Design, a Forest Service team, to develop an interpretive strategy for the Cuyahoga River. This interpretive strategy offers a coordinated approach and look to interpretation along the river corridor; capturing the unique 'sense of place' that is the Cuyahoga River.

The AHR strategy contains recommendations for an interpretive system that will orient visitors to the whole watershed and help place interpretive themes into a larger context. It identifies opportunities for involving more communities along the river. It suggests a way to deliver information about the river to a wide range of visitors, while fostering an understanding of the river as a dynamic, integrated system.



Opportunities for new interpretation were identified by looking first at where visitors find information. This map gives you some idea of the current distribution of interpretation: visitor centers, interpretive signs, and interpretive trails. Predictably, it is the most concentrated in the areas with the densest population and the highest visitation and of course in the vicinity of the National Park.



On the lower segment of the river, from Akron to Cleveland, where most of the events of our early history took place, the interpretive focus is on canal history and the communities that grew up with industry along the canal. In the upper

regions where there are fewer interpreted sites, focus tends to shift to natural history, although there is obviously also excellent natural history interpretation in the lower river.

From the beginning, the Cuyahoga River has given shape to the story of this land. This river, shaped by glaciers, defined what plant and animal life thrived here. It determined how and why man lived here. It has offered sustenance, power and transportation. Some of its history has been troubled but even through the troubled times the river offered definition…it's this definition that is captured in the AHR Interpretive Strategy for the Cuyahoga River.

The "Enduring Cuyahoga River" is the model for placing interpretive stories along the river into a larger context: This model also helps us to look at the distribution of interpretive topics to identify themes that might be developed in future interpretation. A brief interpretive text describing the Enduring River can be used to establish context for other interpretation.

Working within this framework, a visitor should be able to trace any interpreted theme to the overarching theme of the Cuyahoga as a river that has endured much and will continue to shape our lives.

The goal of this river interpretation strategy is the efficient delivery of visitor information throughout the watershed. To do this a layered information delivery system has been proposed. The most comprehensive information should be offered to visitors at a few key
locations where they are the most likely to visit. Existing and proposed visitor centers are the obvious choice: Cleveland, CVNP, Akron (proposed), Burton (proposed). These central hubs are where visitors learn the "big picture" story of the Cuyahoga. This is where the context is formed for the rest of their visit. Here they will be able to find information about all of the attractions along the river and plan the rest of their stay to suit their special interests. Moving out from the visitor center at convenient locations they will find kiosks and orientation panels to help them find their way and locate attractions.

As with the theme model, an information delivery model helps us to understand how interpretation might be distributed. It also suggests locations for additional installations. This layered system of information delivery will help the visitor see sites in the watershed in a larger context while encouraging them to explore it further.

Throughout the river there are a variety of sign types already in place. Each agency has its own, as it should. The use of a standardized orientation panel and the Cuyahoga AHR logo will unify the diverse interpretive styles.

The figure above illustrates the orientation panel concept. It will be available in digital format and can be used in a kiosk or on printed material and customized for regional use.

Orientation kiosks are appropriate at certain key sites throughout the river corridor. These kiosks should contain:

- an orientation panel with a map of the river (with a 'you are here' indicator) and a brief overall river theme and story;

- a panel with a detailed map of that particular area and local wayside interpretation sites, recreational trails, and other visitor opportunities; and
- an interpretive panel with thematic orientation to that particular part of the river story.

Community crossroads are an especially appropriate location for orientation kiosks. Consistent use of these kiosks will help make the river 'visitor friendly'.

The AHR Cuyahoga plan recommends a river oriented, interpretive theme matrix and delivery system that identifies opportunities for additional and augmented interpretation throughout the Cuyahoga river corridor; improving the quality of visitors' experience and encouraging them to extend their stay and get to know the beautiful Cuyahoga River in its entirety.

Tying Cleveland's Recreation Future to the Cuyahoga River

Tim Donovan, Executive Director, Ohio Canal Corridor

As NE Ohio moves into the 21st Century, it faces a number of unanswered questions, whose answers will impact future opportunities for regional growth and job development. Recent research points out that a new breed of "worker" has emerged within the field of technology; a worker who has great flexibility in job choices and extreme latitude regarding where he or she will live and work. This new class of employees favors places which provide a wide menu of ready choices that feed their needs for recreation, art, and culture. Put simply, they want to live in a place that's cool; and one amenity on the list of must-haves is accessible trails for hiking, biking and roller-blading.

In many ways, NE Ohio is well positioned to provide answers that will attract these new entrepreneurs. We have miles of underutilized lakefront and riverfronts poised for reevaluation and ultimate transformation into places where new housing villages can be wrapped within a greenway system which will provide a world-class trail network that can deliver safe and easy access to all the aforementionbed amenity package of art, culture and recreation. We have developed conceptual plans to create a trail network that would reclaim the lakefront, river and its major streams as greenway belts and anchor trails and we are moving toward implementation of the trunk Towpath Trail along the Cuyahoga River.

In the history of park development for our region, it is unmistakeable that such efforts occur in concentrated bursts. In the early 1900's, Cleveland developed an inner-ring of parks, precursers to the Cleveland Metroparks Emerald Necklace in 1917. In the mid-1970's, NE Ohio created the Cuyahoga Valley National Park. Now, in the mid-1990's, we have begun a new era of park and open space development. It features CanalWay Ohio, a National Heritage Corridor, and builds upon it with an expanded system of trails, greenways and open spaces. The success of this effort will impact the region's ability to compete in an ever-changing global marketplace for new jobs dependent on a new breed of worker.

Mill Creek Falls

Ohio Canal Towpath Trail

Section 2.7: Fired Up About Fish:

1. Results of the RAP Larval Fish Study,
Dr. Robert Carlson, Kent State Universityand Enviroscience, Inc.
2. Cuyahoga River Fisheries Improvement,
Phil Hillman, ODNR

The Cuyahoga RAP recently completed a study of the extent to which fish are reproducing in the lower Cuyahoga River. This panel presents the results of that study and its significance for the future of the river.

Fired Up About Fish – Results of the RAP Larval Fish Study

Dr. Robert Carlson, Kent State University and EnviroScience, Inc.{*tc "Executive Summary"****}***

EnviroScience, Inc was chartered by the Cuyahoga River Community Planning Organization (CRCPO) to assemble a team of fisheries experts to evaluate larval fish data collected between 1998 and 2000 and to examine issues related to larval fish abundance and survival in the lower Cuyahoga River. The study plan for data collection activities was developed by the CRCPO and sampling was performed by Ohio EPA staff members. Of particular interest to the project sponsors was the response of the larval fish community to low dissolved oxygen and low habitat quality in the Navigation Channel. The hypothesis was that these factors produce a number of effects including (a) presenting a barrier to upstream adult migration for spawning, (b) contribute to mortality or present a barrier of adults returning to Lake Erie, (c) contribute to the mortality of larval fish moving downstream, and (d) contribute to the elimination of a resident fish community in the navigation channel of the river.

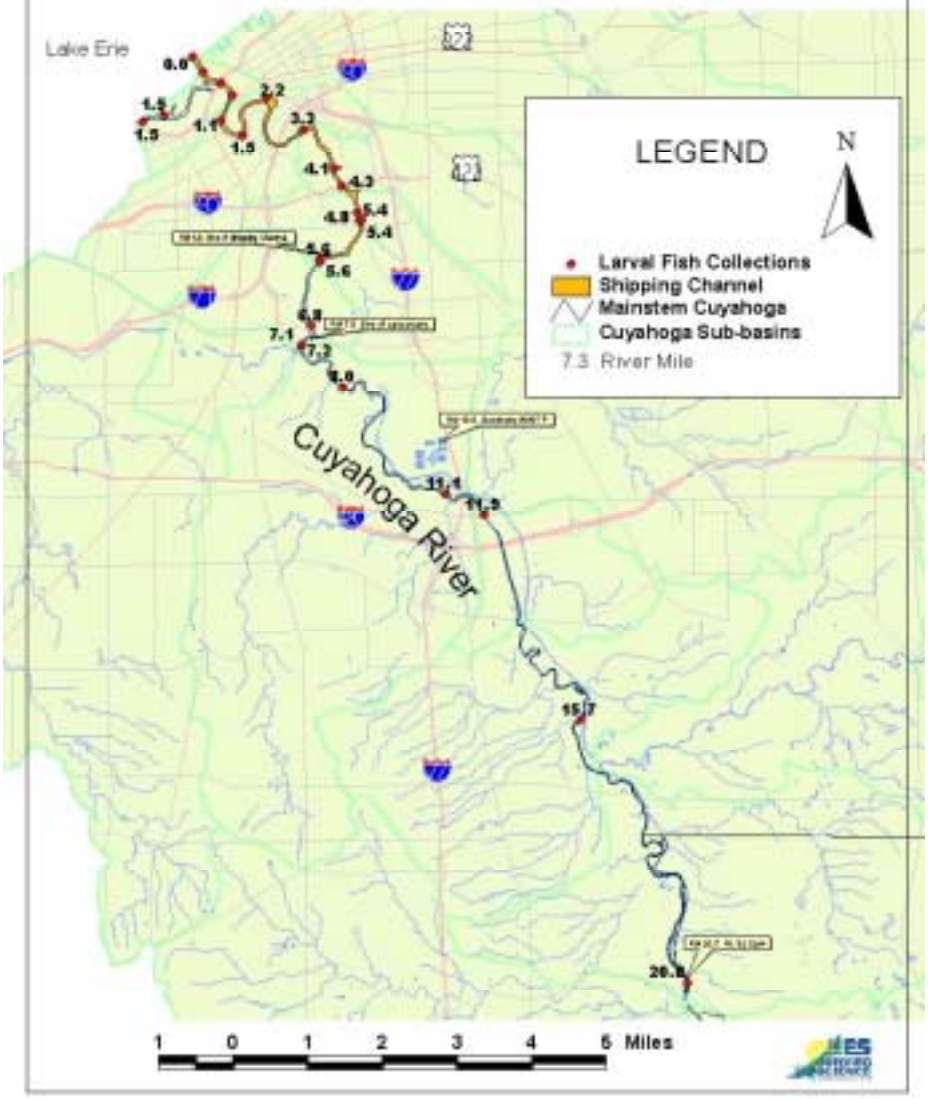
LARVAL FISH COLLECTION SITES

28 Locations in 1998, 1999, 2000

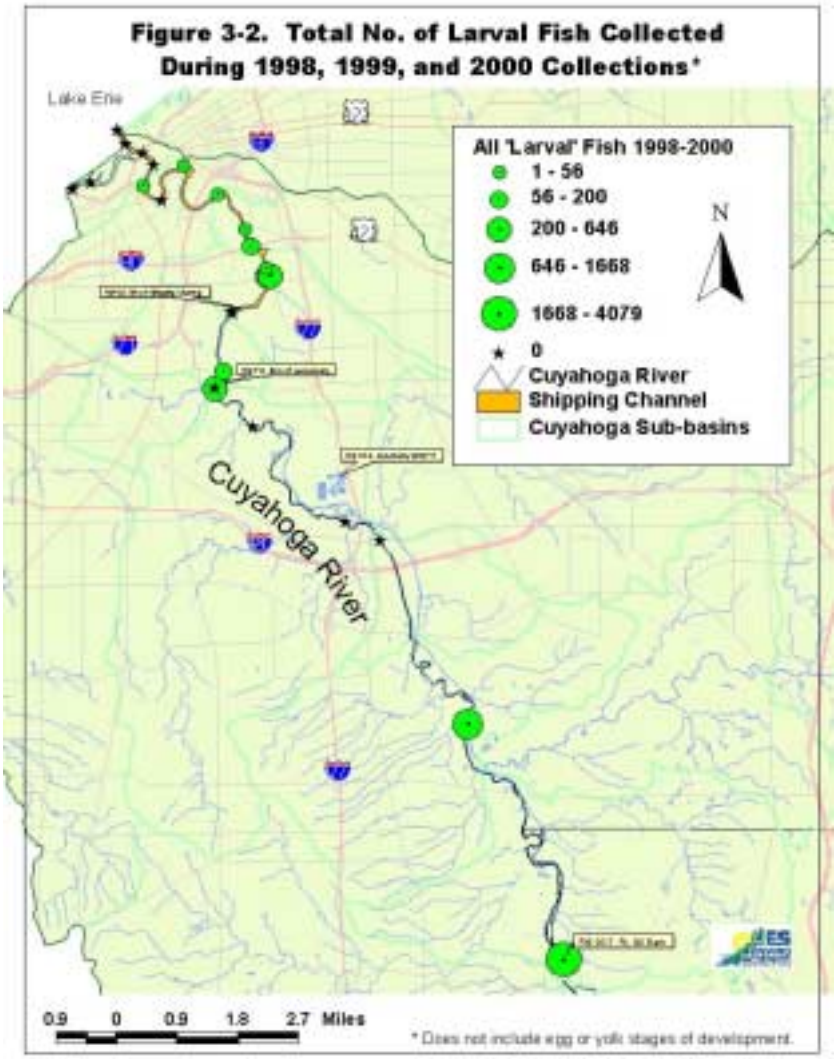
Different collection methodologies utilized

8,519 Fish Collected

Figure 3-1.
Larval Fish Collection Site Locations and River Miles



EnviroScience developed a geographic information system (GIS) database that included the larval fish data collected and other related biological and environmental information on the lower Cuyahoga. They also performed limited statistical analysis of the data.



Total Number of Larval Fish 1998-2000

Fish successfully spawn in the Cuyahoga River

Unknown fraction survive a considerable distance into the Navigation Channel

A Larval Fish Advisory Panel met in April 2001 to review and discuss the results of the GIS and statistical analysis. The panel concluded that:

1. Fish are successfully spawning in the Cuyahoga River and some fraction of the offspring are traveling and surviving a considerable distance into the Navigation Channel.
2. Total numbers of larvae of a drifting species (e.g., white sucker) drop considerably from upper reaches of the Cuyahoga to the Navigation Channel. Collection studies found White Sucker larvae in the lower

portions of the channel and it is therefore presumed that some White Sucker larvae are able to make their way to the lake.

3. Analysis of larval fish and other biological data entered into the GIS database reveals sharp changes in habitat and declines in biological communities at the point of transition to the Navigation Channel.
4. Differences in sampling location, technique, and effort between collections make extensive statistical analysis of the larval fish database difficult. Positive correlations were observed between the following:
    - habitat score vs. number of individual white sucker
    - number of individuals white sucker and habitat metrics for substrate and cover
    - number of simple lithophilic spawners and habitat metrics (characteristics) for substrate, riparian zone and cover types
5. Further work is necessary to quantify the impact of low dissolved oxygen and the lack of quality habitat on larval fish in the Navigation Channel. Future studies must incorporate standardized sampling protocols to allow meaningful statistical analysis.

The panel recommended that:

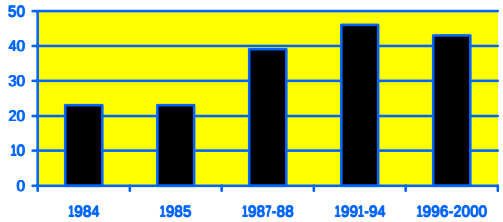
1. Additional studies of the larval fish populations in the lower Cuyahoga River should be conducted and they should incorporate a standardized sampling technique such as light trapping.
2. Flow, dissolved oxygen, and turbidity must be systematically sampled as part of any future larval fish investigation. Continuous sampling of dissolved oxygen using appropriately placed automatic data collection devices are recommended.
3. Future studies should focus on indicator groups such as Centrachids which have been shown to be habitat specialists and particularly well correlated with dissolved oxygen in studies performed in the Calumet River.
4. Future investigations should involve both concurrent adult fish collections and larval collections from a suitable reference stream to allow for meaningful comparison. The Grand River, a Northeastern Ohio Lake Erie tributary, was suggested as a possible reference stream due to similar bulkheading along its navigation channel.
5. Larval fish sampling should be performed between March 1st and August 15th to ensure collection of critical species of interest such as northern pike and walleye. Samples should be collected at least twice per month during most of this period, but weekly between May 1st and July 1st.

Cuyahoga River Fisheries Improvement

Phil Hillman, Ohio Department of Natural Resources, Division of Wildlife

There has been a substantial improvement in the numbers of fish species utilizing the Cuyahoga River since the early 1970's. Only goldfish and emerald shiner fry were found in the lower river and harbor areas during the early 1970's (Water Quality Baseline Assessment, U.S. E.P.A., White 1975). There were no fish found or collected by the Ohio E.P.A. in 1984 for 20 miles of the Cuyahoga River downstream from the Ohio Edison Dam in Cuyahoga Falls. The number of fish species captured by electrofishing during Ohio EPA surveys conducted downstream from the State Route 82 Dam has increased from 23 in 1984 to 46 in the 1991-1994 period. The recent Cuyahoga RAP larval fish study, conducted from 1998-2000, documented the capture of 32 juvenile and young-of-year fish sturgeons, muskellunge, pike, and sucker species flourished in the clean, unpolluted streams that were present during this period (Water Quality Baseline Assessment, U.S. E.P.A., White 1975). Recent observations of muskellunge (during electrofishing), steelhead trout adults (angler caught upstream to the Ohio Edison dam) and fingerlings (natural reproduction appears to be occurring in 6 tributaries to the Cuyahoga River), as well as lake sturgeon (angler caught) in the Cuyahoga River are very promising signs for the future of the Cuyahoga River fishery.

Fish Species captured by electrofishing – Ohio EPA



Above – Steelhead Trout electrofished from Cuyahoga River

Left – Lake Sturgeon

Section 2.8:

Symposium Question and Answers Session

The following questions were posed by the public to members of the Symposium panel, and responded to by them.

Respondent Steve Tuckerman: Cuyahoga River Intensive Survey 2000

How so you explain the dramatic improvement?

Improvements in fish communities take a lot longer to occur. Significant improvements in the aquatic bugs or macroinvertebrate communities have been noted from the 1980's – 1990's. Now the fish populations and number of species have increased. CSO and SSO remediation along with other improvements in WWTP operations have contributed to these improvements.

Why was an intensive survey done on the Little Cuyahoga in 1996 and not 2000?

Ohio EPA uses a five-year basin approach to survey work, returning to the same watershed every five years or so. With limited resources, we try to survey one watershed at a time and much work was done in the Little Cuyahoga in 1996. The 2000 survey did not include many sites in the Little Cuyahoga but did include several small tributaries that had not been sampled previously.

What are the biggest remaining problems to the river?

People – and the related overuse of the land in the watershed due to urban sprawl. There are too many demands on the river and its resources.

What scale was used regarding determining attainment of recreational uses?

We look at primary contact recreation use standards for fecal coliform bacteria – the standard is 1000 colonies per 100 ml of water. It should be noted that 80 % of the samples were collected during dry weather.

What are considered violations Water Quality Standards?

There are acute and chronic standards or criteria that we look at. Acute violations are daily violations. Chronic violations are levels above standards for 30 days of samples.

Respondent Don Jenkins, Bath Township Trustee: Township Zoning

How has Bath Township gone about controlling land uses?

First of all we have a high degree interest in our community, because we are very rural and want to preserve that character. We had to define where those assets are and how they contribute to public health and safety. So we did a natural resource study to get us that information which helps to gives us a legal basis. To follow the legal track we developed an overall comprehensive plan that expresses the objectives of the community and used zoning based on public health and safety and other considerations to implement that plan. This is sustainable in law because it says the community is not being subjective. That is what we are trying to do in Bath Township, and I think we did achieve a sustainable plan and zoning and we do have a defendable position.

This seems to help everyone especially those who serve on the Township Zoning Commission. Our policy states what the Township wants when developers come in, and if a community can lay that out clearly, our experience is that developers are going to comply. The one area of conflict we have concerns the taking the property. Anything that will prohibit someone from using the property is subject to a zoning appeal and that may carry you into the court system, but in our case that has not happened very often.

What are the highlights of your zoning policy?

Our basic approach is laid out in the presentation that was given by Davey Resource Group. Number 1, we made open space zoning a permitted use. A developer can take that zoning, read it and comply with it, go build in conformity with it, and never have to worry about challenges from the Township. If a developer wants to do a conventional design which is just the opposite, he has to go before the zoning review people because this is considered conditional use and he has to go before Board of Zoning Appeals to get a permit. It is quicker for them to do open space zoning and move forward, then to have to take something up for review. What used to be normal was to have conventional design as a permitted use, so we just reversed it.
Number 2 we put the setbacks in on all our streets, and named and unnamed streams.

Do you consider conventional zoning to be 5-acre lots?

In Bath it is 2 ½ acres. It used to be 1 ½, but one could never get septic approval at 1 ½. It usually approvable at 2 acres, but we said 2.5 acres is reasonable.

Can you comment on the Bath Firestone development proposal from the early nineties that was not successful?

When the first developer came in, I think Zaremba was his name, and wanted to develop the Bath Firestone stage area, he proposed exactly what he wanted. There were a lot of people up in arms saying “no, no we want big lots.” At that time our zoning was old zoning. and at that point what he proposed was not a permitted use. In

retrospect his approach is what we would expect to see. The two major criticisms at the time were that he was trying to mix small retail with residential, and that in doing open space he was trying to increase the density substantially. That had a lot of people upset in the community. We talked to him about it and said that if you could bring the density down and the retail could be moved into a business area… He lost and was treated very badly at the hearings and got discouraged and just walked off.

You are requiring 50% of the development to be open space in your permitted use? Can people still do the 2-½ acres development approach in a "cookie cutter" development?

Yes, 50% is our requirement. Yes, the cookie cutter can be done but it would require a conditional use permit. In Bath there would not be many concerns with it, because that's the way the community grew. This is a relatively large lot, but 2-½ acres is a reasonable size lot for health purposes. They have to worry about the fact that sewers are not available and that a septic system can be managed on the site.

You said that a package plant will be available in Bath Township this year or next year as an alternative to septic tanks. A lot of counties are having problems with this approach.

It should be clarified that I was referring to a package plant service that serves private housing areas. There is a lot of gallonage some of which surfaces off into Yellow Creek. They have tried to reduce it. When that package plant comes out a pumping station will go right on the same spot, and convey the sewage to the Akron Wastewater Treatment Plant. The same thing will eventually occur with the Robinwood plant. When it goes, it will be replacedby a pumping station which will convey the sewage out of the watershed. The policy is not to expand septic systems in the township beyond what is already built, and we are urging homeowners clean their tanks out every two years, to be careful what they put down the sink, and make sure the system is in good repair. I think state legislation is coming that will increase a county's ability to site septics and make sure they are in good repair.

Respondent Kelvin Rogers, Ohio EPA: Cuyahoga River RAP Program

You have been working with the Remedial Action Plan for years and years to make some of the improvements that we are now seeing show up in the river. The gentlemen from the Ohio EPA talked about how development pressures are still posing problems. What are the problems you are still seeing?

We definitely see some areas where habitat is threatened, loss of wetlands. There are not that many wetlands left and areas that are left are being considered for development. We recognize the function of wetlands for flood control, erosion control and that sort of thing, but there pressures to develop the remaining wetlands are only going to increase. This will further degrade an environment that we now see improvements in. So continuing urban sprawl and the development of previously poor

quality areas is a threat to the quality of the Cuyahoga River. Fortunately there are now programs in place like storm water controls, construction site runoff controls, things like that that can make a difference. There are some regulations regarding litigation of wetlands, if you do disturb them. That is one of the things that the RAP is addressing. It recently received a grant to identify some of the wetlands in the Cuyahoga County area, to identify what are some of the prime wetland that we can preserve or restore to some degree that will further help the Cuyahoga.

What about the wetlands around the airport? Are you going to be working anywhere near them?

I'm not that familiar with that area, but I think some of the mitigation is going to take place in Geauga County in the Chagrin watershed, I think some is going to be taking place in the Rocky River watershed, and I think some money will be paid out to support mitigation in Doan Brook. One of the problems is that we have not identified some good opportunities in the Cuyahoga River watershed, and that is why the RAP is working to identify sites so that when this opportunity comes up again, we can show areas to preserve, protect or restore and mitigate wetlands here in the Cuyahoga watershed.

Respondent Mark Link: Urban Stream Restoration

What kinds of urban wildlife do you find at urban stream restoration sites?

Unfortunately, when you talk about wildlife in an urban setting people immediately think of rats and skunks; animals that you do not want around your dwelling place. We have not taken a look at other types of animals or birds that may be recolonizing our restoration areas.

Respondent Dave Crandall: Akron CSO strategy

What is the plan? When will it be released to the public? When do you plan to build?

The plan was submitted to the EPA in 1999. The plan was then revised by the City of Akron. It is currently in review by a committee at the Ohio EPA to evaluate the plan. There will be a public hearing after the plan passes through the Ohio EPA.

35 years sounds like not an ambitious time frame. People who were children at the time of the Clean Water Act may have their grandchildren see results.

Ideally, everyone would like to shorten the time frame. However affordability is a factor. There is difficulty when some people cannot even pay their water and sewer bills.

Respondent Steve Litt: Keynote Speaker

How do you see the role of public transportation?

Public Transportation is very important. The current system is very dependant on autos and freeways. We need compact development and transit averted from our shorelines and desired green space.

What are your views on proposed truck routes?

We need more information and a better planning process that is thoroughly integrated with other projects. Stronger leadership on land use is needed. This can't be done by a piece meal approach as have other projects. Coordination of regional planning is needed between cities and the region.

Is 20 acres of Public Access of green space on Whiskey Island important to North East Ohio?

Yes, but it is more important to look at the entire lakefront in a comprehensive way. Whiskey Island can fit into a comprehensive plan. The lakefront should be connected to the Cuyahoga River valley. Cleveland needs to adopt a process for planning the city that is in harmony with its assets. Some good examples of cities that have had success with this approach are Pittsburgh's River Lake Task Force, City Green Space Plan, and Chicago. Like these examples, this has to be a very public process.

3.0: Appendices

Appendix I Symposium Program
Appendix II List of Symposium Participants and Biographical Sketch of Presenters
Appendix III Breakout Group Discussions of Cuyahoga River Issues
Appendix IV Symposium Evaluation
Appendix V Cuyahoga River RAP Coordinating Committee Members and Staff
Appendix VI Cuyahoga River Remedial Action Year 2001 in Review

Appendix I Symposium Program

FOR IMMEDIATE RELEASE: 7/25/01

Press Release

FOR ADDITIONAL INFORMATION CONTACT:
Ms. Kelly Danczak, Environmental Planner
(216) 241-2414 Ext. 275, (216) 621-3024 Fax
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Cuyahoga River Symposium
Sponsored by Cuyahoga River Remedial Action Plan
Thursday, October 25, 2001
Happy Days Visitor's Center
500 W. Streetsboro
Peninsula, Ohio 44264
8:30 a.m.- 3:00 p.m.

Cuyahoga River: Today's Sizzling Issues

[Cleveland]--Join us as we douse the flames on today's searing issues, including the return of the fish, the challenges and benefits of urban stream restoration, pollution control strategies and recreation plans. A Cuyahoga River Symposium, sponsored by the Cuyahoga River Remedial Action Plan (RAP), will be held on Thursday, October 25, 2001 at Happy Days Visitor's Center, 500 W. Streetsboro, Peninsula, Ohio, from 8:30 a.m.- 3:00 p.m. Cost is $25.00 per person, $15.00 for students and lunch is included. Registration and Fee Deadline is October 17, 2001.

Are you interested in the State of the Cuyahoga River? Do you want to know what you can do to help the Cuyahoga River? Would you like to steer future research projects on the Cuyahoga River? Would you like to provide input on the planning process of the Cuyahoga RAP? Let your voice be heard. Come join us for a day of speakers, feedback sessions and reports on the State of the Cuyahoga River. Steve Litt, Plain Dealer Art & Architecture Critic will be the keynote speaker. He will provide his vision for developing the region in relationship to its watersheds and waterways, which could make dynamic improvements to the region's livability. Don't miss the boat!

A meeting of the Cuyahoga River Coordinating Committee will immediately follow the symposium. The public is welcome to attend.

The Cuyahoga Remedial Action Plan (RAP) is a community-based organization that promotes the cleanup and restoration of the Cuyahoga River. The RAP focus area lies between Akron's Ohio Edison Dam and the near shore areas of Lake Erie from Edgewater Beach to Wildwood Park. Call 216-241-2414 ext. 275 for registration and information. Please make checks payable to: Cuyahoga RAP, 1299 Superior Avenue, Cleveland, Ohio 44114.

- ### -

Cuyahoga River Remedial Action Plan (RAP)
1299 Superior Avenue
Cleveland, Ohio 44114-3204
http://community.cleveland.com/cc/cuyahogariver

Non-Profit Org.
U.S. Postal
PAID
Cleveland, OH
Permit No. 721

State of the Cuyahoga River Symposium

Thursday, October 25, 2001
Happy Days Visitor Center
Peninsula, Ohio

Cuyahoga River Symposium Hosted by: The Cuyahoga River Remedial Action Plan

2001 SYMPOSIUM

State of the Cuyahoga River

Hot Topics on a Cool River

Listen to presentations and join Regional experts in open forum discussions about today's hottest issues along the Cuyahoga River

State of the River Report
Cutting Edge Biological and Chemical Data

•

Fired Up About Fish
Larval Fish Migration

•

Glowing Reports for Stream Restoration in the Yellow Creek & Big Creek

•

Combined Sewer Overflows:
Akron and Cleveland's Plans and Progress

•

Take Me to the River
Connecting People to the River

The mission of the Cuyahoga River Remedial Action Plan (RAP) is
to plan and promote the restoration and preservation of beneficial uses of the lower Cuyahoga River and
rea of Lake Erie through remediation of existing conditions and prevention of further pollution and other degradation.

d through grants from The Cleveland Foundation, The George Gund Foundation, The GAR Foundation and The Ohio EPA.

Registration Form

Deadline: October 17, 2001

☐ **I will** be attending the River Symposium *(Cost: $25 or $15 student*)*

Box Lunch (check only one): ☐ **T**urkey ☐ **H**am ☐ **R**oast **B**eef ☐ **V**egetarian

Participants are invited to attend the Cuyahoga Coordinating Committee Meeting, which follows the Symposium at 3:30 P.M.

☐ **Yes,** I plan to also attend the Coordinating Committee

Name/s: _____

Affiliation: _____ **Student:** ☐ *(check here)*

Address: _____

City: _____ **Zip:** _____

Phone Number: _(_____) _____

E-mail Address: _____

Make checks payable to **Cuyahoga RAP**. Please mail **completed Registration Form** and **check to:**

The Cuyahoga River RAP
1299 Superior Avenue
Cleveland, OH 44114

amount enclosed: $

**Cancellation Policy: No refunds after October 23, 2001*

SYMPOSIUM AGENDA

Thursday, October 25, 2001

Happy Days Visitor Center, Cuyahoga Valley National Park

8:30 Registration

9:00 Welcome & Introduction
John Debo, Superintendent, Cuyahoga Valley National Park

9:10 Presentations:

- **Findings of the Cuyahoga River Intensive Survey**
  Steve Tuckerman, Ohio EPA
- **The Challenges and Benefits of Urban Stream Restoration**
  Don Jenkins, Bath Township Trustee and Mark Link, NEORSD
- **State of CSO Projects**
  Dave Crandell, Akron Public Utilities and Betsy Yingling, NEORSD
- **Warming Up to Public Access**
  Jim Kastelic, Cuyahoga Planning Commission and Steve Davis, River Navigator
- **Fired Up About Fish**
  Marty Hilovsky, EnviroScience, Inc.

12:45 Lunch

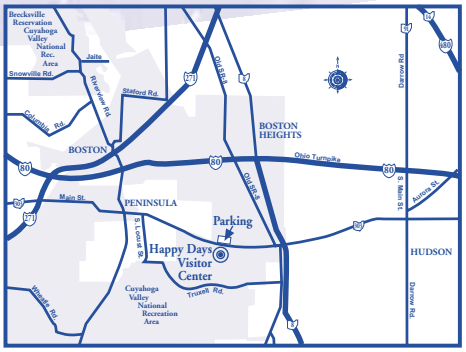
1:15 Keynote Speaker
Steve Litt, Architect Critic, Plain Dealer

2:00 Community Feedback

- **Q & A**
- **Setting Future Priorities**

3:30 Cuyahoga Coordinating Committee Meeting

Cuyahoga River Symposium Hosted by: The Cuyahoga River Remedial Action Plan
CUYAHOGA RIVER RAP



Directions

To Happy Days Visitor Center, Cuyahoga Valley National Park
500 W. Streetsboro Road, Peninsula, OH 44264
1·800·257·9477

From Cleveland:
I-77 South exit at SR-82 East, continue east through Brecksville. At Riverview Road turn Right, (South) to SR-303 in Peninsula. Left (East) on SR-303 to Happy Days Visitor Center, approximately 2-3 miles. The Parking Lot will be on the left.

From Akron:
Take SR-8 North to SR-303 West.
Happy Days Visitor Center is approximately one mile west of SR-8. Parking Lot will be on the right.

State of the Cuyahoga River Symposium
October 25, 2001
Happy Days Visitor Center
Cuyahoga Valley National Park

Moderator: Edward W. Rybka, RAP Chair

AGENDA

8:30 am	Registration & Continental Breakfast
9:00 am	Welcome & Introduction John Debo, Cuyahoga Valley National Park
9:10 am	Presentations: • Findings of the Cuyahoga River Intensive Survey Steve Tuckerman, Ohio EPA • The Challenges and Benefits of Urban Stream Restoration Maia Peck, Davey Resource Group and Mark Link, NEORSD • State of Combined Sewer Overflow Projects Dave Crandell, Akron Public Utilities and Betsy Yingling, NEORSD • Warming Up to Public Access Jim Kastelic, Cuyahoga Planning Commission and Steve Davis, River Navigator • Fired Up About Fish Dr. Robert Carlson for EnviroScience, Inc.
12:45 pm	Box Lunch
1:15 pm	Keynote Speaker Steve Litt, Art and Architecture Critic, Plain Dealer
2:00 pm	Community Feedback • Question & Answer Session • Setting Future Priorities • Report back to the audience
3:30 pm	Cuyahoga Coordinating Committee Meeting

Appendix II
October 25, 2001 Cuyahoga River Symposium
Biographical Sketch of Presenters

DR. ROBERT CARLSON
Department of Biological Sciences
Kent State University

Dr. Carlson is a professor in the Department of Biological Sciences at Kent State University, where he has taught since 1975. He received his undergraduate education in Biology at Gustavus Adolphus College, St. Peter, Minnesota, and a MS degree in Entomology and a PhD in Ecology at the University of Minnesota. Dr. Carlson has a number of ongoing interests. He and his students have conducted research ranging from the trophic state classification of lakes and reservoirs to using paleolimnological techniques to investigate the effect of past fish species introductions to lakes. His interest in the Cuyahoga River includes a 1979 study of water quality in the lower Cuyahoga and its tributaries and a study of the use of urban stormwater detention basins to reduce pollutants into the Cuyahoga River.

DAVID L. CRANDELL
Public Utilities Manager
Akron Public Utilities Bureau

Mr. Dave Crandell, Public Utilities Manager has been with the Akron Public Utilities Bureau since 1954 when he began as a Co-op Engineering student through the University of Akron. Dave has been a manager for 38 years and is currently responsible for all aspects of the water system (an upper Cuyahoga River surface supply, treatment and pumping, distribution, engineering, planning, and utility billing) and sewer system (sanitary and storm sewer systems, industrial pretreatment enforcement, wastewater treatment and sludge composting). Twelve (12) years as a manager of the Water Distribution Division and twenty-six (26) years as the Public Utilities Manager. The Akron water and sewer system is in reality a regional water and sewer agency that provides water and sewer service to a population of 280,000 and 320,000 respectively.

STEVE R. DAVIS
River Navigator
American Heritage River

As River Navigator for the Cuyahoga River, Steve Davis serves as the liaison between the Federal government and the local communities and acts as a catalyst and facilitator to accomplish the goals of the Initiative. As a 27-year veteran of the Forest Service, Steve has served in a variety of positions in natural resource management, community organization, and watershed protection. He served in Washington, DC as a Congressional Liaison, Interpretive Naturalist, and the Agency's Boy Scout and Girl Scout Coordinator. He also led a multi-agency interdisciplinary team in the preparation of management plans for protection and enhancement of 30 rivers in the Pacific Northwest and served as the Agency's Regional Wild and Scenic River Coordinator for California, Colorado, and Wyoming. In 1999, Steve joined the Northeastern Area as the River Navigator for the Cuyahoga American Heritage River.
Steve has a Bachelor of Science in Forest Management from Oregon State University (1974) and a Masters in Public Affairs from Western Carolina University (1985).

TIM S. DONOVAN
Executive Director
Ohio Canal Corridor

Under Executive Director Tim Donovan's leadership, the Ohio Canal Corridor has worked in partnership with more than 50 organizations and public agencies to successfully win federal designations for this project as a National Heritage Corridor, a National Scenic Byway and the Cuyahoga American Heritage River. On the state level, a partnership effort also brought the state's first Scenic Byway designation and Ohio's first designated Heritage Area.

Tim has represented Ohio Canal Corridor in a number of local, regional, state and national initiatives. Currently, he sits on steering committees for County Greenspace, ODOT InnerBelt Project, Ohio Heritage Area Partners, RAP, and the Cuyahoga American Heritage River Partnership. His current endeavors include a "finding your way" signage program for the Scenic Byway; a visitor's guide/map for Canal Way Ohio; a local improvement plan for West 25 Street and Broadway as a Scenic Byway enhancement; and a new park at the site of the original Canal Basin in Cleveland.

Tim has a Bachelor of Arts degree in History form Cleveland State University (1974).

PHIL HILLMAN
Fish Management Supervisor
District Three, Division of Wildlife
Ohio Department of Natural Resources

Mr. Phil Hillman has worked for the Division of Wildlife since 1980. He initial began his career with the Ohio Department of Natural Resources (ODNR) as a fisheries research biologist. Phil has been the District Three's Fish Management Supervisor since 1985. His responsibilities include supervising all fisheries efforts that include public lakes and streams within the nineteen counties within northeast Ohio. Most of Phil's work with the Division of Wildlife has been focused on inland systems. Staff from Division Three has been involved with the Cuyahoga River larval fish project since its onset.

Phil has a Bachelor of Arts in Zoology from Indiana University (1977) and a Master's of Science in Fisheries and Wildlife from University of Missouri (1982).

MARK A. LINK
Planning Scientist
Northeast Ohio Regional Sewer District

Mr. Mark Link has been with the Northeast Ohio Regional Sewer District (NEORSD) for 5 years working on legislative, regulatory, and technical support issues. For the past 3 years, Mark has been actively working on various urban stream restoration projects. Mark presented a poster at the Coastal Zone 2001 conference that depicted the institutional issues, which were experienced and overcome during these restoration projects. Recently, he has delivered a similar presentation at the Ohio Water Environment Association watershed conference. Mark is currently working on a scope of services to develop additional restoration concept plans for portions of the Chevy branch stream in the City of Cleveland.

Mark earned a Bachelor of Science degree in Biological Conservation from Kent State University and a Master of Science in Urban Studies, with an emphasis in Environmental Planning from Cleveland State University.

STEVEN LITT
Art & Architecture Critic
The Plain Dealer

Steven Litt has been the Art and Architecture Critic of The Plain Dealer for ten years. Before moving to Cleveland, he held the same position for seven years at The News and Observer in Raleigh, North Carolina. Outside The Plain Dealer, his articles have appeared in Progressive Architecture, Travel & Leisure and ARTnews. He currently serves as a contributing editor for Architecture magazine. Litt speaks frequently to audiences across Northeast Ohio about art and architecture. This fall, he is teaching journalism to undergraduates at Case Western Reserve University.

Mr. Litt earned a bachelor's degree in art from Brown University and a master's degree in journalism from Columbia University. His honors and awards include fellowships at the Whitney Museum of American Art in New York, and the University of Michigan in Ann Arbor, where he studied at the College of Architecture and Urban Planning.

MAIA PECK, AICP
Environmental Planner
Davey Resource Group

Ms. Maia Peck, a certified planner, has 12 years of experience as an environmental planner. She is currently completing watershed studies and plans for the Pymatuning-Shenango watershed in eastern Ohio and Chippewa Lake watershed in Medina County. Ms. Peck has conducted natural resource studies for comprehensive plans in Ohio and Rhode Island and developed a comprehensive plan for a community in Rhode Island, where natural resource protection is a key issue. Prior to coming to Ohio a year ago, Ms. Peck lived in Rhode Island. Her position as the environmental planner in the RI Statewide Planning Program melded water quality protection and land use policy. Her experience in an engineering firm in Rhode Island included municipal comprehensive plans, watershed, stormwater, and natural resource studies for municipalities, water suppliers, transportation projects, and land development projects.

KELVIN F. ROGERS
Cuyahoga River
Remedial Action Plan (RAP) Coordinator
Ohio EPA, Northeast District Office

Kelvin Rogers has been employed by the Ohio Environmental Protection Agency, Northeast District Office for over 22 years. During that time he has worked for the Division of Surface Water as an inspector, NPDES permit writer, and enforcement/compliance officer. In 1992 he became the Black River RAP Coordinator for the agency. He assumed the position of Cuyahoga River RAP Coordinator in early 1995 and officially serves on the Cuyahoga Coordinating Committee, Steering Committee, and Board of Directors of the Cuyahoga River Community Planning Organization. He also serves as chair of the Aquatic Life Work Group for the Cuyahoga River RAP. On a part-time basis, Kelvin teaches general biology and parasitology at Kent State University.

Kelvin received both his Bachelor's and Master's degrees in Biology from the University of Akron.

EDWARD W. RYBKA
Cleveland City Councilman
12th Ward

Edward W. Rybka has been a member of the Cleveland City Council since 1985, representing approximately 25,000 residents in the City's 12th Ward. A four-term Councilman, Ed Rybka chairs the council's Committee on Parks, Recreation and Properties. In addition, he is currently serving as Vice Chair of both the Finance and Planning Committees, as well as serving as a member of the Aviation and Transportation Committee. Ed currently represents Cleveland on the Northeast Ohio Areawide Coordinating Agency (NOACA) Governing Board. Most importantly, Ed is Chairman of the Cuyahoga River Remedial Action Plan Committee and is President of the Cuyahoga River Community Planning Organization.

Ed has a Bachelor of Arts degree in Political Science from John Carroll University (1977) and a Juris Doctorate degree from Cleveland State University's Cleveland-Marshall College of Law (1980).

STEVE TUCKERMAN
Environmental Specialist
Ohio EPA

Steve Tuckerman is an Environmental Specialist with the Ohio EPA's Division of Surface Water Northeast District Office in Twinsburg. He currently works in the water quality group and is primarily responsible for monitoring and assessing the biological, chemical and physical quality of the surface waters of Northeast Ohio with focus in the Cuyahoga River and Upper Tuscarawas River basins. His work experience includes: operator at a water treatment plant in Kent; Forestry Technician with the U.S. Forest Service in Pennsylvania; hazardous waste and Superfund with Ohio EPA; a member of US EPA's Superfund technical

assistance team (TAT); and private consulting. Steve has been a principle contributor to several Ohio EPA and RAP reports on the Cuyahoga River concerning various topics such as water quality, sediment and fish tissue contamination.

Steve has a Bachelor of Science degree in Biology from Kent State University (1975).

BETSY YINGLING
Planning Engineer
Northeast Ohio Regional Sewer District

Betsy Yingling has been employed as Planning Engineer at NEORSD since January 1990. She has served as project manager for Mill Creek Watershed Study that was completed in 1997. She also served as project manager on a Combined Sewer System Operational Plan, completed in 1998. Betsy is currently acting as project manager for Doan Brook Watershed Study and Easterly CSO Facilities Plan, both of which will be completed in late 2001. In addition, she is also acting as project manager for Southerly CSO Facilities Plan, which is to be completed in mid-2002.

Betsy has a Bachelor of Science degree in Environmental Engineering from Worcester Polytechnic Institute (Worcester, MA) and a Master's of Engineering degree in Ocean Engineering from the Stevens Institute of Technology (Hoboken, NJ).

Appendix II*
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Appendix III
2001 State of the Cuyahoga River Symposium
Breakout Session Facilitator's Guide

Group #	Facilitator	Potential Scribes
	Ed Rybka	Anne Marie Vincent
	Tim Donovan	Mark Moloney
	Kelvin Rogers	Beth Buchanan
	Julie Letterhos	Lucy Miller
	Mark Link	Phil Hillman
	Pam Davis	John Beeker
		Rebecca Porath

Make sure you have a scribe for your group.

Participants may have to pull up chairs around each group.

Ask participants to have the RAP use impairment status report (blue) handy for review/discussion.

Tell participants that we are asking for input on six areas – each relating to a RAP work group- many of which were discussed during the presentations. Due to time constraints, we can only spend 5-10 minutes on each one. We are trying to get a feel for what are the most important issues/actions that the RAP is or should be working on. The areas are:

1. Fish and Aquatic Life
2. Habitat
3. Human Health
4. Socio-Economic
5. Wildlife
6. Recreation and Public Access

Try to cover each area in order – each group will be starting at a different area so that we get them all covered in case your group does not have time for each one.

For each of these areas:

1. What do you feel are the most important issues that need to be addressed?

2. What actions/projects/programs do you feel need to be taken to address these issues and the remaining river impairments?

3. Do you agree with the current assessments of the use impairments?

Facilitators will report out (briefly) to entire audience on what their group has come up with. Turn in flipchart pages to Kelvin for processing. Thanks!!!!!!!!!

Appendix III
Results of the Break Out Sessions

The final portion of the State of the River Symposium was devoted to receiving and discussing input from symposium participants in a break out session. Participants were asked to briefly review the State of the River Use Impairment Status Report included in their folders in regards to six areas – Fish and Aquatic Life, Habitat, Recreation, Socioeconomic Factors, Wildlife, and Human Health. These areas roughly correspond to the work groups of the Cuyahoga RAP. Several projects and research studies in the areas of Fish and Aquatic Life, Habitat, Recreation, and Socioeconomic Factors were presented in the morning session of the symposium, along with their linkages to improvements in the beneficial use impairments.

Six groups were assigned a facilitator and scribe and were asked to answer three questions about each area:

1. What do you feel are the most important issues that need to be addressed?

2. What actions/projects/programs do you feel need to be taken to address these issues and the remaining river impairments?

3. Do you agree with the current assessment of the use impairments?

After the break out session the facilitators briefly reported on the answers and ideas that each group had generated. A bullet item synopsis of the information presented by all the groups for each use impairment area follows:

HABITAT

ISSUES

- Loss of wetlands, keep wetland mitigation in watershed, need to educate public and decision makers
- Need to increase riparian areas, importance of rivers as spawning grounds for fish
- Better definitions of good vs. bad habitat, automobile habitat should be incorporated
- Need to incorporate viewsheds, industrial environments
- Need better policies/land use management decisions for habitat protection – setbacks, zoning
- Restoration of good stream quality, opportunities
- “Improving habitat will draw people”
- Costs of creating habitat in navigation channel may be expensive

- Water use conflicts, development pressures, urban sprawl
- Lack of planning for diversity of species populations
- Habitat fragmentation

ACTIONS/PROGRAMS/PROJECTS

- Floodplain protection
- More funding - for easements, acquisition of riparian corridor, conservation easements
- Assist communities experiencing development pressures to begin planning and zoning for their health and welfare through the protection of natural resources – like Bath Twp.
- Address urban sprawl by improving "the quality of city life"
- Provide incentives to improve habitat - tax breaks
- Education - communicate success of urban programs, involve public schools, more programs like the symposium, communicate benefits to landowners, benefits of habitat, connect the river to fish & animals to habitat to people's habitat
- Ohio needs to evaluate 319 program in relation to money allocated, provide larger penalties/larger mitigation ratios, use of TMDL
- Better cooperation between groups, agencies
- Look at future opportunities of Burke Lakefront Airport, continuation of river dredging, Dike 14
- Create fish habitat in navigation channel, develop a habitat plan for the navigation channel
- Utilize public planning process
- Coordinate habitat and recreation uses

CURRENT STATUS ASSESSMENT

- Need to quantify amount of habitat we currently have and are losing before a good assessment can be made
- Navigation channel remains impaired

FISH AND AQUATIC LIFE

ISSUES

- Low dissolved oxygen in navigation channel, remains impaired
- Control of Exotic or Invasive species
- Target 'sentinel" species
- Habitat improvement
- Water quality problems remain in some areas – low DO, temperature, SSOs, CSOs, failing HSDS

- Dams – obstruction of fish migratory patterns
- Problems due to air pollution and runoff, nonpoint pollution, Akron CSOs
- Navigation channel conflicts – fish vs. freighters
- The more people we draw to the river, the more support there will be for future improvements
- Toxic contaminants – linked to toxicology, risk assessment, consumption
- Natural flow of river and diversions

ACTIONS/PROGRAMS/PROJECTS

- Riparian plantings, riparian corridor restoration & protection, restore & protect wetlands, tributary stream restoration, return to natural streambed
- Coordination of regional plans and development
- Implement demonstration projects for incidental fish habitat in navigation channel, bulkhead modifications, remove unused bulkheads
- Focus on station Road (SR 82) Dam modification feasibility study, also other dams, fish passage
- Provide more education and public information, use fish survey results to indicate contaminants in fish, increase awareness
- Support for “beefed up’ management programs is needed, including funding, staffing and enforcement resources
- More use of ODNR Scenic River volunteer sampling methodology
- Look at aeration waterfalls in navigation channel, develop specific measures to address the needs of fish and aquatic life in navigation channel
- Ohio should enact nutrient standards, enforce current regulations, TMDL
- Identify sources of toxic contamination, such as mercury
- Look at relationship between river and groundwater
- More testing in old river channel, look at substrates in mainstem

CURRENT STATUS ASSESSMENT

- What are the impairments for the near shore and navigation channel?
- Great improvements noted
- Assessment is not quantitative enough, can’t agree or disagree,
- Nice to see goals and progress towards goals
- Need clarification of impairment and status definitions
- Need to recognize dependence on middle Cuyahoga which is not assessed by the RAP
- Agree with benthos being “much better”, but fish populations should be just “better” (not “much better”)
- General agreement with status report, but fish and aquatic life are continually threatened by loss of habitat due to urban sprawl and land management decisions that encroach upon the riparian and those actions that impact water quality

RECREATION AND PUBLIC ACCESS

ISSUES

- Identification of nonpoint source pollution
- Identification of appropriate recreation uses
- High bacteria levels still exist due to NPS, SSOs, CSOs, failing HSDS
- Watershed-wide planning, public involvement in planning
- Lack of sufficient canoeing/boating access and links to public transportation, when is there enough access?
- Lack of sufficient wading and fishing access points
- Need clarification of standards to public and risks to health
- Lack of public education – better marketing and increased public awareness needed, fish advisories should impact consumption, when are "safe" times to be in contact with the river?
- Most mainstem riparian land in Cuyahoga county is privately owned, most is publicly owned in Summit county
- Publicly-owned land does not mean recreation and public access are ensured

ACTIONS/PROGRAMS/PROJECTS

- Education of homeowners/businesses of nonpoint source pollution
- Land acquisition by park systems, purchase of Whiskey Island, more local parks, encourage streamside communities to develop riparian parks and greenways
- Ohio should revisit standards that guide recreational use and provide realistic standards – fecal coliform vs. E. coli
- Extend Towpath Trail, bikeways to Whiskey Island, provide pedestrian access to the river, lake, throughout Cleveland, link to other neighborhoods
- Encourage comprehensive planning in riparian corridors to repair aesthetics and improve recreation, involve the public in the development of an AOC Recreation & Public Access Plan
- Continue and enhance existing measurements of recreation and access
- Better public warning advisories and understanding
- Get municipalities and public officials to make this a priority, work with local and federal park services
- Improve public buy-in, build constituency
- Develop and implement HSDS maintenance/inspection program and public education
- Get entire watershed together to determine economic potential of recreation issues and what it all means and can mean

- Incorporate other recreational uses into parks/trails – paddling, horses, kiteflying, CCskiing, walking dogs, bikes
- Provide access to lake in Cleveland so you can put your toes in it
- Need better beach risk reporting
- Need to eliminate CSOs and other sources

CURRENT STATUS ASSESSMENT

- Public access is “better”, not “much better”
- Do a better job measuring our criteria for assessment
- Disagree on definition of improvement status
- General agreement with status report, but improvements in recreation and public access are continually threatened by urban sprawl and land use management decisions
- Access is “better” – but more is needed

SOCIOECONOMIC FACTORS

ISSUES

- Turbid muddy water, floating debris, trash, degraded riparian areas (slag piles, trash) – poor/degraded aesthetics
- Decreased recreation due to bacteria/health threats
- Lack of comprehensive planning that balances natural resources, human health and economics
- Improvements along waterways increase economic value of river property
- Water reflects what we do on the land
- Imbalance of values and priorities – jobs vs. environment; why not jobs & environment?
- Recreation uses, public access does not necessarily result in the needs of the natural area
- Regional planning/communication – more voices need to be heard like NOACA local planning on the innerbelt project
- Need for a vision followed by a long term plan
- Define public access better – physical vs. visual access
- Navigation channel issues linked to recreation – fish habitat, D.O., dredging, recreation, access
- Zoning for values and not quality of life issues
- Lack of log jam maintenance along river and tributaries

ACTIONS/PROGRAMS/PROJECTS

- TMDL criteria need to be identified – biological, chemical, and/or physical

- Riparian overlay districts (like Bath's) need to be expanded to other communities
- Encourage sustainability by balancing the good and bad during the planning initiatives
- Develop a joint protection program that links the health of the inner city to the protection of the natural resources – an environmentally protective, socio-economically viable river
- Increase outreach to elected officials to think about waterway protection, enact and enforce local ordinances
- Develop and support programs that build open space in conjunction with the development of alternative housing choices
- If small percentage of innerbelt cost could be dedicated to environmental concerns, much could be accomplished
- Work with the industrial setting for potential access
- Support economic sharing through the use of Joint Economic Development Districts (JEDDs)
- Improve aesthetics – reduce floatable debris, dead fish
- Better management policies for trash removal and recycling programs
- Remove C & D landfills from floodplain
- Provide better public education on keeping yard wastes out of streams; develop programs and jobs that bring the Cuyahoga River and Lake Erie into people's living rooms
- Educate golf courses about keeping fertilizers, etc. out of waterways
- Improve aesthetics through use of a river debris harvester, storm sewer screens/floatables collection systems, more & better street cleaning
- Demonstration project in navigation channel
- Implement innovative funding programs – (1 cent on every Happy Meal)
- Conduct litter collection/cleanup projects, educate public & riparian landowners on litter problem, enforce litter laws – punish violators with community service on river projects
- Improve access to aesthetically pleasing areas

CURRENT STATUS ASSESSMENT

- Aesthetics have a long way to go, but they have improved
- The health of the Cuyahoga River and its natural resources can no longer be compromised for economic benefits

WILDLIFE

ISSUES

- Exotic species populations may become worse problem with increases and improvements in habitat, i.e. sea lamprey, zebra mussels
- Urban Sprawl
- Need to re-establish riparian corridor and networks of land, not just patches of parks
- Elevation of bacteria levels due to large mammals and geese
- Akron CSO impacts
- Deer population management
- Limited populations of some species, lack of migratory bird species

ACTIONS/PROGRAMS/PROJECTS

- Brownfield reclamation, greenway/corridor establishment, increase protection/preservation of riparian areas, provide habitat opportunities in navigation channel (noted that this may be very expensive)
- Provide incentives, tax breaks for wildlife habitat protection/preservation
- Wetland preservation, in-watershed mitigation
- Utilize better, comprehensive, public land-use planning and decision making – habitat planning to encourage re-establishment of populations
- Incorporate wildlife strategies into TMDL
- Appropriate management of deer populations (urban bow hunting, culling in CNVP) and other potentially "nuisance" species, i.e. – skunks, beaver, geese, support proactive management of wildlife as a resource
- Public education linking water quality to wildlife
- Develop a comprehensive lakefront plan incorporating wildlife/habitat concerns, enhance "urban" wildlife opportunities
- Preserve Dike 14 as open space for wildlife
- Develop a "desireable" wildlife species list

CURRENT STATUS ASSESSMENT

- Note that contaminant levels are more important than taste
- Keep goal of establishing river otter populations
- Agree with status determination, note that wildlife can be improved
- Note that wildlife are continually threatened by urban sprawl and land management decisions

HUMAN HEALTH

ISSUES

- High bacteria levels affect access, contact, recreation
- Fecal coliform vs. E. coli – which should be used?
- CSOs need to be addressed in short term, not long term

- Environmental justice, education, and economic issues – subsistence fisherman and their families are at most risk
- Fish consumption advisory in place
- Risk assessments of local community are lacking
- Are we sure about the quality and quantity of all drinking water?
- Lack of political will to address problems
- Negative impact on sports fishery from fish consumption advisories
- Lack of education regarding “safe” times for contact with river/lake
- Acceptance of pollution problems results in a less than desirable “quality of life” attitude
- Disturbance of contaminated sediments

ACTIONS/PROGRAMS/PROJECTS

- Address CSOs by creating/finding funding, raising rates, raising awareness by media reporting CSO events
- Need public health system that records chronic diseases
- Determine how to prevent contaminants from entering the environment
- Educate the public on how to treat the environment and to appreciate natural areas, focus on youth programs
- Information on water quality should be made available (real-time if possible) to allow appropriate decisions on use, institute more frequent testing of recreational waters
- Institute improved/better warning systems, PSAs utilizing all types of media on human contact advisories
- Educate public on bacteria, pathogens, fish contaminants, potential risks so that they can make appropriate decisions on use, place signage at all access points.
- Conduct study of risks from drinking water from private wells
- Find funding for education and research on human health issues
- More action on identifying and removing sources of PCBs, organochlorides, mercury, hormone mimics
- Promote positive health benefits of towpath/river recreation
- State and local officials should provide better enforcement of environmental regulations, particularly involving impacts from HSDS and landfills

CURRENT STATUS ASSESSMENT

- The impairments don’t cover what needs to be addressed – 59 toxic substances in river
- Agree that some improvements have occurred, but still need more help
- Need more knowledge of drinking water quality before making assessment

- General agreement with assessments, note that improvements will continually be threatened by poor land management decisions

Breakout Session Summary

In addition to answering the questions, one group went ahead to identify priority items for the RAP to work on in the coming year. This list includes:

1. Development of a Master Plan to address the beneficial use impairments and to implement in phases. The plan could be distributed to communities to enlist their help in implementation.
2. Develop a Stream Protection Policy, aided by a State mandate of riparian buffer protection.
3. Restoration of riparian areas.
4. Promote the river for recreation to draw tourism dollars.
5. Accelerate the CSO cleanup efforts.

Appendix IV
Symposium Evaluation

Discussion

Symposium participants were asked to fill out a program evaluation form that had been included in the program kit (see Evaluation Form attached). The total symposium evaluations received equaled 67 out of 190 attendees. The mean responses for each numerically valued question are shown in this graphical representation. The scale used for these responses was 1 = worst and 5 = best. The overall rating of the symposium was a 4. Please note the format of presentations and the food score were reflective of specific issues identified in the comments section of the evaluations. A screen viewing issue (due to the room layout) was identified in the format of presentations average. The average food score reflected responses received regarding the non-recyclable packaging used for the box lunches (6 rating). This material is not as easily recycled as 1, 2, or 3 rated recyclables, but is recyclable. These issues have been noted and will be addressed in future programs.

Overview of Evaluation Comments

There was an overwhelming response of hopefulness from the attendees regarding the progress of the RAP program. Several statements were made to keep the momentum going to remediate/restore the Cuyahoga River. The selection of information presented was well received and appreciated by the attendees. Steve Litt the keynote speaker, spoke with a passion and eloquence that encouraged the attendees hopefulness for the future of the Cuyahoga River Watershed. A comprehensive view of the watershed including environmentalism, economics, social ethics and transportation was stated as an important concept in the watershed.

Suggestions for improvements on the logistics and content of the program were received including an explanation of the terminology, speakers repeating questions before responding, screen viewing improvements, and fewer topics with more detail.

Most Important Issues

- Decision making – Regional in scope and water quality based (14)
- Public Access (10)
- CSO's (9)
- Public Awareness (9)
- Water Quality (5)
- Akron CSO's (4)
- Urban Sprawl (3)
- Non Point Source pollution (3)
- Human Health (3)
- Habitat loss and restoration (2)

- Housing development (2)
- Transcending political and monetary hurdles
- Apathy
- Zoning

Additional Topics of Interest

- Recreation
- Cost of Countermeasures
- Mobilization of citizens
- Bioregional Planning
- TMDLs
- Representation from elected officials in the area
- Funding for local communities to facilitate parks and access to the river
- Cuyahoga River history, ranking in the U.S.A. and the world
- Zebra Mussels
- Vegetation in the Cuyahoga River riparian zones
- Land Acquisition
- Overview of sewage treatment plants
- Dam structures in the watershed

“ As a classroom teacher that monitors water quality on the Yellow Creek a tribuatary to the Cuyahoga River please include and utilize the children in the watershed. When you educate and involve the students you also educate their extended families and promote life long environmental stewardship!” Betsy Gleason-Highland High School

Appendix V
CUYAHOGA RIVER REMEDIAL ACTION PLAN
2001 COORDINATING COMMITTEE

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Flats Industry	Jack Cox*
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Goodyear Tire & Rubber Company	Martin Trembly
Greater Cleveland Growth Association/Ohio Sea Grant	Walter Williams
Lake Carriers Association	Richard Harkins
LTV Steel	Larry Szuhay*
Samsel Supply Co.	Frank Samsel
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Greater Cleveland Boating Association	Rolf Tinge
Great Lakes Tomorrow	Jim Cowden*
Great Lakes United	Kathryn Brock
League of Women Voters	Edith Chase*
Ohio & Erie Canal Association	Tim Donovan
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Cuyahoga County Planning Commission	Virginia Aveni*
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Cuyahoga Mayors & Managers Association	Hon.Thomas Longo
Cuyahoga Valley Communities Council	Pete Henderson
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Northeast Ohio Areawide Coordinating Agency	John Beeker**
Summit County Health Department	Robert Hasenyager
Summit County Sanitary Engineering Office	Jim Demboski

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Appendix VI
CUYAHOGA RIVER
REMEDIAL ACTION PLAN
YEAR IN REVIEW
2001

"Our vision, as we enter the 21st Century, is to restore and protect the Cuyahoga River and near shore area of Lake Erie as a natural resource which we can use, enjoy, and bequeath with pride as our heritage to our children and future generations."

The mission of the **Cuyahoga River Remedial Action Plan (RAP)** is to plan and promote the restoration and preservation of beneficial uses of the lower Cuyahoga River and near shore Lake Erie. A 39 member stakeholder committee, the **Cuyahoga Coordinating Committee (CCC)**, is the principal planning body of the RAP. CCC members are appointed by the Ohio EPA. The **Cuyahoga River Community Planning Organization (CRCPO)** is a non-profit, charitable organization incorporated in 1989 to provide staff support to RAP program.

The CRCPO supports this effort with planning and coordination, technical research, stream stewardship and and other public education programs aimed at promoting the remediation of existing conditions and prevention of further pollution and other degradation. In 2001 core programming support has been provided by The Cleveland Foundation, the George Gund Foundation, the GAR Foundation, Ohio EPA and member contributions. Specific projects have been funded by the Ohio Water Development Authority, the United States Forest Service, the City of Cleveland, and the USEPA Great Lakes Program Office. CRCPO staff support the RAP Coordinating Committee and its work groups and implement supporting technical and educational programs.

RAP WORK GROUP ACTIVITIES

During 2001 five RAP Work Groups met to address priority actions. The **Fish & Aquatic Life Work Group** focuses on larval fish populations and the feasibility of improving habitat in the Navigation Channel, wetland restoration issues, the potential for dam removals, stream bank restoration and riparian area management activities. **The Wildlife Work** Group is working toward the establishment of wildlife indicator species and the development of a GIS based wildlife habitat inventory. A **Human Health Work Group** is addressing issues of fish consumption and community health in the Cuyahoga Area of Concern. The **Recreation Work Group** is concerned about issues of impairments to the recreational uses of the river and nearshore areas. The **Socio-Economic Work Group** has been focusing on issues of open space and public access to the river. The Community Involvement Committee supports the Stream Stewardship program and other public education and outreach efforts.

TECHNICAL PROGRAM

The RAP completed the final phase of its **Larval Fish Study** in 2001. This study evaluated three years of data on the the possible effects of low levels of dissolved oxygen during extreme low flow conditions on fish species that utilize the navigation channel (the lower 5.6 miles) for passage to upstream spawning areas. The study was funded by a grant from the Ohio Water Development Authority and matched with funds from the NEORSD and the City of Cleveland, and will be used to set priorities for future research, habitat enhancement, and water quality improvements.

A **Stream Restoration Education Project** funded by USEPA's Great Lakes National Program Office was also completed in 2001. This project included a series of Streamside Management Workshops on April and May for local managers and maintenance personnel from public, private, parks and institutional lands and an August Workshop on Streamside and Storm Water Management for local communities and their elected officials. This project also produced a homeowner education booklet, **Life at the Water's Edge - Living in Harmony with Your Backyard Stream** with assistance from the Summit and Cuyahoga Soil & Water Conservation Districts.

Over 7000 copies of this booklet were distributed to watershed residents in 2001.

In October, the RAP received a grant for **Prioritizing Wetlands for Restoration and Preservation in the Cuyahoga River Area of Concern** from the Ohio Lake Erie Protection Fund. When completed, this study will assist decision-makers in future land use decisions concerning preservation of wetlands.

STREAM STEWARDSHIP AND OTHER EDUCATION PROGRAMS

The RAP is seen as a primary source of public information about the Cuyahoga River. Information and material regarding the overall RAP effort, the health of the Cuyahoga River, and RAP programs is provided through brochures, fact sheets, displays at events, public meetings, and presentations through our Speaker's Bureau.

Our **RAP-UP** newsletter was published twice in 2001 and distributed to over 6,000 stakeholders, providing timely information about the goals and progress of RAP activities.

The **RAP Informational Display** traveled to over a dozen events in 2001 including the Ohio Lake Erie Conference, Earthfest '01, RiverDay, and the Cuyahoga County Fair. Over 5000 pieces of literature were distributed. RAP participated in coordinating activities for **RiverDay 2001** - A River Odyssey - the 11th annual event featuring over 20 river related activities. **RAP presentations** were made to over 30 civic, school, watershed and professional groups including CoastalZone 2001, Euclid Creek Day, the Ohio Planning Conference and Bath Nature Day.

Yellow Creek and Big Creek Stream Stewardship Projects continued progress with public forums, educational events and citizen involvement programs. The Yellow Creek Program was funded with support from the GAR Foundation. A **State of Yellow Creek Report** was completed in January and a **State of Big Creek Report** completed in April

With financial assistance from the **US Forest Service**, RAP produced and distributed over 200 **Fish Consumption Advisory Posters** which are now seen along most fishing areas of the Cuyahoga River and tributaries. The USFS also provided financial assistance to the the RAP to continue its service as a point of contact for the **American Heritage River Partners (AHR)**, which coordinates efforts to develop and implement community based projects on a watershed scale. The RAP coordinated a public input session for creating an AHR **Cuyahoga River Documentary** to be filmed for PBS.

In October, the RAP hosted **2001 Symposium: State of the Cuyahoga River** addressing current research, pollution control, recreation and stream restoration issues in the Cuyahoga River and seeking public input. Almost two hundred people attended this event which features speakers involved with ongoing river restoration activities.

2001 FUNDRAISING CHALLENGE

This year the Gund and GAR Foundations issued a challenge to the RAP to pursue new sources of funding which they would then match dollar for dollar. The RAP initiated a fundraising campaign to attract new donors. In June it held its first Burning River Fest fundraising event with help from the Great Lakes Brewing Company. This event attracted over 400 people and raised over $10,000. Other efforts produced a number of new individual donors and grants from new funding sources.