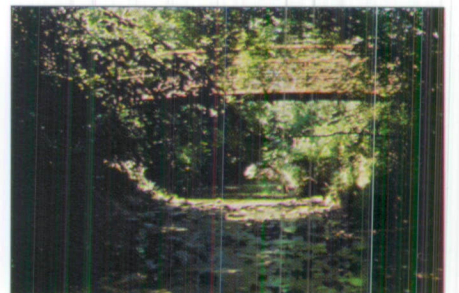


Voices of the

WATERSHED

A Guide
to Urban
Watershed
Management
Planning

Based on the
experiences of
the North Branch
Watershed Project



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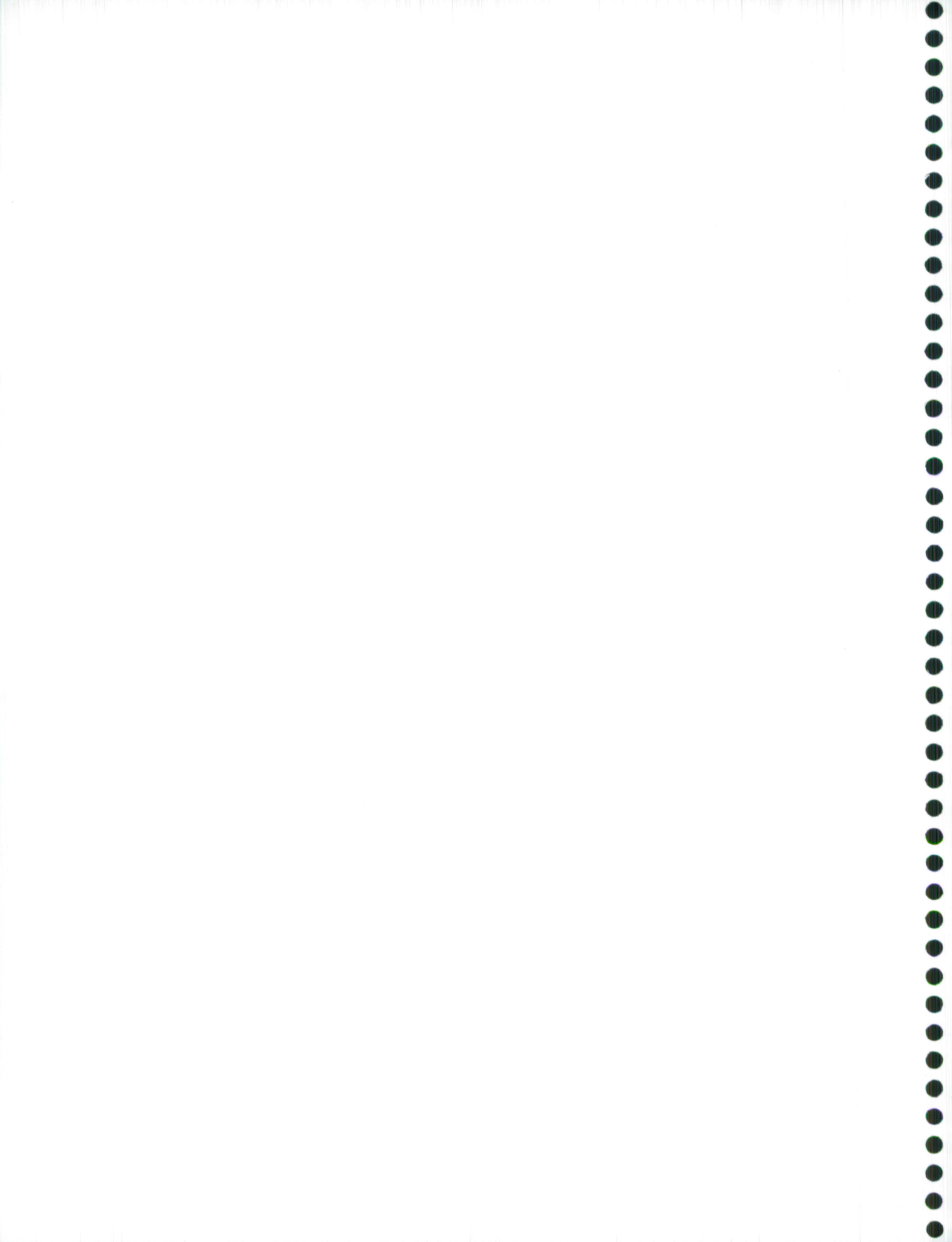
Dedication

This handbook is dedicated to the many River Champions of the North Branch of the Chicago River on whose ample shoulders our present work stands:

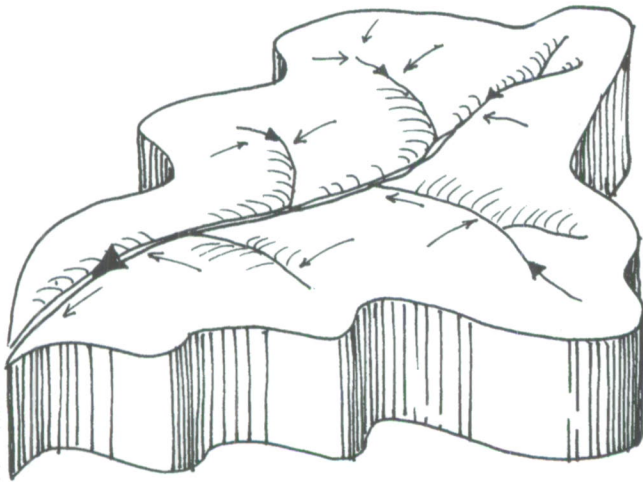
Ralph Frese, who advocated for years for improving and dedicating a canoe trail on the North Branch; Beth White, former Executive Director of the Friends of the Chicago River; Jim Louthen and the other early staff; the North Branch Action Group which initiated the planning effort on the North Branch in the late 1980s, including Sue Brogdon, Stephen Christy, David Jones, Damon Ohlerking, Richard Mariner, Bob Piper, Warren Wood and Friends' Alison Zehr; the many participants in the Voices of the Stream Conferences in 1991 and 1992; the National Park Service's Rivers, Trails and Conservation Assistance Program which sponsored the Chicago River Demonstration Project, especially Wink Hastings who guided the project and Congressman Sidney Yates who funded it through the US Congress; and many others including those who are named in the Acknowledgements section.

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1. Introduction



A WATERSHED DRAINS AN AREA OF LAND

We all live in a watershed—an area of land that drains into a stream, river, lake, or wetland. For many people that watershed is urban, consisting of cities, suburbs, and developing metropolitan areas. Urban watersheds are growing even faster than urban populations. In the Chicago metropolitan area between 1970 and 1990, the population grew by 5 percent. In the same period residential land use increased by 35 percent, changing rural or undeveloped watersheds into ones characterized by sewer-pipe “tributaries” and a growing shell of concrete and asphalt that has drastically reduced the land’s ability to absorb rain and snowmelt. These land use changes impact water quality, flood control, recreation opportunities, and wildlife habitat.

An increasing number of people are becoming involved in plans and actions to improve or reestablish healthy watersheds. More and more communities and municipalities are discussing comprehensive watershed management planning and protection strategies. New approaches in healing urban watersheds are being tried every day, resulting in a growing body of ideas and information. This handbook details the experiences and assembled expertise of agencies, organizations, and individuals who came together to develop an urban watershed management plan for the North Branch of the Chicago River. We’ve been learning as we go and have tried to share both our successes and the lessons we’ve learned.

An increasing number of people are becoming involved in plans and actions to improve or reestablish healthy watersheds.

The Friends of the Chicago River has observed that change for the better in watersheds is driven by local people.

People and Watersheds

This handbook focuses on the human processes in watershed improvement—how people become interested in and concerned about watersheds and how good watershed protection strategies inspire actions that affect our communities. The Friends of the Chicago River has observed that change for the better in watersheds is driven by local people. It is essential that people feel a sense of ownership of the watershed and in any process or plan designed to improve it.

Scientific and technical expertise also play a vital role in urban watershed management planning. There is a growing body of data concerning technical characteristics and considerations specific to urban watersheds, proven techniques for urban best management practices, as well as several good models for watershed management planning processes. This handbook summarizes this information and directs the reader to specific resources.

What is in this handbook?

This handbook will be useful to anyone concerned with watersheds from newcomers to experts. It is specifically geared toward the complexities of urban watersheds, including downtown areas, city neighborhoods, suburban areas and the developing fringe. We think that involving local people is valuable in any watershed, but it is especially crucial in urban watersheds where the health of rivers and their watersheds are closely intertwined with the actions and decisions of large numbers of people, individually and through agencies and municipalities. For issues specific to rural watersheds, please refer to *Ensuring Citizens Have a Voice: A Guide to Watershed Management Planning*. This guide is a product of the Mackinaw River Project, a sister Illinois watershed project, also sponsored by the Illinois EPA. Additional general resources are listed at the end of this handbook.

You may use this handbook in a variety of ways—you may want to read it cover to cover or you can dip into specific chapters of interest. In addition, you may use it to connect with the variety of expertise and experiences documented in the resource section.

About the North Branch Watershed Project

The Watershed

The Chicago River's North Branch represents a valuable ecological resource. Freshwater sponges, clams, mussels, herons, red fox, beavers, mink, and dozens of species of fish all call some part of the river home. About 300,000 people live in the area of the watershed covered by this project. Each year greater numbers of people walk, play, hike, boat, and canoe along the river.

The North Branch watershed project area drains 94 square miles of land in Lake and Cook counties and contains the three headwater streams of the Chicago River: the Skokie River, the Middle Fork, and the West Fork. The

predominant land use is residential in both counties; only about 2 percent of land use in the project area is industrial. About 25 percent of the area is some kind of open space, much of it managed for recreation, for example, with land designated as golf courses and forest preserves. (For more on North Branch land use, refer to the detailed watershed assessments completed for Lake and Cook counties. See the resource section at the end of this handbook for more information.) The health of the North Branch and its watershed impacts the entire downstream river and the waterways into which it flows, leading ultimately to the Mississippi River and the Gulf of Mexico. The North Branch exemplifies the many issues and opportunities facing densely populated, rapidly urbanizing watersheds.

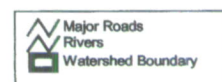
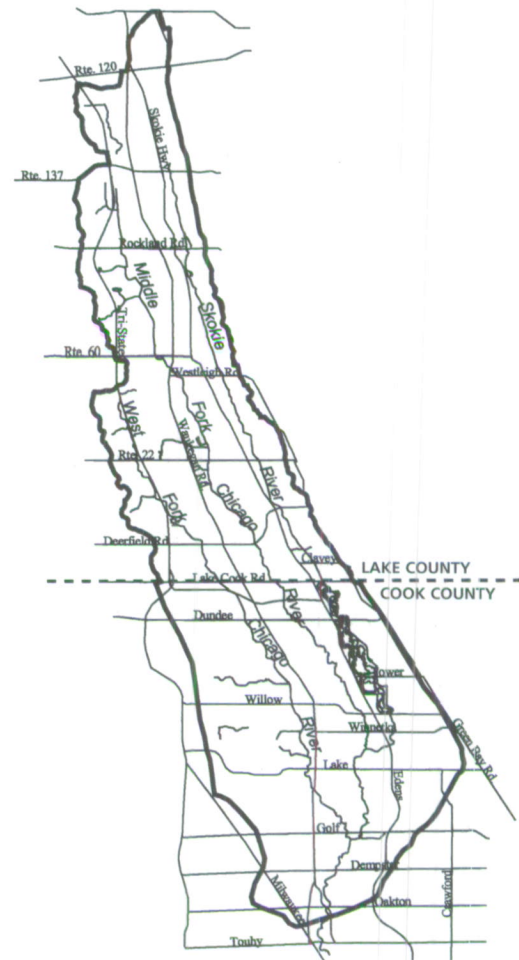
The Project

The North Branch Watershed Project is a major initiative to develop and implement a comprehensive, community-driven watershed management plan for the North Branch watershed by Friends of the Chicago River (Friends), with the support of the Illinois Environmental Protection Agency. Friends was selected because of its track record in bringing together diverse partners in restoration and planning projects. The Lake County Stormwater Management Commission (LCSMC) and Northeastern Illinois University (NEIU) led the process of assessing the watershed's condition. LCSMC led the Lake County portion of the watershed management plan. The project mission is: To combine water quality improvement, water quantity control, flood damage reduction, and natural resource protection and enhancement in multi-objective watershed management activities.

More specific project goals include:

- Assembling a comprehensive picture of the watershed's condition, seeing how the existing wealth of local information fits together.
- Bringing together people with an interest in the watershed.
- Developing an action plan to protect and maintain water quality.
- Educating children and adults about the watershed and water quality issues and involving people in stewardship.
- Identifying and implementing watershed management projects that address multiple issues such as streambank restoration, sedimentation, urban runoff, nonpoint source pollution, and stormwater control.
- Sharing what is learned on the North Branch, through this watershed protection handbook, presenting successes, challenges, and strategies encountered during this project.

NORTH BRANCH CHICAGO RIVER WATERSHED



Partners

The following partners are watershed stakeholders who have taken an active role in the watershed management planning process, demonstration projects, or provided financial support:

*The project mission is:
To combine water quality
improvement, water
quantity control, flood
damage reduction, and
natural resource protection
and enhancement in
multi-objective watershed
management activities.*

The Abbott Laboratories Fund
Chicago Botanic Garden
Chicago Wilderness
Chauncey and Marion Deering McCormick Foundation
Cook County Forest Preserve District
Dr. Scholl Foundation
Friends of the Chicago River
The Gaylord and Dorothy Donnelley Foundation
Highland Park Community Development Department
Highland Park Environmental Commission
Illinois Department of Natural Resources
Illinois Environmental Protection Agency
The Jamee and Marshall Field Foundation
McDougal Family Foundation
Kraft Foods, Inc.
Lake Bluff Open Lands Association
Lake County Forest Preserve District
Lake County Planning, Zoning, & Environmental Quality Department
Lake County Soil and Water Conservation District
Lake County Stormwater Management Commission
Lake Forest Open Lands Association
Natural Resources Conservation Service
Northbrook Park District
Northbrook Stormwater Management Commission
North Cook County Soil and Water Conservation District
Northern Illinois Planning Commission
Northeastern Illinois University
Openlands Project
Park District of Highland Park
Union Drainage District

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
Village of Northbrook
West Skokie Drainage District

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Lake County Board Member Carol Spielman dedicated Prairie Wolf Slough Wetlands Restoration Project.



How the North Branch Watershed Project Developed

Recent interest in watershed improvements on the North Branch can be traced to the early 1990s when Friends of the Chicago River facilitated Voices from the Stream, a pair of conferences held at the Chicago Botanic Gardens. A diverse group of stakeholders assembled and shared stories about the North Branch—an anecdotal assessment of conditions in the watershed as well as a variety of visions for the potential of the stream and its watershed. One of the ideas that came out of this process was the recognition of a need for planning. At this point several national players became involved. The National Park Service's Rivers, Trails and Conservation Assistance Program offered technical assistance. A staff person from U.S. Congressman Sidney Yates's office volunteered resources to help build on the local momentum for watershed improvements. What came out of this was the **Chicago Rivers Demonstration Project (CRDP)**, later known as the **Chicago-Rivers Project**. The initial CRDP partners included the National Park Service, Friends of the Chicago River, and numerous federal agencies. CRDP was initially designed to provide a comprehensive assessment of the entire 156-mile Chicago River system. Wanting to keep enthusiasm and momentum going, Friends advocated the addition of several demonstration projects that would complement the large-scale planning process with some more immediate action. The U.S. Fish and Wildlife Service and other CRDP partners aided in



the identification of several projects. One of these was Prairie Wolf Slough, a wetland restoration project on the Middle Fork. (See the sidebar “Prairie Wolf Slough: A Volunteer Extravaganza” in chapter 9. See also the National Park Service's *What's Working on Working Rivers—Ideas for Urban River Restoration* for additional coverage of Prairie Wolf Slough and other CRDP demonstration projects.)

Prairie Wolf Slough, in addition to its tangible benefits for the environment, brought together several local partners, including Friends of the Chicago River and the Lake County Stormwater Management Commission (LCSMC), as well as federal partners to make the project a success. Illinois EPA was a funding source for the project. The activities involved in undertaking a complex project built trust between the partners, got agencies working together, and laid the groundwork for the relationships and cooperation that are needed for the sustained effort of watershed management planning.

Around this time, the Illinois EPA was in the process of selecting two Illinois watersheds—one rural and one urban—as sites to develop watershed management plans. The watershed man-

agement planning process would be chronicled in handbooks that would serve as resources for people interested in planning for their own watershed. Illinois EPA identified the Mackinaw River as the rural watershed project and the North Branch of the Chicago River as the urban watershed project. The collaborative work at Prairie Wolf Slough encouraged Illinois EPA to choose the North Branch for the urban watershed planning effort.

LCSMC and the Friends represented only part of the project's active leadership. In early 1995 Friends and the LCSMC assembled a group of stakeholders who would be active participants in the watershed management planning process. They convened CRDP and Prairie Wolf Slough participants and others who had shown a sustained interest in the watershed. These organizations and individuals attended meetings and grappled with watershed management planning issues long before any funding for a project was confirmed. About 20 organizations were represented, with about a dozen organizations forming a core group, which later on became the North Branch planning committee. It was this collection of active stakeholders who got the North Branch Watershed Project off the ground, made major decisions, wrote a proposal for Illinois EPA funding, decided on the project's scale and boundaries, and developed an initial working structure and the project's mission, goals, and objectives.

2. About Urban Watersheds

WORDS TO KNOW

watershed: an area of land that drains into a given stream, river, lake or wetland.

As a watershed becomes more urban, it becomes both more unique and complex.

—Keith Eichorst, Community Planner,
USDA Natural Resources Conservation Service.

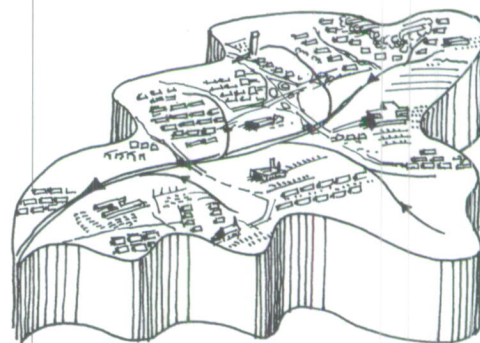
This chapter explains basic watershed concepts and defines urban watersheds and their special characteristics and problems.

What is a watershed?

A watershed is the area of land that drains into a given stream, river, lake, or wetland. A watershed includes not just the surface of the land, but also the area below the surface. The North Branch of the Chicago River, for example, drains 94 square miles of land in Lake and Cook counties. The health of our water is a direct reflection of how the land in its watershed is used.

What Is an *Urban* Watershed?

For the purposes of this handbook, an urban watershed is defined as including both urban downtown areas, city neighborhoods, suburban municipalities, and unincorporated areas characterized by encroaching urban sprawl. The ways people live in urban areas have dramatic effects on the health of urban watersheds and waterways. Our storm and sewer systems and our roads, highways, parking lots, and other expanses of paved surfaces all impact urban watersheds, causing water to move more quickly off the land, which results in larger amounts of water surging through streams in shorter periods of time.

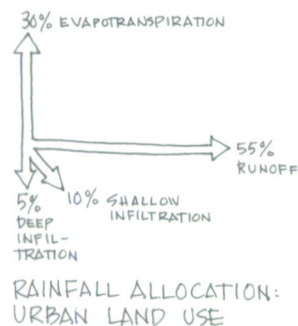
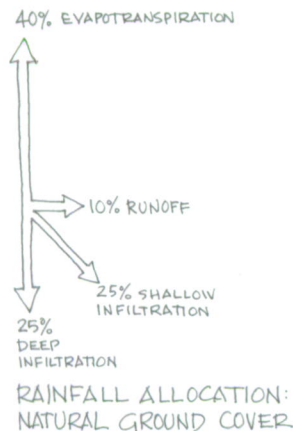


URBANIZING WATERSHED

WORDS TO KNOW

urban runoff: water from rain or snow events that runs over surfaces such as streets, lawns, parking lots and directly into storm sewers before entering the river rather than infiltrating the land upon which it falls.

nonpoint source pollution: nonpoint source pollution (NPS) is the diffuse, intermittent runoff of pollutants from various sources.



Source: Northeastern Illinois Planning Commission

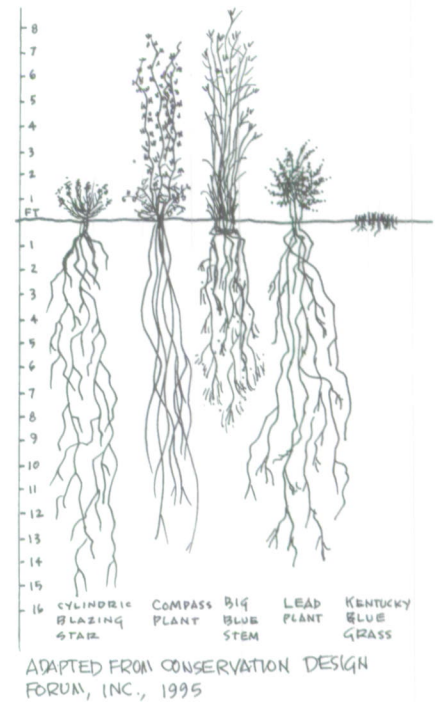
To look at these alterations in a little more depth, consider what the three tributaries that make up the North Branch were probably like before European settlement. The West and Middle Forks and the Skokie River were probably shallow or intermittent streams that were surrounded by expanses of wetland. The area on the Skokie River now known as the Lagoons was a vast marsh, the Chewab Skokie. There and elsewhere, the deeply meandering paths these streams carved may have been changing and sometimes indistinct, blurring with the surrounding wetlands. Water levels in these streams were probably never

high and changed gradually due to the undisturbed ability of the floodplains and the watershed to soak up rainfall and snowmelt. Deep-rooted native vegetation was important in helping the land soak up and store—like a sponge—large amounts of water from storm events. The water was then gradually released back into streams. The system supported a broad diversity of plant and animal life.

Today the headwaters of the Chicago River are year-round streams or channels that run in generally straight paths, often between steep, eroded banks. Overall, they carry a far greater volume of water than their ancestor streams. After rainstorms, water that once soaked into the floodplain or the absorbent land of the watershed now runs quickly into stream channels often causing severe erosion of the stream bed and banks and depositing sediment downstream. The water that runs directly over streets and lawns and into storm drains is called **urban runoff**. Along the way the urban runoff picks up a potent charge of pollutants—ranging from salt and motor oil to eroded soil, lawn pesticides, fertilizers, and pet wastes—before eventually flowing into the river. This kind of pollution is called **nonpoint source (NPS) pollution**. Other major sources of NPS pollution in an urban watershed like the North Branch include construction erosion and the increased flow regime (changed hydrology) of the stream mentioned above.

The reduced ability of land to absorb the increased runoff water also creates sudden, dramatic, and damaging variations in water flow; storms now result in brief yet large pulses of water moving through the river. These pulses quickly pass through the system, leaving normal river levels reduced, which results in elevated water temperatures, lower dissolved oxygen levels, and impoverished aquatic life. Worse yet, the dramatic pulses in water flow also cause streambank erosion, which destroys river habitat, and further pollutes

PRAIRIE PLANTS' ROOT SYSTEMS



the water with sediment.

Many experts use the term **sewershed** to describe urban watersheds, to emphasize that the urban stream no longer has many natural tributaries. These have largely been drained or filled and replaced by stormsewer and wastewater treatment plant connections.

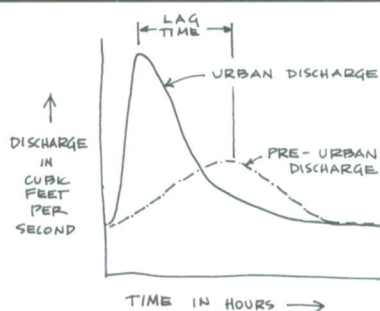
The term sewershed is a short-hand reminder of the two main causes of urban watershed degradation:

- The growing percentage of paved or impervious land, which has a reduced ability to soak up moisture.
- The increasing numbers of ever-larger storm and sewer drain connections.

These changes to the urban watershed tend to be worsened by changes to the urban stream itself. Often the stream is **channelized**, that is, straight, deep channels have been dug that are lined with steel sheet piling, concrete, or other hard edges. Even where the watershed and stream corridor have not been paved, deep-rooted native vegetation has often been replaced by shallow-rooted lawns or invasive introduced species such as buckthorn that greatly reduces water absorbing and soil holding capacity. At the most extreme, the stream may be reduced to a completely concrete channel, as in the case of the Los Angeles River, or it may run through a culvert or pipe, like the headwaters of the Skokie River.

What Lives in an Urban River?

The North Branch is still an important ecological resource. A recent survey by the U.S. Fish and Wildlife Service found the Iowa Darter, a fish species endangered in the state of Illinois, in the West Fork. In the same study other stretches of the North Branch were found to support relatively pollution intolerant **benthic macroinvertebrates**. On the Chicago River as a whole, leeches and scuds, which are more tolerant of pollution, predominate in many areas. Mussel and clam diversity is also greatly reduced. Even so, the river as a whole supports as many as 50 species of fish, as well as freshwater sponges, mink, beaver, and several species of heron and duck. It is also an important migratory corridor for songbirds.



URBAN STREAM DISCHARGE AFTER A RAIN EVENT



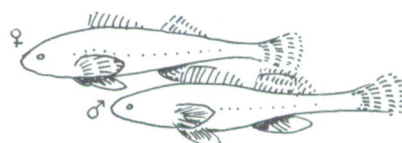
Often the stream is **channelized**, that is, straight, deep channels have been dug that are lined with steel sheet piling, concrete, or other hard edges. Even where the watershed and stream corridor have not been paved, deep-rooted native vegetation has often been replaced by shallow-rooted lawns or invasive introduced species such as buckthorn that greatly reduces water absorbing and soil holding capacity. At the most extreme, the stream may be reduced to a completely concrete channel, as in the case

sewershed: an area of land whose stormwater drains into a common storm sewer.

channelized stream: a stream that has been artificially straightened, deepened, or widened to accommodate increased stormwater flows, to increase the amount of adjacent land that can be developed or used for urban development, agriculture or for navigation purposes. In addition to being unsightly, channelized streams have a uniform gradient, no riffle and pool development, no meanders (curves) and very steep banks. The vegetation is frequently removed and replaced with rip-rap, concrete or other hard surfaces. During low-flow periods in the summer, many channelized streams have low dissolved oxygen levels. Under these conditions, they provide poor habitat for fish or other stream organisms such as benthic macroinvertebrates.

benthic macroinvertebrates: bottom dwelling (benthic) invertebrates which can be seen by the unaided eye (macro). Most benthic macroinvertebrates in flowing water are aquatic insects or the aquatic stage of insects, such as stonefly nymphs, mayfly nymphs, caddisfly larvae, dragonfly nymphs and midge larvae. They also include such things as clams and worms. The presence of species of benthic macroinvertebrates that are intolerant of pollution is a good indicator of good water quality.

IOWA DARTER

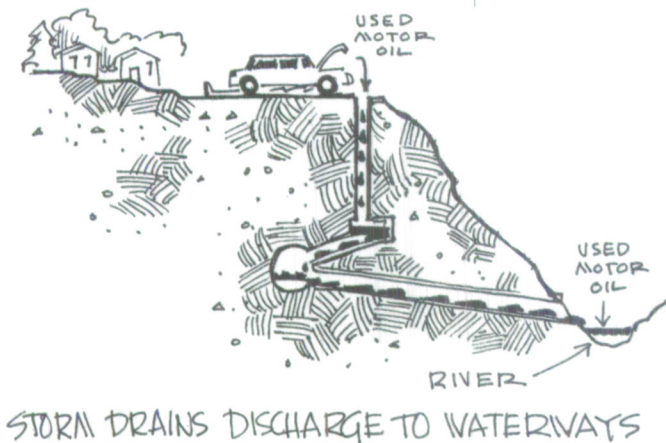


Etheostoma exile

People in Urban Watersheds

People have long shaped watersheds to suit human needs. The American car-dependent lifestyle has had far reaching direct and indirect effects on watershed health, generating sprawled development with roads, highways, and vast shopping mall parking lots, or “car habitat,” as Tom Schueler of the Center for Watershed Protection calls it. Cars also mean chemicals—road salt and other deicing chemicals in winter and motor oil and gasoline and copper from brake linings all year round.

Whether applied intentionally, in the case of road salt, or unintentionally in the case of leaking oil or gasoline, it all ends up in the water.



Watersheds and Governments

Urban dwellers place other demands on the watershed and its water as well. For example, we want clean drinking water, and we don't want our basements to flood. In most communities people have given various units of government responsibility for taking care of these concerns. In many municipalities there are departments responsible for flood control or drainage, for sewage treatment, for land use planning, and for providing tap water.

All this means that urban watersheds are highly complex in terms of land use and governance as compared to a typical rural watershed. A nonurban watershed may be under the jurisdiction of one or two agencies and its acreage may be owned by a handful of individuals. By contrast, urban watersheds are often home to thousands of individuals and landowners and may be in the domain of numerous agencies with overlapping and even contradictory responsibilities. Governmental boundaries—county and state lines, for example—rarely, if ever, match watershed boundaries. These issues are of particular concern in Illinois, which is a state with a large number of government entities compared with other states.

Thus any attempt at watershed change in urban areas has to address this fragmentation by bringing people and agencies together and promoting cooperation between agencies and municipalities. Successful watershed change means addressing another kind of fragmentation as well, helping reconnect people with the watershed.

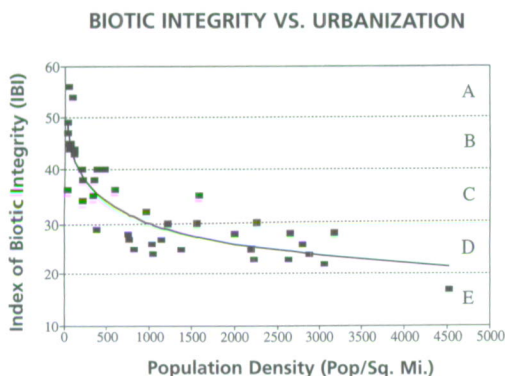
Why Watersheds Matter

The condition of urban watersheds has real consequences. Healthy watersheds can offer many benefits including:

- a healthy river through improved water quality

- enhanced opportunities for recreation, environmental education, and environmentally sustainable economic revitalization
- enhanced wildlife habitat
- reduced flooding problems
- an ensured safe drinking water supply

Technical Means for Understanding Urban Watersheds



Note: Higher numbers for the Index of Biotic Integrity are an indication of a healthier, more diverse aquatic community as measured by the numbers and diversity of the fish population. Source: *Northeastern Illinois Planning Commission*

Watershed experts have developed techniques for understanding or predicting what types of restoration practices will be successful in urban watersheds in improving stream quality. One technique uses computers to simulate watershed processes. Another examines a factor such as percentage of **impervious surfaces** or human population and analyzes its correlation to indicators of stream or watershed health, such as fish popula-

tions. For example, a Northeastern Illinois Planning Commission study shows that watershed degradation is closely tied to increasing population densities. Higher concentrations of people tend to increase the stresses on a watershed and its water resources.

The Center for Watershed Protection, a nonprofit organization devoted to research and technical assistance on urban watersheds, has tracked the close correlation between stream quality and impervious surfaces within the watershed. Their work has shown that even relatively small increases in impervious surface on the order of 10 to 15 percent, have significant impacts on water quality, biodiversity, and soil erosion. Based on an examination of research around the country, the Center has grouped streams and their watersheds into three categories according to the amount of impervious surfaces. The resource objectives and types of restoration activities appropriate for each stream differ. The Center advises that restoring the most degraded streams to presettlement conditions in terms of water quality and the biological community may not be feasible.

Other Ways of Understanding Watersheds: What Science Alone Cannot Tell Us

Even the most trashed urban watersheds have promise and can be changed for the better, if the human will is there. As Laurene von Klan, Executive Director of the Friends, says, "People look at what's being accomplished on the Chicago River and say, 'Wow, if you can do that on your trashed river, think what we could do on ours.'" When people succeed in

WORDS TO KNOW

impervious surfaces: the land in a watershed—expressed in an area or percentage—covered by hard surfaces that prevent the infiltration of water into the soil. Impervious surfaces are the asphalt or concrete roads, parking lots, buildings or other "hard surfaces" that are relatively impenetrable to the movement of water.

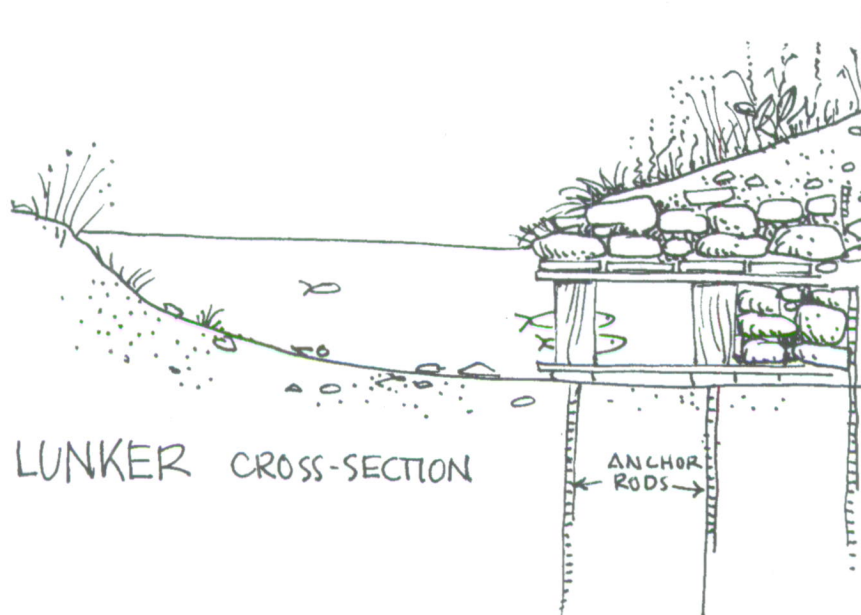
When people succeed in making improvements on the most developed urban watersheds, it serves as an inspiration to people concerned about watersheds everywhere.

making improvements on the most developed urban watersheds, it serves as an inspiration to people concerned about watersheds everywhere.

Demonstration projects and watershed management planning efforts around the country are showing that urban watersheds can be improved. Urban watersheds like the North Branch will probably never be restored to what they once were. But people working in agencies, nonprofit organizations, and as groups of interested stakeholders are showing that there is hope for watershed improvement. Using watershed management planning, science, community organizing, vision, and elbow grease, people are changing watersheds for the better.

As succeeding chapters of this handbook will show, a variety of tools are needed to heal urban watersheds. Sound science and technical information are important, but involved and committed people are also keys to success. Changing how people interact with rivers and watersheds and expanding their sense of concern and opportunity is as vital as physical changes to the watershed.

3. Steps in Comprehensive Watershed Management Planning and Strategies



This chapter provides a brief overview of steps or components in watershed management planning, presenting model processes and outlines for an ideal planning process. It will also present an outline of the watershed management planning process as it is actually happening on the North Branch of the Chicago River. Succeeding chapters examine individual topics in watershed management planning in more detail.

Keep in mind that there is no recipe nor one right method for watershed management planning. Every watershed is different and in any real-life planning process, steps often overlap and sometimes need repetition at successive stages of the process. This is not a sign of failure; good planning needs to respond to actual conditions and concerns of stakeholders in your watershed.

Tom Krapf of the Natural Resources Conservation Service (NRCS) emphasizes that whatever watershed management planning process you use, the reality is not always tidy. When you get into the details of a specific watershed management planning effort he says, “[you find] every watershed is different; planning is not...linear.”

Participants in the North Branch Watershed Project did share one strong opinion about watershed management planning—that meaningful public involvement is critical to a successful plan. Another common factor was an

...good planning needs to respond to actual conditions and concerns of stakeholders in your watershed.

WORDS TO KNOW

multi-objective planning: using a planning process that incorporates multiple concerns — water quality, flooding, and natural resources — rather than attempting to address only one isolated issue.

emphasis on **multi-objective planning**, for example, using a planning process that incorporates multiple concerns—water quality, flooding, and natural resources—rather than attempting to address only one isolated issue.

Another important consideration in selecting an appropriate planning process is knowing what you want to achieve. Initial participants in your watershed management planning process need to develop a mission statement and a common set of goals to work with.

Watershed Management Planning Processes

The North Branch Watershed Project partners examined and drew from the wisdom of several approaches to watershed management planning in designing their own process. Two local approaches used in northeastern Illinois included that of the Northeastern Illinois Planning Commission (NIPC) and that of the NRCS.

The **NIPC approach**¹ has been used successfully in numerous places in northeastern Illinois, most notably perhaps on Flint Creek. NIPC emphasizes a solid scientific understanding of the watershed. The steps in this approach are as follows:

- Establish mission, goals, and objectives.
- Inventory watershed resources and conditions.
- Analyze watershed problems.
- Recommend best management practices or solutions for problem remediation and prevention.
- Develop an effective action plan.

Dennis Dreher of NIPC emphasizes that effective solutions can be selected only after solid assessment and analysis: “You need to define uses, impairments, causes and sources. Based on that you select best management practices.” NIPC’s method is based on good science, but, as discussed in chapter 4, it also depends on community interest.

Community interest is the linchpin of the **NRCS process**.² They outline their watershed management planning process as follows:

Phase 1: Know Your Watershed

Identify concerns

Establish objectives or desired future conditions

Inventory resources

Analyze data

Phase 2: Develop a Plan

Formulate alternatives

Evaluate alternatives

Develop an action plan, including priorities, funding, technical assistance, responsibilities, and time frame required.

1 See Dennis Dreher, *Model Watershed Management Strategy for the Control of Urban Waterbody Use Impairments in Lake County, Illinois* (Northeastern Illinois Planning Commission, July 1994).

2 Natural Resources Conservation Service. “Watershed Planning.”

Phase 3: Implementation and Monitoring

Obtain technical assistance
Obtain funding
Measure and report progress

NRCS also provides a simplified process for resource planning:

- Decide what you want.
- Determine ways to get there.
- Decide on a plan.
- Implement the plan.
- See what happens.

The staff of NRCS emphasizes that it doesn't matter what you call the process you use or how many steps you use.

The North Branch Project Experience

So much for planning processes. What follows is a summary of how watershed management planning actually progressed in the North Branch Watershed Project. Note that many steps in the process are ongoing or repeated in multiple phases of the project.

1. Develop a watershed management planning partnership, organization, or committee with relevant stakeholders.

Who: Initial ad hoc planning committee members, led by the Lake County Stormwater Management Commission (LCSMC) and Friends of the Chicago River.

Timing: At project's beginning, though structure allowed for new participants to join in at later stages.

More information: See chapter 1 sidebar, "How the North Branch Watershed Project Developed"; see also chapters 4 and 5.

2. Funding for watershed management planning efforts.

Who: Planning committee.

Timing: At project's beginning for planning funds; a second phase to fund projects and implementation.

More information: See chapter 6.

3. Formulate project goals and objectives statement.

Who: Planning committee and other stakeholders.

Timing: Initial goal at beginning of project; final goals after the assessment phase.

More information: See chapter 8.

4. Perform watershed inventory and identify and collect existing studies and other watershed resources.

Who: LCSMC, Northeastern Illinois University, or other organizations such as local soil and water conservation district or NRCS.

More information: See chapter 7.



IEPA's WIP Guidance Document³

The Illinois EPA's Watershed Implementation Plan Guidance Document establishes a useful and complete outline for developing and implementing a holistic, comprehensive watershed implementation plan (WIP).

The components of a WIP are:

1. Mission Statement
2. Watershed Description
3. Watershed Activities
4. Watershed Resource Inventory
5. Problem Statements
6. Goals/Objectives
7. Implementation Strategies
8. Cost Summary
9. Implementation Strategy Selection
10. Measuring Progress/Success

³ Illinois EPA, Draft *Guidance for Developing Watershed Implementation Plans in Illinois*, (Illinois EPA, Bureau of Water, Springfield, IL, March, 1998).

Education and outreach was a continuous part of the entire process.

5. Outreach to stakeholders.

Who: Assessment and Planning committees, educational outreach initiative led by Friends and Chicago River Schools Network.

Timing: At beginning, during assessment and ongoing.

More information: See chapters 7, 8, 9, 10, and 11.

6. Analyze watershed problems and identify and develop multi-objective opportunities with public input.

Who: Planning committee (LCSMC and Northeastern Illinois University) and other stakeholders.

More information: See chapters 7, 8, and 9.

7. Develop draft watershed management plan.

Who: Planning committee (LCSMC).

Timing: After watershed analysis completed.

More information: See chapter 8.

8. Obtain public input and review of draft watershed management plan; finalize plan including implementation schedule.

Who: Planning committee, with other stakeholders' input.

More information: See chapter 8.

9. Develop implementation schedule and write final watershed management plan.

Who: Planning committee with other stakeholders (especially stakeholders who will be directly involved in implementation).

More information: See chapter 8.

10. Communicate findings to stakeholders.

Who: Planning committee.

More information: See chapters 8 and 11.

11. Implement plan.

Who: Planning committee and new participants.

More information: See chapters 9, 10, and 11.

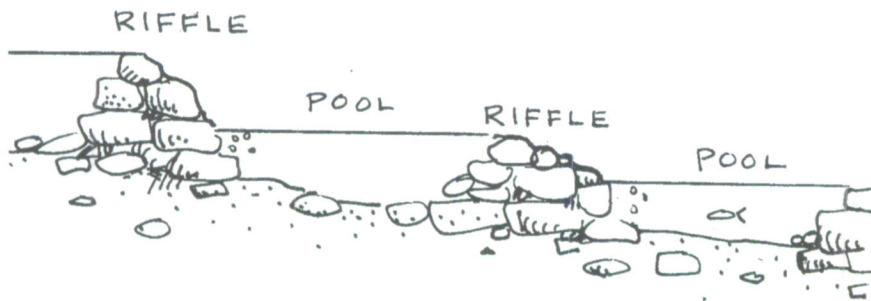
12. Review and update plan on regular schedule or cycle.

Who: Planning committee and new participants.

More information: See chapters 4 and 11.

It is important to emphasize that these steps do not happen in a linear fashion. For example, with the North Branch Watershed Project, the stakeholders who formed the original committee to lead the planning effort formulated a general set of goals to provide direction to the process. Goals were refined and confirmed at the River Rap, where public input and consensus was developed as part of the phase of identifying multi-objective opportunities. Education and outreach was a continuous part of the entire process.

4. Getting Started: Urban Watershed Management Planning Considerations



SYSTEM OF POOLS & RIFFLES

Considering the complex array of challenges that face urban watersheds, how can watershed management planning help heal them? Successful watershed management planning requires rethinking, not just about our storm drains but also about our institutions and ways of doing things.

A watershed management plan examines all the different aspects—natural and social—of the watershed. It coordinates the activities of diverse municipalities and agencies and provides a blueprint for integrating activities and overcoming the fragmentation that plagues urban watersheds.

Watershed management planning is a significant collaborative venture in healing a watershed. A successful watershed management plan leads to action and improvements within a watershed. It broadly defines and involves as many stakeholders as possible; it brings together the specialized expertise of partners; it intertwines thoughtful planning with effective and inspiring action. This chapter looks at some issues to consider as you decide whether your watershed would benefit from this type of planning. Other chapters in this handbook look at the steps of effective planning in detail.

Watershed management planning is a significant collaborative venture in healing a watershed.

The newer model...presumes that anyone with an identifiable "stake" in the watershed has a right to help decide its fate by participating in the watershed management planning process.

Different Styles of Planning

Watershed management planning has evolved over the years. According to David Ramsay of Friends of the Chicago River, "Current, state-of-the-art watershed management planning is light-years ahead of old, top-down approaches, which usually produced documents that sat on shelves, rarely inspiring action or seeing the light of day." The newer model is more democratic and consensus oriented. It presumes that anyone with an identifiable "stake" in the watershed has a right to help decide its fate by participating in the watershed management planning process.

Kent Sims of the Natural Resources Conservation Service (NRCS), which has aided many citizens and communities with planning efforts, categorizes planning into two broad types: program-driven, or top-down, and grassroots. NRCS focuses on facilitating grassroots planning. "We facilitate, rather than drive planning," explains Sims. No matter how valuable the goals of top-down planning, or how great the need for planning in a given community or watershed, Sims favors grassroots planning because it tends to be more successful. "When other people do the plan and hand it to local people [it is less likely to get implemented]."

Planning in Urban Watersheds

How Does Consensus-Based Watershed Management Planning Work in Urban Watersheds?

The density and complexity of urban watersheds have negative impacts on water quality that potentially can be improved through planning. What happens in one part of the watershed, whether healthy or not, has an influence both upstream and downstream. Yet in too many places our laws, institutions, and practices are not set up to accommodate the interconnectedness of water. In many communities the web of natural and artificial drainage patterns that characterize urban watersheds are not only physically but also culturally invisible. Often zoning laws, property lines, drainage districts, roads, and municipal borders have all been developed in ignorance of the watershed's very existence. These are all issues that can be addressed through watershed management planning. At the same time, these urban issues of density, complexity, and fragmentation are often major obstacles to watershed management planning and implementing watershed improvements successfully.

Patricia Werner of the Lake County Stormwater Management Commission (LCSMC) says, "A densely populated, highly urbanized watershed complicates the planning process." It is not feasible to have every one of the tens of thousands of people who may live in a small urban watershed play an active role in a watershed management planning process. Even getting decision makers representing every North Branch watershed municipality was beyond the scope of the North Branch Watershed Project. Thus, the very issues that create a crying need for watershed management planning in urban watersheds also make planning a challenge.

Watershed and Project Scale

One of the most challenging issues to emerge in early planning meetings of the North Branch Watershed Project was that of watershed and project scale. The North Branch of the Chicago River has a narrow, linear watershed that encompasses two counties and 94 square miles. Project leaders recognized that the whole area originally considered would be difficult to undertake but were unable to break the watershed down into smaller, but still hydrologically meaningful units.

Why would a small scale be useful? Because it is one way to deal with the complexity and difficulty of urban watershed management planning. It reduces the number of people who live in the area and reduces the number of municipalities and agencies who need to be involved. Sims suggests “break[ing] it down into the smallest unit possible, where people feel they have a stake” as one management option in an urban watershed. But smaller is not always better. If you choose a planning area that is too tiny, it will do little to overcome fragmentation and lack of coordination between jurisdictions. Sims says, “the plan scale needs to be big enough to solve the problem.”

The Illinois Environmental Protection Agency recommends no more than a 40-square-mile area for comprehensive watershed management planning efforts in urban areas. At the same time it is important to make sure that your watershed is “complete.” According to Chris Davis of the Illinois EPA, “A small area that does not include all sources of pollution will keep you from your final goal of good water quality.”

The scale chosen for the North Branch was a compromise based on the awkward, linear shape of the watershed and the commitment of the Steering Committee to include both Cook and Lake counties. This meant a more regional scale for the project. Selecting a large area added to the project workload, especially in getting reasonable representation and doing adequate outreach. At the same time, a watershed management project that only dealt with one of the two counties would not have addressed critical issues within the watershed.

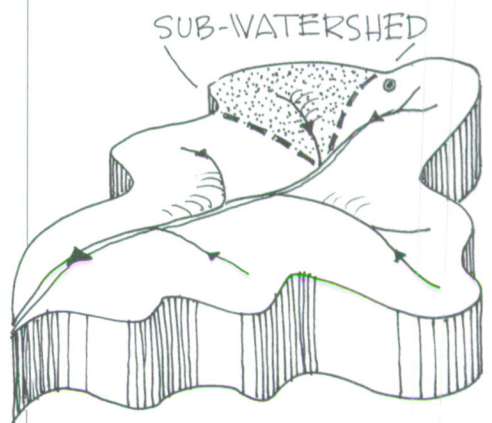
What Strategies Will Help Make Your Effort Successful?

The North Branch Watershed Project emphasizes:

- Avoiding single-minded planning.
- Going for the light.
- Reconnecting people with the watershed and its water.

Successful watershed management planning turns the complexity of urban watersheds into an advantage. Water quality, flooding, open space, wildlife habitat, and development—all these issues relate to and can be addressed through watershed management planning. Any one of these issues can spark an interest in watersheds and watershed management planning. The most successful plans usually address more than one of these issues.

Experience has shown that consideration of only one variable—for example,



A WATERSHED HAS SUB-WATERSHEDS

Don't Be Single Minded

Multi-objective [watershed management] planning results in environmentally and economically acceptable solutions to watershed problems. The multi-objective planning process reinforces the "watershed perspective." If people think in terms of the whole watershed [or subwatershed], they will come up with more potential solutions, and the solutions they choose will [less likely] cause problems for someone else.

—Ward Miller, Lake County
Stormwater Management
Commission

movement of stormwater—abstracted from other variables (water quality, habitat) has created some of the very watershed problems and damage that people are now trying to remedy. Dennis Dreher of NIPC emphasizes this point by noting that "multi-objective [planning] is critical." Plans that address multiple issues succeed and get enacted, because they enjoy the broadest support.

Going for the Light

Change in a watershed is like a forest fire, which progresses not as a solid wall or advancing line of fire but by scattered "scout" fires. Sparks and burning debris start scout fires, some of which fizzle out, lacking fuel or other favorable conditions; others take hold, spread, and link up with the mother fire. Successful watershed strategies capitalize on this apparently random type of change. Friends calls this "going for the light," that is, working to generate interest and working with whoever is interested and ready to work with you.

According to Ramsay, this approach is based on the belief that "people's energy, leadership, stewardship, and enthusiasm are what changes watersheds for the better." Going for the light involves starting with issues and areas of concern to people and building from there. Jim Rospopo of NRCS says, "You can't stand up and dictate to people." He says successful watershed management planning grows out of "what the people of the area want. When people have a personal interest, that's when they get things done."

Carol Spielman, a Lake County Board member who is also on the Executive Committee of the Stormwater Management Commission (LCSMC) emphasizes taking advantage of opportunities wherever they arise. "It's not always consecutive steps, one at a time. Even if you've got a plan...you should seize a new opportunity if it arises. Sometimes one small step leads to a solution."

Reconnecting People with the Watershed

The task of reconnecting people with their watersheds is an ongoing process. This is something that happens before, during, and after the creation of a watershed management plan. North Branch project partners and watershed experts all agree that it is never too early in the process to focus on reconnection.



Tom Krapf of the NRCS has worked with a variety of northeastern Illinois communities on watershed management planning and notes, "We do conservation tours before we start identifying resource problems. We start at the top of the watershed and end at the bottom [downstream]." This kind of introduction to the watershed "gives people an overview and puts people on the same page." (For in-depth treatment of this essential strategy, see chapters 9 and 10.)

How Can You Tell Whether Your Watershed is Ready, or Ripe, for Planning?

Here are some questions to consider before you start:

- Is there public interest in or knowledge about the watershed or the river, lake, or stream? Or are there public concerns about water quality, flooding, or other watershed-related issues?
- Are there agencies and organizations that can help promote watershed management planning and implementation?
- Have there been previous studies, planning efforts, or demonstration projects relating to the watershed?
- Does your watershed have a mix of interested groups and individuals who will become involved in the watershed management planning process?
- Are there potential sources of financial support for your effort?

A Word about Money

Lack of funds is not a reason to postpone bringing stakeholders together for watershed management planning. Be realistic, however, about how far you can proceed without any money; focus on a few key priorities.

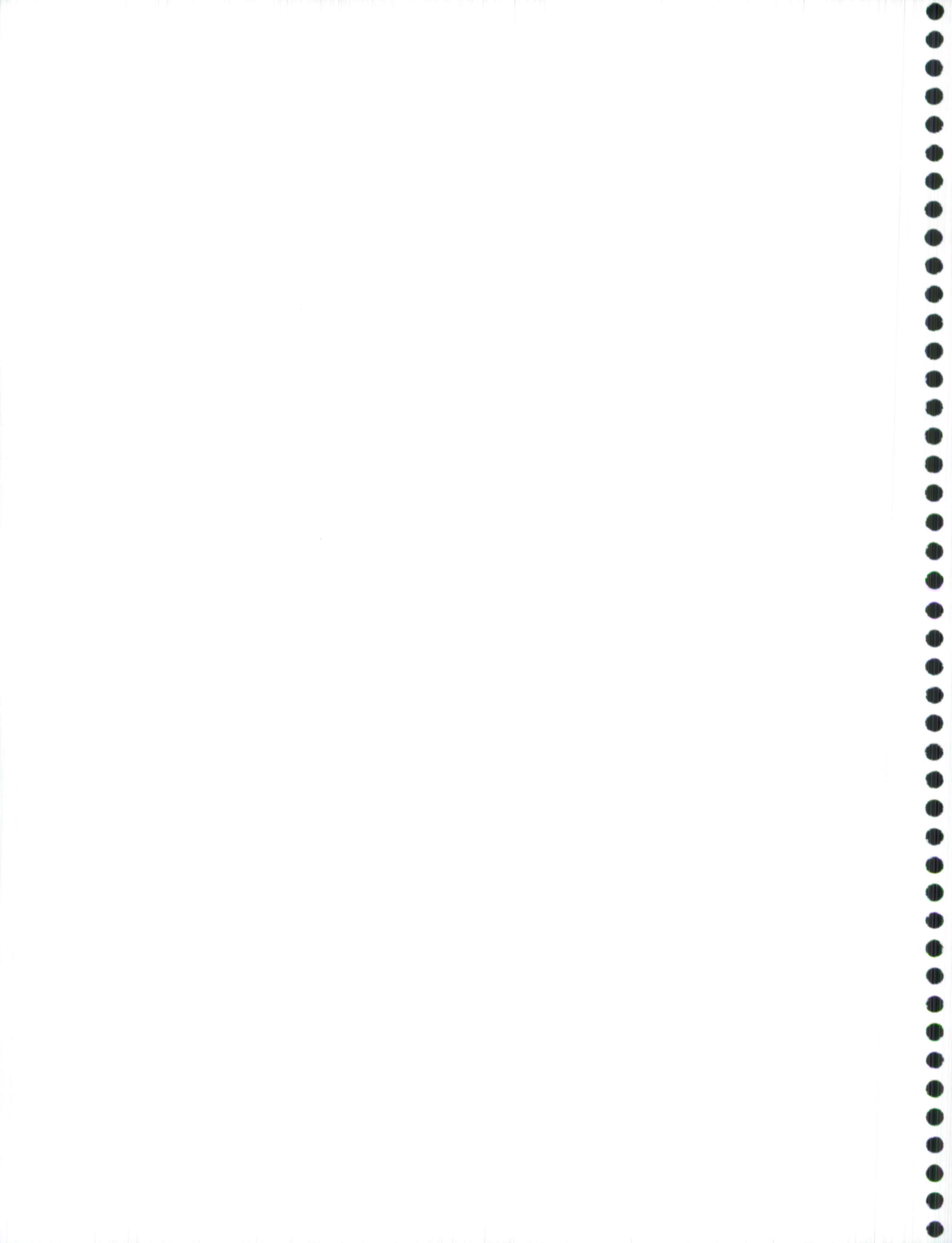
On the North Branch one of the factors that helped us get started was funding. The track record of Friends, LCSMC, and other stakeholder organizations in obtaining funding and completing efforts like the Prairie Wolf Slough wetland restoration project helped attract funding for watershed management planning. The money has followed the ideas and programs. We advise other fledgling watershed groups to develop an agenda, goals, and a vision and then to start organizing. You have to believe in your mission and in its ability to attract support. (See chapter 6 for more information on money issues.)

Planning and Time—One More Thing Before You Start

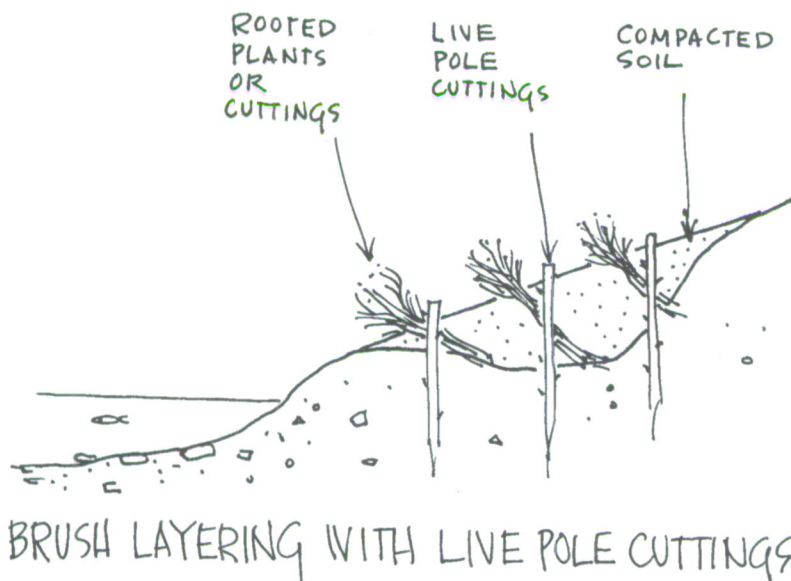
Suppose you and your watershed are ready for planning. Be prepared for the fact that watershed management planning takes time. Krapf of the NRCS explains that the amount of time “varies, but [that you should] expect to spend a year or two on the plan [alone].” In addition, remember that the drafting and acceptance of a planning document is just one piece of the picture. A good watershed management plan will lead to projects and policy changes in your watershed and to the implementation phase.

Plans are assembled based on the best available information and analysis available at the time the plan is developed. As a result, says Sims, “Plans need updating; it’s the nature of things.” You can’t know all the information, projections change, people’s interests change. There is no one watershed management plan for all time.

We advise other fledgling watershed groups to develop an agenda, goals, and a vision and then to start organizing.



5. Participation, Partnerships, and Process



If there is one important message to convey about watershed management planning, it would be: Don't Do It Alone.

—Chris Davis, Illinois
Environmental Protection Agency

Without question...collaborations break down barriers, overcome fragmentation of services, and establish productive linkages between agencies and the communities they serve.

—David Ramsay,
Friends of the Chicago River

As long as you don't get hung up over ownership, credit, and control, you'll go far.

—Tom Krapf, Natural Resources
Conservation Service

Watershed management planning is not the work of superheroes or soloists; healing watersheds demands that people work together, finding common areas of concern and agreement and forming flexible but effective organizational structures. This chapter shares the experiences and expertise of partners in the North Branch Watershed Project and in other collaborative efforts within the watershed.

Meaningful Participation From Partners and Stakeholders

Who should be involved with your watershed management plan? What should their roles be? What is a **stakeholder**, anyway? What is the relationship between stakeholders and **partners**?

Stakeholder is a commonly used term in planning and refers to a person with a legal, economic, personal, or professional interest in the watershed. Individuals or organizations may also speak on behalf of interests without a "voice" such as future generations or songbirds or rivers or the watershed itself.

Partners as we defined them in the North Branch Watershed Project are the watershed stakeholders who take an active role in the watershed management planning process.

WORDS TO KNOW

stakeholder: a person who has a legal, economic, personal or professional interest in the watershed.

partner: the watershed stakeholders who take an active role in the watershed management planning process.

These partners, or participants, are the agencies and individuals who share in the actual task of making the planning process happen, for example, by convening meetings, seeking public input, completing watershed assessments, analyzing watershed information, and formulating solutions.

Identifying Active Stakeholders

Where do you begin in identifying stakeholders, particularly those who will be active participants in watershed management planning? And how can these parties be organized to lead your effort? Identifying stakeholders is not always a straightforward process. "Finding stakeholders is organic," says Rick McAndless of the North Cook Soil and Water Conservation District, one of the project partners. Look at who has participated historically and who will or should participate. For example, the North Branch Watershed Project grew out of public interest and involvement in the river and its watershed. David Ramsay of Friends of the Chicago River observes, "This successful formal watershed management planning didn't arise out of nothing. We are standing on the shoulders of many good people in this area who have demonstrated concern for and visions for improving the river and its watershed, going back at least six years and probably much more."

How Stakeholders Got Involved in the North Branch Project

The North Branch Watershed Project formally came together in 1996. The seeds of the collaboration originated with an ad hoc group coordinated by Friends of the Chicago River. This group of stakeholders was the basis for creating the initial watershed management planning committee. The group included many organizations who had worked with the Friends on other programs and projects, such as the Prairie Wolf Slough Wetlands Restoration Project (see case study, chapter 9). These earlier projects created a good foundation for the planning effort. This committee expanded as the project progressed and more stakeholders became involved.

Your list of active stakeholders should grow as you move through the process of planning and implementation. As you move to the action stage of working on structural or educational projects, you may find roles for new participants. As your efforts gain momentum and publicity, additional stakeholders may become interested in the watershed and decide they should have a say in its future.

Remember that the easy part is involving people who already have an interest in the watershed. Give thought, however, to how you will work to gain the involvement and interest of those who currently are not interested in the watershed or may be perceived to have a nonsupportive or potentially adversarial interest.

In the North Branch Project, for example, golf courses were believed to be major contributors of nonpoint source pollution. To the surprise of the Friends, it turned out that several golf courses had themselves initiated major conservation programs and were leaders among the golf courses in the watershed in developing watershed-friendly management practices (see Wilmette

Golf Course case study, chapter 9). In another instance, the county home builders association attended one of the “River Rap” meetings and suggested that the North Branch Project create workshops to educate builders, developers and local municipal officials about watershed-friendly building practices.

Setting Up Structures for Leading Watershed Management Planning

Some form of organizational structure is important to give direction and help define roles in your watershed management planning effort. The primary committee functions generally include the following: a **steering** (or executive) **committee**; a **planning committee**; a **technical advisory committee (TAC)**; and **action teams** or **subcommittees**.

Create a Steering Committee

In the North Branch Project, this initial ad hoc Steering Committee of stakeholders met for over a year in order to develop the agenda and work agreement with the Illinois EPA for the North Branch Watershed Project. The people and organizations from this group have continued to form the leadership and make the decisions for the North Branch Watershed Project.

Considerations in Forming Your Planning Committee

The **planning committee** is the group responsible for creating the watershed management plan. Your planning committee needs to represent a broad range of interests and also ensure that a diverse and representative range of stakeholders are engaged in the process. Geographic representation is one factor to consider. If your watershed boundaries cross municipal or county lines, seek representation from both sides of those lines. Include a diversity of perspectives.

Citizens, businesses, nonprofit organizations, and government agencies may find they share common goals and overlap in their ways of doing things, but a partnership made up of only one of these sectors would lack depth and balance. Authority over the resource is another factor. Agencies responsible for water quality, flood or stormwater management, land use planning or zoning, as well as public landowners such as forest preserve districts are all good to get at the table together. Your planning committee needs to mirror the diversity of your watershed, but you also need to keep the size of your committee manageable.

Technical Advisory Committee

It is essential to have good technical advice and input, particularly for the phases of assessment and for formulating your plan. It is useful to form a separate Technical Advisory Committee (TAC) to bring these resource people together. These experts can advise the planning committee. In the North Branch Watershed Project, a TAC was formed when the Lake County Stormwater Management Commission (LCSMC) and Northeastern Illinois University (NEIU) began work on watershed assessment phase. This group was called the Assess-

WORDS TO KNOW

steering committee: a steering or executive committee forms the core leadership and decision-making group of stakeholders in the watershed management planning effort.

planning committee: the group of stakeholders responsible for creating the watershed management plan.

technical advisory committee (TAC): the group of technically qualified ecologists, biologists, hydrologists, engineers, planners and others who advise the planning committee in performing the assessment and analysis phase and developing the best management practices and policies in the action plan.

action teams or subcommittees: these are the ongoing or temporary groups that are formed to carry out specific tasks of a more specialized nature such as planning special events or investigating specific issues such as wetlands preservation or best management practices.

Establishing and maintaining collaboration requires intense investments of time and communication. So why, then, is everybody collaborating these days?

ment and Strategy (A&S) Work Group. This technical group was made up of federal, state, and local government agency representatives.

Due to the overlap in committee membership, the A&S Work Group and the Steering Committee were combined in October 1997 into a single Planning Committee that continues to meet monthly and oversee the watershed management planning process. When special technical assistance is needed, for example in reviewing a best management project or working on technical parts of the action plan, the more technically-oriented people hold a special meeting.

This arrangement has worked well for the North Branch Watershed Project but may not work for every watershed. Sometimes it is a good idea to keep your planning committee and your TAC separate so that local leadership as represented by the planning committee retains full ownership of the project. It is important that the knowledgeable, well-meaning TAC not take leadership away from the grassroots leadership. However, the function of a TAC, whether a separate committee or not, is vital—both for the expertise it brings to the project and as a means of building local relationships with government agencies essential to the overall success of the project.

Action or Working Groups

If you have large and diverse Planning Committee, it may be useful to create separate action or working groups to carry out specialized by tasks for a limited time and not require the participation of the general membership of the Planning Committee. In the North Branch Watershed Project, the Planning Committee has formed subcommittees on an ad hoc basis in order to plan and hold conferences and special events such as canoe trips and to identify and construct best management practice demonstration projects.

WORKING WITH PEOPLE: PARTICIPATION ISSUES

Getting People Working Together

If you want something done right do it yourself. A familiar adage. Everybody knows that working with other people takes more time, forces you to give up control, means you cannot always get what you want, and generally complicates your life. Establishing and maintaining collaboration requires intense investments of time and communication. So why, then, is everybody collaborating these days?

Carol Spielman of the Lake County Board sums it up this way; "It's very difficult to do, to get all these partners involved. Each municipality has a small staff—they don't have a lot of loose time to take on new things like watershed [management] planning." But she also emphasizes that the effort is well worth it. "I truly believe for these things to work, you need to have more people on board."

Collaboration is vital to watershed management planning. If you don't involve the majority of interests in the development of a local watershed

management plan, it won't have the necessary support to work as a voluntary plan. Wink Hastings of the National Park Service observes, "Partnerships tend to increase the capabilities and knowledge of organizations that participate. They become familiar with other ways of doing things, how to collaborate and hopefully work together on future projects."

Patricia Werner of the LCSMC adds this: "The good things about partnerships include keeping the process going, knowing that other people that you meet with regularly are relying on you for action. It's good for sharing responsibility. A downside or reality of partnerships is that relying on another partner means having to accommodate others' schedules or needs." Jim Anderson of the Lake County Forest Preserve District gained experience with collaboration in the Prairie Wolf Slough project. "It always takes longer than you've anticipated. But all the [difficulties] are outweighed by having several agencies work together. Each agency has its own expertise and resources that it can pull upon."

Partnerships can also expand the number of advocates for your goals. Additionally, collaboration is increasingly an interest and even an expectation of funders. So unless your initiative is entirely internally funded and you have ownership or control of the entire watershed, you may need to figure out how to work with partners. Anderson suggests that in collaborations, "Planning can alleviate some of the catches, giving yourself time to think about everything that needs to be thought about."

Collaboration is especially important to the process of improving urban watersheds; it can integrate a variety of interests and perspectives. Partnerships and collaborations can overcome the paralysis and fragmentation that characterize many densely populated watersheds. For example, in a highly politically fragmented watershed, adjacent drainage districts may make neighboring municipalities' jobs harder with a "send it downstream as fast as possible" attitude. Or separate agencies dealing with flooding issues and water quality may be working at cross purposes if working separately. Agencies and municipalities that move beyond artificial political boundaries may find common solutions when they begin working together and pooling resources in the natural framework of a watershed.

Decision Making by Consensus

When organizations are joined together in a major collaborative effort such as the creation of a watershed management plan, great care must be taken when making important decisions. At the beginning, it is important to establish the rules by which decisions will be made, whether through consensus or by formal voting or by a mixture, depending on the circumstances. In the North Branch Watershed Project, the Steering Committee agreed that all decisions would be by consensus.

Consensus decision making has definite rules and generally is preferable to voting because consensus is better suited to maintaining trust and a cooperative atmosphere. However, the consensus approach can lead to paralysis

WORDS TO KNOW

collaboration: a mutually beneficial and well-defined relationship entered into by two or more organizations to achieve results they are more likely to achieve together than alone.¹

consensus: an inclusive form of decision making in which all of the parties discuss and debate the issues prior to reaching an agreement. All parties must either agree with the decision or at least agree that they can live with it. Any one party may block an agreement.

¹ Winer, Michael, Karen Ray, *Collaboration Handbook: Creating, Sustaining and Enjoying the Journey*, (Amherst K. Wilder Foundation, St. Paul, MN, 1994)



*Canoe trip on the Main Branch,
Chicago River.*

Courtesy Friends of Chicago River

in the group process, when highly controversial issues are being decided. The leadership needs to have some training or experience in consensus leadership and decision making in order to make it work. Great care need also be taken to set up objective criteria for making decisions regarding the allocation of money or resources and that important decisions be well documented.

General Stakeholder Participation and Partnership Considerations

Every group needs to find their own process for watershed management planning, but here are some of the lessons the North Branch learned on achieving the balancing act of being both inclusive and effective.

Do Something Real and Specific

Partners in the North Branch Watershed Project were unanimous on this advice. Most people feel they are already too busy; if they take on anything new, it has to be concrete and finite. The prospect of amorphous, open-ended responsibilities can scare off the most dedicated participant. At the same time, project organizers need to be willing to hand over meaningful tasks and share control with interested and committed partners. Anybody, whether a volunteer or a paid staff member, responds to the chance to make a difference.

Consistent representation from key partners may begin with asking people to do certain specific things—review goals, provide specific expertise—rather than asking them to commit to a lengthy and indeterminate process without defining a specific role for them. Hastings emphasizes this point. “To get follow-through, people need to know what’s expected of them; responsibilities should be documented and agreed upon.”

Get Out into the Watershed

People get involved when they know what they’re working for. There is no substitute for getting people out to see and experience their watershed. A tour on land or water, on foot or in a canoe, is a great opportunity for people to connect—to the river, to the watershed, and with each other.

Show people the problems and opportunities within their watershed. Seeing soil erosion or stormwater runoff firsthand is far more compelling than just being told about it. Canoe trips, for example, are a unique and valuable way to know and appreciate streams. Such trips provide a new perspective, a chance to see wildlife and vegetation and the opportunity to appreciate the wilderness character of urban streams.

If you truly cannot get people out of their offices (and do try your hardest), you can still provide visual images or other examples of hands-on experiences. Slide shows or videos are one easy way. If you cannot bring people to the water, bring it to them. For example, one of the most valued teaching tools in the Friends of the Chicago River office is a football-shaped chunk of log, chewed off a tree along the North Branch of the Chicago River by an urban beaver. That little chunk of wood has convinced a surprising number

of people of the importance of urban streams (and indirectly their watersheds) as places for wildlife. (See chapter 10.)

Don't Waste People's Time

Nobody likes to spend too much time at meetings. Make sure there's a clear agenda for each meeting, stick to it, and make sure something gets accomplished at each meeting. Keep meetings to a minimum and cancel any that turn out to be redundant or unnecessary. Use a timekeeper to keep meetings on schedule. (See the resource section for references on holding effective meetings.)

A Word about Facilitators

With so many partners, interests, and personalities, it can be invaluable at certain stages of the watershed management planning process to have a facilitator. A neutral facilitator can move things along and, even more vitally, ensure that the full variety of perspectives are voiced. Be careful, however, that your facilitator is indeed neutral. One with an agenda of his or her own can disrupt, rather than promote, your process.

On the North Branch, participants were fortunate to have experienced and neutral facilitation. The Natural Resources Conservation Service (NRCS), with its years of experience helping communities with consensus-based natural resource planning, facilitated public input and goal setting at the North Branch River Rap held in November 1997. (For more information about setting goals and priorities, see chapter 8.)

Getting Interests Out on the Table

Effective partnership depends on acknowledging differences. From the beginning stakeholders should be encouraged to say what's bringing them to the table. While participants in watershed management planning do need to find common goals, they don't need to share every goal. Organizations come together to accomplish watershed planning for different reasons. You can get more done and avoid conflict later on if each partner's interests are clearly expressed early on. North Branch Steering Committee members already had a history of positive working relationships when they came together to begin this watershed management planning process. Even so, it was important to recognize the complementary but different needs and approaches of different active stakeholders.

For example, on the North Branch the LCSMC and Friends of the Chicago River have very similar ideas about many aspects of watershed improvement, including more holistic management, a concern for water quality, flood control, and open space and wildlife habitat. Both also share a commitment to stakeholder involvement.

The LCSMC was very interested in the watershed management plan as an outcome of the project; having a set of guidelines for the watershed was seen as vital to the protection of the watershed in rapidly developing Lake County. For Friends of the Chicago River, building a broad-based constituency for the

Effective partnership depends on acknowledging differences.

Again there was common agreement, however, about ensuring that, whatever the approach, stakeholders would have sufficient input and ownership of the outcomes generated by watershed management planning.

watershed and the Chicago River and involving people in their ongoing improvement were priorities. In this case these differing needs were compatible.

These participants also varied in their approach to regulatory versus voluntary solutions. Ward Miller of the LCSMC says, "Our watershed management plan in Lake County (and likely most watershed plans) will include some regulatory measures, which will complement voluntary and educational efforts." Friends has a much stronger emphasis on the voluntary approach. Again there was common agreement, however, about ensuring that, whatever the approach, stakeholders would have sufficient input and ownership of the outcomes generated by watershed management planning.

Stakeholders who are willing to find common ground in this way are essential to watershed management planning. "Consensus is the nucleus of the whole plan," acknowledges Tom Krapf of NRCS. It can be a problem "if any group [or individual] wants to focus on their objectives to the exclusion of others." Find ways to include new perspectives and interests and components while keeping focused on ultimate goals.

A good partnership attracts increasing interest from additional stakeholders. As your watershed initiative gathers momentum, especially as you move into action and implementation and hands-on projects, you may generate additional potential participants. Your efforts will only be improved and strengthened by their involvement and expertise as long as you keep your original mission in mind.



A Sampling of Stakeholders

What kinds of stakeholders were involved in the North Branch Watershed Project planning committee? Keep in mind that different urban areas will have different types of resources and stakeholders. These examples from northeastern Illinois are merely intended to start you thinking about your own region.

Nonprofit River Advocacy

Organization: Friends of the Chicago River is a membership organization that focuses on making improvements in the watershed and has a history of nonadversarial facilitating. Friends brings people together around areas of agreement in order to implement river and watershed-improvement projects.

Watershed-Based Stormwater

Management Agency: The Lake County Stormwater Management Commission is a relatively new, watershed-oriented agency specifically created to bring together municipal governments to address stormwater issues in a holistic way. If your area has an agency of this type, it will be a valuable resource for your planning committee or your technical advisory committee (TAC).

Local Government Representatives:

On the North Branch, where the watershed included 24 municipalities, not every municipality was involved at the planning committee level. Those that were active from the start tended to be from municipalities that had shown strong leadership

earlier, for example, through involvement in the Prairie Wolf Slough project (see chapter 9 for a description of this project). Participation can be from elected officials and/or staff such as planners, engineers, or public-works employees.

Local Representatives of Federal

Natural Resource Agencies: The Natural Resources Conservation Service, the U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service were all partners in the Chicago River Demonstration Project and provided substantial technical and financial assistance in local restoration projects. (See the chapter 1 sidebar, “How the North Branch Watershed Project Developed.”) These agencies made important contributions to the TAC. The NRCS has special expertise in watershed planning and facilitating.

Local Soil and Water Conservation

Districts: Notably the North Cook County Soil and Water Conservation District. Participation could be from staff or the district director. The SWCDs are important resources for the TAC, especially in developing and implementing best management practices. Also, they may be a valuable source of local government contacts.

Representatives from State Environmental and Natural Resource Agencies:

Notably the Illinois Environmental Protection Agency and the Department of Natural Resources (including the Illinois Water Survey and Office of Water Resources). The federal and state natural resource agencies may make up the core

of your TAC. The Illinois EPA was a major financial contributor to the North Branch Watershed Project and earlier had contributed to the Prairie Wolf Slough Project.

County Political Leadership: For example, Lake County Board member or staff person. County board members have assisted in the planning committee and helped remove potential roadblocks to getting BMP projects implemented. Key county officials can play an important role in getting the watershed action plan implemented especially in the area of policy.

Local Drainage Districts: Including both elected officials and staff. Drainage districts have major responsibilities for maintaining streams and drainage channels. Although historically focused on the single purpose of improving drainage, the drainage districts are becoming “greener” in their approach to stream maintenance. In the North Branch Project they have provided technical assistance.

Local Environmental Groups and

Nature Centers: In addition to the Friends, participants included the Highland Park Conservation Society, staff from park districts and nature centers (for example, staff from Heller Nature Center), the Chicago Botanic Garden, Lake Forest Open Lands, and the Openlands Project. Park districts and environmental organizations have sponsored innovative demonstration projects and participated in the planning committee.

Forest Preserve Districts: Representatives from Lake and Cook counties, which both have extensive land holdings in the watershed. District staff participated in the planning committee and demonstration projects.

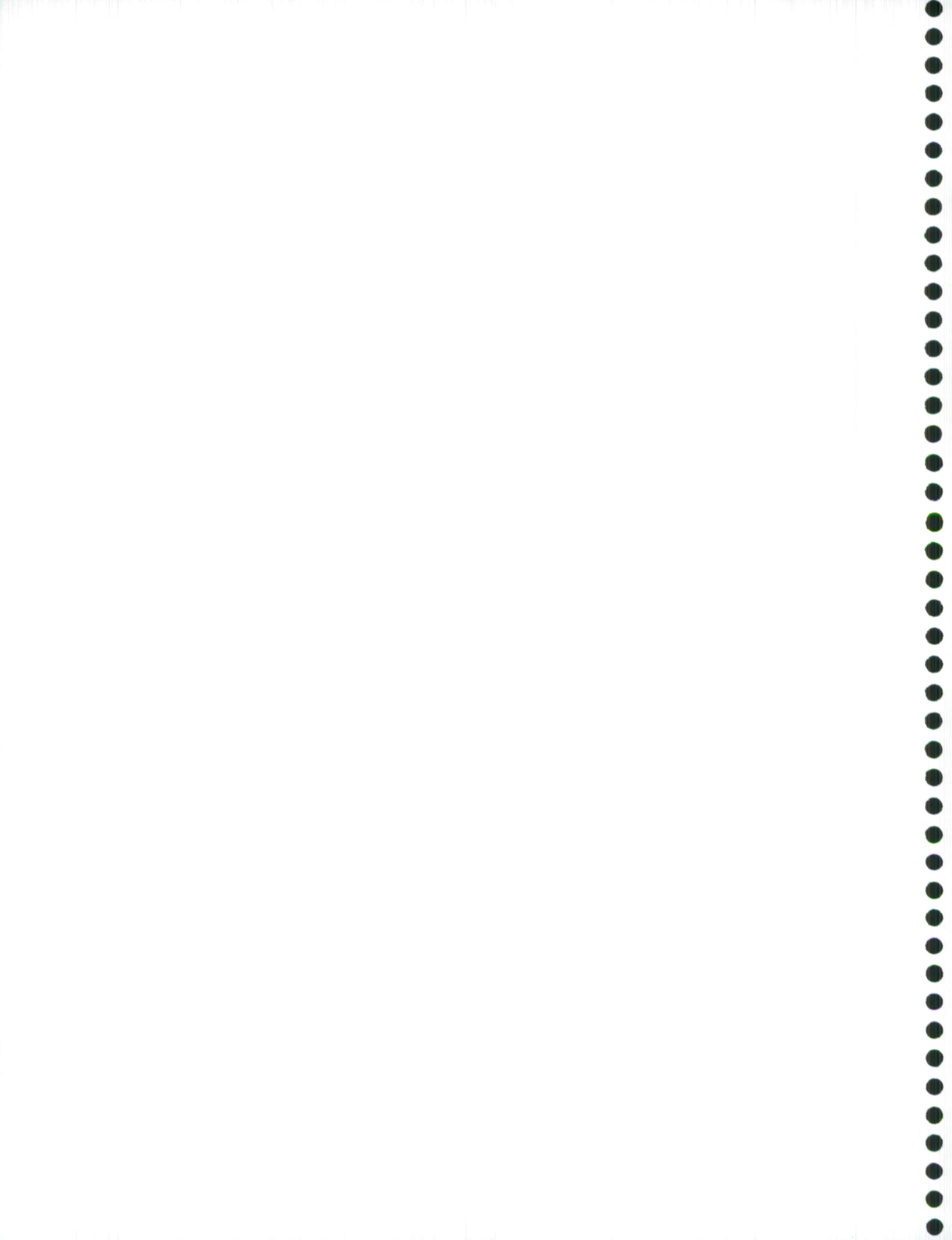
Regional Planning Organization: The Northeastern Illinois Planning Commission (NIPC) is a regional leader in developing innovative watershed restoration demonstration projects, model local ordinances and planning. If your area has an agency like NIPC, it will be a useful addition to your TAC.

Private Sector Professional Engineers

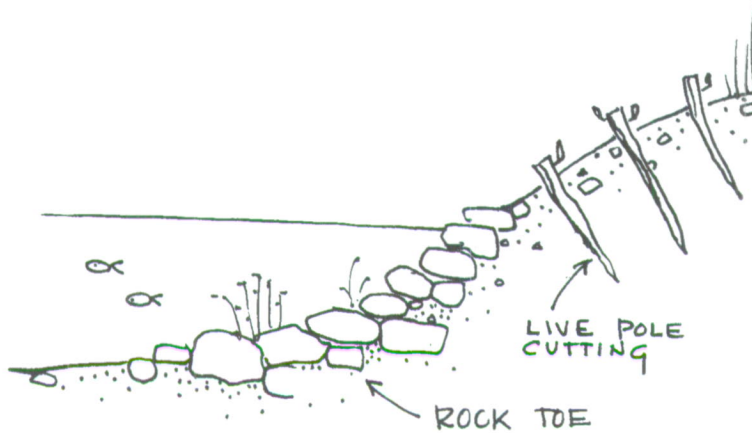
and Planners: On the North Branch, some of these individuals represented longtime watershed leadership. Various engineering, planning and ecological consulting firms have participated on the planning committee, provided input to the TAC and provided services (paid and pro-bono) in various phases of BMP projects.

Local Academic Institutions:

Northeastern Illinois University's Department of Geography and Environmental Studies led the Cook County portion of the assessment.



6. Funding Watershed Management Plans



POLE CUTTINGS WITH ROCK TOE

Anyone involved in watershed improvement needs to consider money—getting it and keeping track of it. Remember that fundraising is something that you may need to do to get your watershed management planning started. You will also certainly need funds when you get to your implementation stage and if you do demonstration projects along the way. This chapter focuses on some key fundraising points and directs you to existing resources on raising money and finances.

We'll start with a list of “funding truths” garnered from the experience of the Friends of the Chicago River:

Truth Number One: Improving a watershed takes money.

You can start watershed management planning without money, but it will take a long time to finish it. Many groups have developed watershed plans without funds. Volunteers and the willingness of partners to donate staff time and resources can stretch the impact of funding sources greatly, but you will still find that there are expenses to be paid.

Truth Number Two: Financial support is a vital and legitimate form of participation.

People and organizations who donate money to make good things happen in your watershed are not aliens from another planet; they are part of the potential constituency, or involved stakeholders, for your watershed.

Watershed [management] planning takes money. You need enough money to do the research, the assessments, ...actually create the plan.

—Carol Spielman,
Lake County Board

A good budget shows potential supporters that you have thought out what your project or initiative entails; it gives potential funders specific things they can support.

Money is just one more way for people, businesses, and organizations to express their commitment to and involvement in an idea, mission, program, or process. Successful fundraising is integrated with other processes in a watershed management planning initiative, particularly outreach and education activities. If your efforts are important to a broad spectrum of interests in your community, they will be important to funders. Also, just as average watershed dwellers cannot care about the watershed if they do not know what a watershed is or that they live in one, funders cannot be expected to care about a watershed improvement process if they are not exposed to the issues and opportunities.

Truth Number Three: Two grants are better than one.

Everyone who gives money to your watershed management plan or project is someone with a vested interest in seeing your plans work. Would you rather have one person or 100 with an interest in seeing you succeed? Additionally, many funders want to be part of something; nobody wants to go it alone. A grant, whatever its size, can help leverage additional support. Different supporters will support different facets of your program.

“Actually the best situation is one big grant and 15 small ones,” says Julia Fabris, Development Director for Friends of the Chicago River. “For example, the \$30,000 grant from the [Gaylord and Dorothy] Donnelley Foundation made people [other private funders] comfortable with supporting the North Branch project.” Don’t be close minded about whom to approach for support of watershed improvement. Give people a genuine opportunity to be part of the solution.

Truth Number Four: Keep your fundraising focused on your mission.

Stay close to your original mission and goals in seeking funding. Steer clear of funding that forces you to stray from your established priorities. Also don’t get funding before you know what you plan to do with it. Knowing what your priorities and plans are is also important in establishing budgets.

Truth Number Five: Bookkeeping is not the place to be creative.

If your eyes glaze over whenever you have to look at a budget, you are not alone. But learning to speak the language of budgets is a vital tool. When properly used, budgets can be a dynamic planning tool. A good budget shows potential supporters that you have thought out what your project or initiative entails; it gives potential funders specific things they can support. A good budget is part of your financial credibility. Remember that budgets can be revised. As you get more information and better cost estimates, plug new numbers into your budget.

Be savvy about budget information. If you figure out that restoring your entire watershed will have a total price tag over a period of 10 years of \$753 million, and several of the communities involved are financially strapped and not entirely convinced of the benefits of watershed improvements, waving this price tag around may not help your cause.

Truth Number Six: In-kind contributions add up too.

Keep track of the time and other resources donated by stakeholders. Five hours of donated staff time by an agency is valuable in itself; it is even more valuable if that staff person keeps track of it. Many government and other grants require a specific portion of matching contributions. Some funders will allow **in-kind contributions** as part or all of that match if such contributions are well documented. This is just one example of how careful accounting can actually bring in money for your project or organization.

The North Branch Experience

Receiving Section 319 funding for the North Branch Watershed Project was a major step for Friends of the Chicago River. Section 319 of the Clean Water Act provides federal funds through the U.S. Environmental Protection Agency to states to control NPS pollution. As a relatively small nonprofit organization, Friends fulfilled the requirements of a variety of sources of support (including government funding) and received funding from several of them. The Section 319 grant, however, required a level of detailed financial accounting new to the organization. Randall Leurquin, Friends administrator, explains, “We didn’t know about government paperwork when we began this. Now a year into it, we’re clicking along, getting reimbursed regularly. I know the system now.”

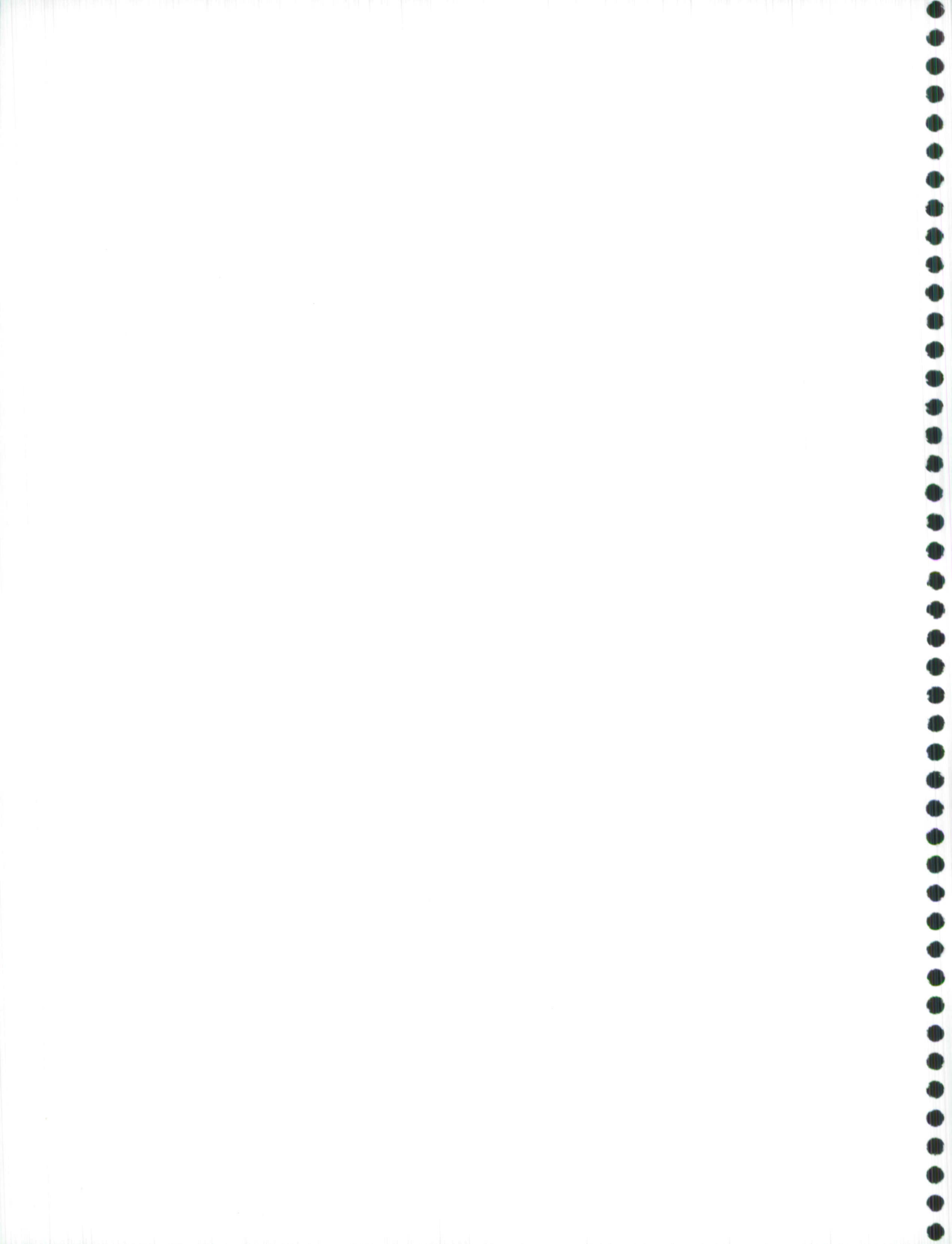
It has been a learning experience on both sides. For the Friends the challenge has been to meet accounting requirements without adding dramatically to its staff. On the government side, the demand for a wealth of accounting detail stems from an important and worthy goal, documenting that taxpayer dollars are well spent. The key to success in meeting both funder and recipient needs has been open communication. Leurquin’s advice to smaller organizations is simply to know that keeping track of finances takes time. “You need to put aside enough time for it and dedicate someone to do it.”

Learning How and Getting Help

There is a wealth of resources and information available on fundraising and nonprofit finance. The value of what you are doing is an important piece of the fundraising equation, but it won’t add up unless someone committed to your watershed project has the know-how, energy, and thoroughness required to raise money. And without the ability to appropriately manage the funds you do get, you are unlikely to get repeat funding. Whether you invest in a full-time professional fund-raiser or in training so that program staff or a dedicated volunteer can pitch in, invest you must. Many free resources are available. For training that isn’t free, organizations such as the Environmental Support Center can help pay for training. (See the resource section for more information.)

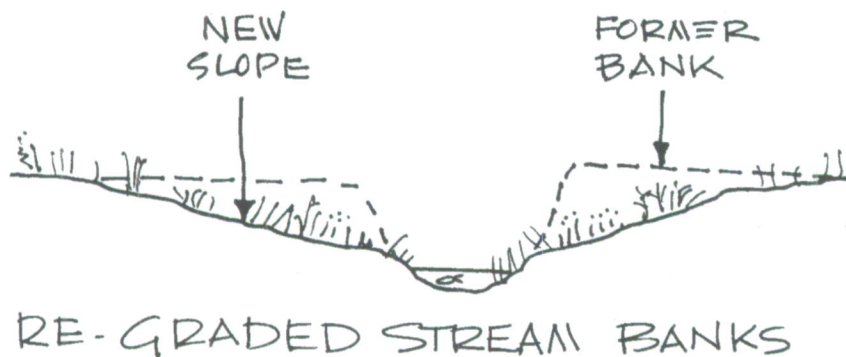
WORDS TO KNOW

in-kind contribution: a contribution of effort (labor or technical expertise) by a paid staff person or volunteer for a project that is documented and used to match other funding sources such as a government grant.



7. Assessment:

Assembling Knowledge



This chapter covers gaining familiarity with the complexities of your watershed—finding and analyzing the information you need to plan for the future of your watershed. Assessment can be both formal and informal, relying on direct observations of the rivers and associated ecosystem, but this phase is also a great opportunity to get to know what local officials and citizens know about the issues and opportunities for their stretch of the river. At the same time you can avoid wasting resources and reinventing the wheel by using existing information about water quality and other watershed conditions. Finally, assessment needs to include technical and scientific information, but it is also important to understand community realities, visions, and desires as they affect the watershed.

“Our goal was to get a snapshot of the watershed. There was anecdotal evidence about what was happening in the watershed, but we needed a more complete picture,” says Sean Wiedel, of the Lake County Stormwater Management Commission (LCSMC), who led the assessment in the Lake County portion of the watershed. “We needed to know what we were dealing with.”

Kirk Gregory of Northeastern Illinois University led the Cook County assessment and voiced a similar approach. “We were looking to identify current conditions and problems and identify, where possible, what might have led to those problems.”

There is no substitute for getting out in the watershed and seeing it first hand.

—Sean Wiedel,
Watershed Specialist,
Lake County Stormwater
Management Commission

Let the watershed speak to you through the voices of local officials and citizens who know it most intimately.

—David Ramsay,
Friends of the Chicago River



Steps in Assessment

- Identify and collect existing studies and other watershed resources
- Inventory watershed conditions
- Collect and process data

What Are the Basic Types of Data You Can Collect?

Assessment in the two North Branch counties was not identical, but overall a variety of common and related factors were examined and a consistent format was used. The broad categories of information collected included physical conditions and land uses and social, cultural, and economic characteristics. Examples of physical conditions investigated included water quality, streambank erosion, streambed conditions, vegetation and habitat, soils, detention basins, stormwater outfalls, flood damage areas, land use and occurrence of wetland areas. The social, cultural, and economic information included tabulating population statistics, identifying jurisdictions and municipalities, and charting development trends. Perhaps the most critical piece of cultural assessment was learning people's concerns and interests about the watershed.

Assessment information was collected by the LCSMC and Northeastern Illinois University in three ways:

- By consulting existing databases, surveys, statistics, and reports.
- By taking physical inventories such as stream walks and inventories of detention ponds.
- By holding meetings with municipal representatives.

The following list contains examples of types of information you might include in your inventory. For a more detailed list consult the Illinois EPA's *Guidance for Developing Watershed Implementation Plans in Illinois*¹

General Inventory

Location and size of watershed
Description of relevant physical and cultural characteristics
Water bodies
Designated use and support
Water quality assessment
Existing or potential water quality problems (impacts and data)
High quality waters
Nonpoint source pollution
Pollutant loading hotspots
Wastewater discharges
Groundwater drainage
Wetlands
Geology
Wildlife habitat
Aquatic community (fish and macroinvertebrates)
Air quality
Political jurisdictions/authorities
Demographics

¹ Illinois EPA, *Guidance for Developing Watershed Implementation Plans in Illinois*, (ILLINOIS EPA, Bureau of Water, Springfield, IL, March, 1998).

Type, size, location, and uses of water resources
Land uses
Land-management considerations
Floodplains
Subwatershed boundaries
Riparian corridors
Soils information
Topography and actual drainage patterns
Historical and cultural resources
Hydrologic modifications
Stormwater management
Inventory of existing watershed management programs
Resource management roles and responsibilities

Using Existing Information to Avoid Reinventing the Wheel

Assessment can be time consuming and expensive. Conserve precious resources by making use of existing information whenever possible. As noted by Wiedel, “We didn’t want to do anything somebody had already done. We talked to different stakeholders and partners to find out what had already been done. Do your homework. Talk with key players.” Both the Cook and Lake counties assessments made use of existing information assembled by Northeastern Illinois Planning Commission (NIPC), the Illinois Environmental Protection Agency, and others. Water quality data, demographics, flood damages, fish and wildlife surveys, and land use information were just some of the assessment data that partners were able to provide. Additional important information came from the stormsewer maps provided by participating municipalities, which provided vital details on the artificial tributaries of the watershed.

Knowledge of public attitudes and perceptions about the Chicago River was a key piece of assessment that came from existing studies and experience. Through the Chicago Rivers Demonstration Project (CRDP), Friends gained a comprehensive understanding of people’s interest in, knowledge of, and attitudes toward the Chicago River. Two CRDP partners, the Army Corps of Engineers and the U.S. Forest Service, gained information on public attitudes through a survey of attitudes of river edge residents, user group interviews, and focus groups. These studies confirmed what the Friends had learned informally, for example, that public attitudes about the river lag behind the reality of a cleaner river by about 15 or 20 years.

Knowledge of public attitudes and perceptions about the Chicago River was a key piece of assessment that came from existing studies and experience.



Sources of Information

The assessment team for the North Branch Watershed Project had a variety of sources of existing information available to it. Some of the resources available in the North Branch area may not exist for your watershed. For example, there may be no local counterpart to the Northeastern Illinois Planning Commission (which provided data on water quality, land use and demographics), or to the findings of the Chicago Rivers Demonstration Project (reports on natural resources, as well as stakeholder perceptions about the Chicago River). Even so, you may be surprised at the wealth of existing information for your watershed. What follows is a partial list of agencies and sources that may have information you can use to get started.

Water Quality

Illinois Environmental Protection Agency
Local wastewater treatment agencies or facilities
U.S. Geological Survey
Illinois Department of Natural Resources (IDNR), Illinois State Water Survey

Stormsewer Maps

Municipalities and villages (these can be a source of a variety of information. (See the section below, "Meetings: Doubly Useful.")

Demographics

U.S. Bureau of Census
Regional planning agencies

Watershed Delineation

Illinois EPA
IDNR, Illinois State Water Survey
U.S. Geological Survey topographic maps
USDA, Natural Resources Conservation Service (NRCS)

Wetlands

IDNR: National Wetlands Inventory information

Soil Types

Natural Resource Conservation Service: Soil survey

Threatened and Endangered Species

Illinois Department of Natural Resources

Geographic Information Systems (GIS)

Illinois EPA
IDNR, Illinois State Water Survey
County or Regional Planning Agencies
Colleges or Universities, Geography or Planning Departments

Cultural Resources

County or local visitors bureau or chamber of commerce

The Value of Getting Out into the Watershed:



Stream Walks

Stream walks are a great way to get out and know the stream and watershed first hand. The Lake and Cook County assessment teams met and developed a common methodology and standard forms to ensure consistency of results. The North Branch assessment included an inventory of streams and detention basins in the watershed area. Wiedel reported that "between the three forks, Tim [Andruss, LCSMC Watershed Intern] and I covered over 40 miles of stream. We did it over a period of about three months." Much of the inventory involved conditions that made progress difficult—dense thickets of invasive buckthorn growing on the banks and thick deposits of fine sediment in the stream. "Our boots sank about a foot into the muck with each step. The banks were covered in buckthorn. Invasive vegetation is a very real problem walking the North Branch." That's what stream walks do; they make abstract watershed conditions very real. Each step Wiedel and Andruss took confirmed the seriousness of erosion and sedimentation problems. Gregory and his team of



students faced similar challenges. Of the Cook County portion, Gregory reports, “The stream is so degraded that it becomes monotonous after a while.”

There were some surprises, however, on both stretches. Wiedel and Andruss, for example, counted more than 900 outfalls (all stormwater outfalls, detention basin outlets and drainage pipes greater than 6 inches in diameter) in the Lake County portion of the watershed. “I expected a good number but not that number. We were overwhelmed by the number of pipes we saw.”

Gregory was surprised by the severe, deep gullies in the Cook County Forest Preserve portion of his assessment area. “These were probably old swales. Residential developments are channeling runoff into these depressions.” The result is severe undercutting, with 8- to 10-foot-deep gullies forming and “delivering tons of sediment to the stream.”

Despite the challenges, both Gregory and Wiedel feel the stream walk is a vital piece of the assessment. Says Wiedel, “Now we have a much better picture of what [our section of the watershed is like] and what needs to be fixed.” While the gullies that Gregory found point to a serious problem, he also saw them as an opportunity. “They are a tremendous opportunity for restoration work—expanding existing prairie restoration, as well as a great chance to work with municipalities.”

Meetings: Doubly Useful

Both Wiedel and Gregory met with representatives of municipalities within the watershed. This step was added because the planning committee was not getting sufficient attendance or input from municipal stakeholders at planning committee meetings. Wiedel explains, “The purpose of the one-on-one meetings was to introduce the stakeholders to the North Branch Watershed Project, to solicit their initial input into the planning process, and to collect relevant information to be used by the project partners in the watershed assessment and plan.”

Thus, the meetings had a dual purpose, both to get useful information for the assessment but also to do outreach. “To sell them on the project,” as Gregory put it.

Requested information included:

- stormsewer maps
- zoning maps
- information on any expected land use changes



We went out to hear what problems people have, what their perceptions were, what opportunities are out there. You never know what you are going to find. You need to find the angle of people's interest, whether it's flooding, water quality, or something else, to bring them into the project.

—Sean Wiedel,

**Lake County Stormwater
Management Commission**

WORDS TO KNOW

geographic information system

(GIS): a computer system that inputs, assembles, stores, manipulates and displays (usually in the form of maps) geographically referenced information.

- any opportunities for new open space or regional stormwater detention
- flooding issues
- any municipal plans relating to the watershed

Municipalities often have small staffs with already full workloads. Keep this in mind as you meet with municipal representatives. Ideally these assessment meetings will be just the beginning or the continuation of an ongoing relationship with a given municipality. As David Ramsay of the Friends of the Chicago River says, "Approach the meeting with keen interest and cautious optimism. If you show genuine interest in their problems, you are more likely to win them over at a later time."

Collecting and Processing Watershed Data

What do you do once you have gathered your assessment information? How do you deal with gaps in information? Computers are now an important part of this processing phase, allowing people with the requisite expertise to discern important patterns in watershed data. One of the major computer analytic tools is **Geographic Information Systems**, or **GIS**.

Wiedel says, "Geographic Information Systems can be a powerful tool for analyzing complex geographic data. In Lake County we obtained our GIS data from both internal and external data sources." Some of the information collected from other sources included data on roads, water resources, and wetlands available from the Lake County Department of Management Services. NIPC provided 1990 land use, greenways, and 2020 population forecast data.

What can be done with GIS? Wiedel gives just one example, "We visually compared the 1990 NIPC land use data with 1995 aerial photography of the North Branch in order to detect significant changes in land use. We were interested in determining which vacant lands in 1990 had been developed by 1995."

The LCSMC also used individual stormsewer maps collected from municipalities to create a sewershed map for the North Branch watershed. Wiedel explains, "Drainage divides between individual stormsewers were manually estimated and these divides were then digitized in a GIS system. The stormsewer [sewershed] map was compared to the watershed boundary map to determine if any significant differences existed between the two layers. This GIS layer was also used by Kirk Gregory at NEIU to model nonpoint source pollution 'hotspots.'"

Modeling is especially important for identifying causes and sources of nonpoint source pollution, which is the diffuse, intermittent runoff of pollutants from various sources (see chapter 2). Regular water quality data is collected by agencies, including the Illinois EPA, which provides a solid basis for understanding general causes and sources of water pollution. Still, at a very detailed level in a watershed, it can be difficult to identify specific sources and their impacts in an urban watershed. Meaningful water quality

monitoring, measured both during dry times and storm events, can be prohibitively expensive to collect. Yet improving water quality is a key focus of watershed management planning. Modeling can help fill this gap, for example, by matching local land use to runoff rates known or estimated from other regions. Ramsay says, "Monitoring and modeling are complementary. I would say monitoring is the ideal, but it is not always practical to monitor everywhere you would like. Modeling can help."

Another potential source of water quality information can actually come from educational programs (see chapter 10). If performed regularly with consistent standards, simple biological testing of water quality done by supervised students or volunteers can help complete the picture of a stream and its watershed's health.

What Was Found on the North Branch

The overall picture of the North Branch was of a long, narrow watershed with the majority of its open space, wetlands, and undisturbed natural flood storage in its uppermost portions in Lake County. Development and its associated problems intensified downstream. In the uppermost and headwaters portions of the watershed, Wiedel and Andruss found shallow, meandering channels, ranging from 1 to 8 feet wide, with relatively little erosion. In the headwaters area, these channels were interspersed with wetlands. At the southern end of Lake County, they found straighter, trapezoidal channels with significant erosion and widths ranging from 16 to 70 feet wide and depths up to 16 feet. Gregory's assessment showed urban stream characteristics and problems increasing in the downstream Cook County portion. For example, both streambank erosion and sediment deposit rates increased downstream.



Types of Problems Found on the North Branch

Degraded water quality

Primary causes:

Excess nutrients and pollutants from urban runoff and sewage treatment plants

Flooding and excess water quantity (high runoff and "flashiness")

Stream channelization, streambank erosion, and lack of maintenance

Loss of plant and animal habitat and natural resource degradation

Inappropriate land use and/or overly intensive development

Snapshots of the Watershed

Jurisdictions	24 municipalities (14 in Lake County; 10 in Cook County) 10 townships (7 Lake; 3 Cook) 4 drainage districts
Estimated Population Change, 1990-2020 (Lake and Cook, respectively)	Population: 39% (+31,217) 15% (+35,122) Households: 43% (+9,930) 9% (+8,288) Employment: 44% (+20,918) 16% (+29,553)
Land Use (Lake and Cook Combined, 1990)	Residential 46% Commercial 8% Institutional 6% Industrial 3% Transportation 3% Agricultural 6% (9% Lake; 2% Cook) Conservation/recreation 15% Vacant 9% (15% Lake; 2% Cook) Under development 3% (5% Lake; 1% Cook)
Special Resources (Lake and Cook, respectively)	Forest Preserves 1,330 acres, 3,696 acres Wetlands 4,390 acres, 1,157 acres
Plants and Animals	23 threatened and endangered species 16 Illinois Natural Area Inventory sites and Nature Preserves

Assessment should ask the question: What behaviors have the biggest impact on the watershed, what are the major (and tractable) problems that can be addressed through public outreach and education?

—Chris Parson, Friends of the Chicago River

Suggestions About Assessment

Be Consistent

If you have more than one agency or individual collecting assessment information, be sure that everyone uses a consistent format. On the North Branch Watershed Project this was one of the tasks of the Assessment and Strategy work group (a technical advisory committee that later merged with the planning committee); several meetings focused on ensuring that results collected in Lake and Cook counties would be compatible and that they shared a consistent set of methods.

Assessing Values and Attitudes

Understanding the values and attitudes, the culture of your watershed, is critical to designing your solutions. If the future of the watershed depends on

a cultural shift in values, you need to start with a solid understanding of where the culture is currently.

Don't Rule Out Informal Forms of Knowledge

Multiple angles of inquiry about a watershed—scientific, intuitive, cultural, artistic, economic—can be useful. Assembling knowledge is a perfect first chance to get a broad variety of stakeholders actively involved in your watershed management planning. Voices from the Stream, held in the early 1990s, was a predecessor to the formal watershed management planning process. It gave a broad spectrum of people in the North Branch watershed a chance to share visions and concerns about the watershed.

Make Time for Outreach

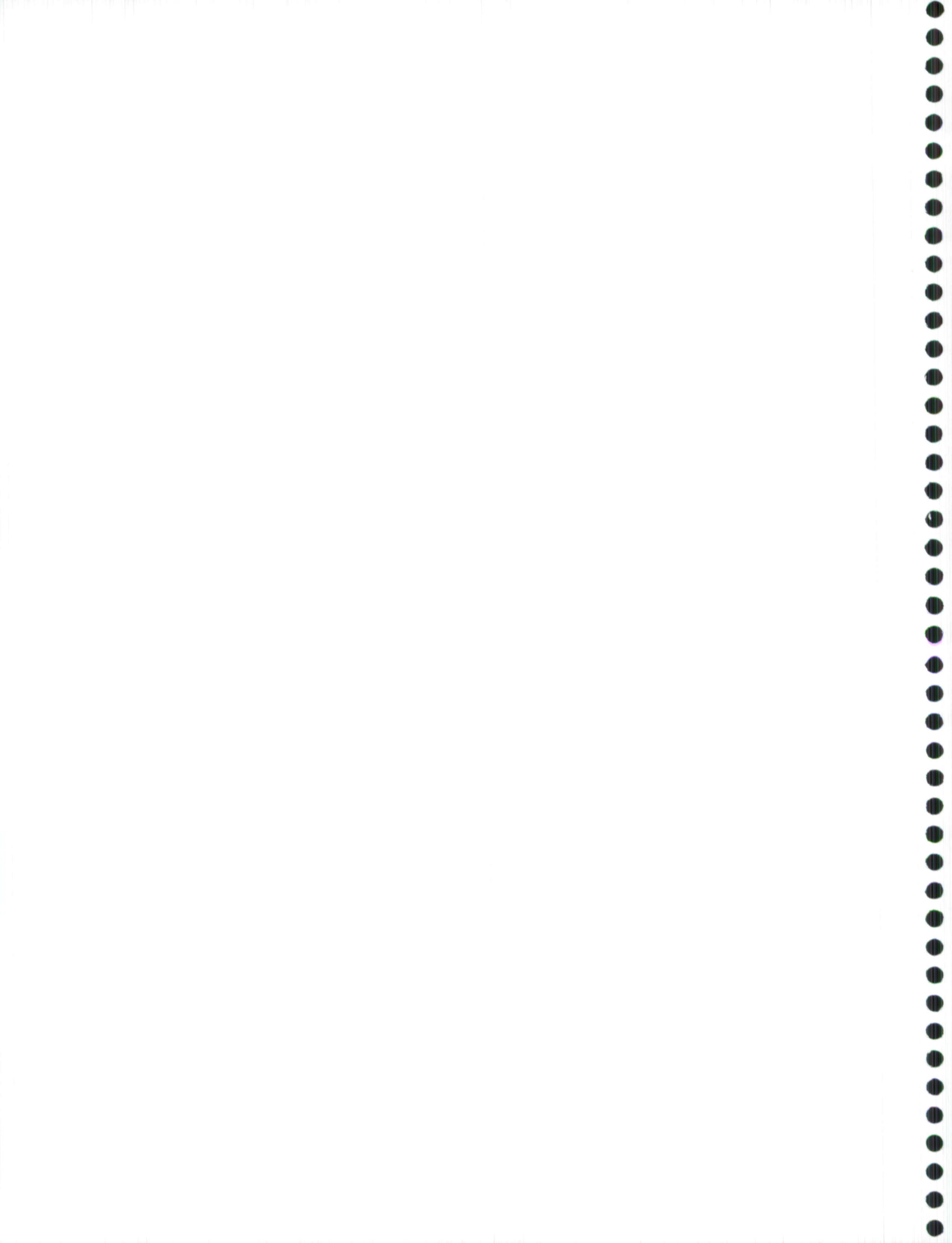
While outreach is not always instantly rewarding, North Branch partners reiterated its importance. Wiedel estimates that he spent up to a third of his time on meetings and outreach and could have spent even more. He views this as one of the most critical parts of the assessment. Ramsay agrees: “Remember you are not just gathering information, you’re also building relationships, building trust.”

When Is Enough Enough?

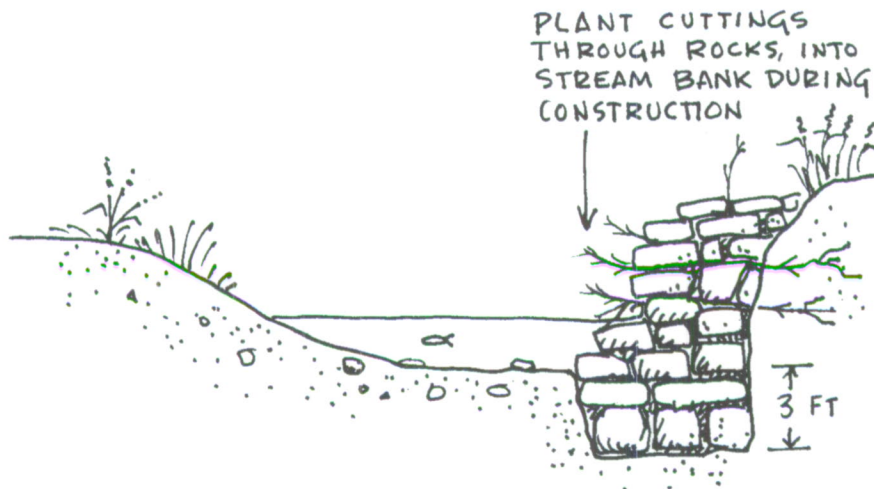
“There are limits to the amount of information we can use,” observes Wiedel. He recommends deciding in advance what information you really need and thinking about what level of detail is necessary. If you do not have the resources to collect all the information you need, create a schedule for when this information will be collected, and if possible, who will do it.

Remember that when it comes to watershed assessment, you need a snapshot, not an oil painting. Wiedel suggests that you “weigh how much time and money you have and focus those resources as best you can. Realize in advance what you are planning to do with the information you collect.”

Remember that when it comes to watershed assessment, you need a snapshot, not an oil painting.



8. Getting to Solutions: Crafting Your Action Plan



TYPICAL ROCK WALL CONSTRUCTION

This chapter examines the issues involved in bringing together watershed knowledge and public concerns into a working plan for action. What exactly are the outcomes of watershed management planning? What should you hope or expect to get out of it that will be the basis for implementing improvements in your watershed? Watershed management planning provides you with shared goals that can help you move forward into implementation. These are expressed in your action plan, a formal document. If watershed management planning is successful, this set of goals also exists as a shared vision, a shared understanding, among stakeholders that inspires action.

What is an Action Plan?

An action plan is at the heart of watershed management planning. It is created through the sometimes inexact process of meshing scientific findings and stakeholder visions for watershed improvement. It can take many different formats, but, essentially, it is the distillation of your work, a document that says who will do what and when you will promote water quality improvements and other benefits in your watershed.

Patricia Werner of the Lake County Stormwater Management Commission (LCSMC) says an action plan integrates “what is technically needed in a watershed” with stakeholder concerns, focusing on issues for which there is the

Watershed management planning provides you with shared goals that can help you move forward into implementation.



Some Terms Used in This Chapter

Goals, objectives, action plans...what does it all mean? A lot of these terms have overlapping meanings or mean different things in different contexts. Here is how we defined them for the North Branch Watershed Project.

Goals and Objectives: These are a statement of what you want to achieve through your watershed management planning process. Usually this statement will include an overall mission statement. This mission guides your planning process. On the North Branch, the planning committee developed a draft set of goals early on that reflected the experience of participating stakeholders and existing knowledge about the watershed. Goals are broad and inclusive. Objectives are more specific but still may be relatively general in initial stages. As the planning process proceeds, new information gained through assessment may allow you to refine your goals and objectives.

Issues and Opportunities: These are stakeholder perceptions of watershed problems and possible solutions or visions

for a healthier watershed. On the North Branch, these were developed at the River Rap session.

Best Management Practices (BMPs): Best management practices are those that improve watershed conditions or prevent further deterioration in water quality.

Action Plan
To formulate an action plan you must decide exactly who will do what and when you will achieve your goals for watershed improvement. This is the point at which watershed management planning gets down to the nitty-gritty. The action plan focuses on issues of stakeholder concern that are confirmed by the scientific findings of your assessment.

“social or political will to deal with.”

The ingredients that went into the initial draft of the North Branch (Lake County) action plan included:

- An initial mission statement, goals, and objectives drafted by the planning committee.
- A knowledge of watershed conditions learned through assessment.
- Direct stakeholder input gained at River Rap (see below).

From this information, the LCSMC created an initial plan, which was then refined based on further stakeholder input.

Identifying Issues and Opportunities

As you complete your assessment phase, the question of what you will try to change in your watershed will come to the forefront. Bringing your watershed constituency together at this phase can help identify priorities and opportunities, as well as helping build momentum for future action in your watershed.

On the North Branch Watershed Project, the planning committee organized a River Rap to share the results of the assessment phase and to develop consensus on which watershed issues seemed most critical and what opportunities most promising. Representatives of local government, agencies, developers, environmentalists, and interested stakeholders were all invited. About 50 people participated.

Sharing the Knowledge

The North Branch River Rap began with presentations. Tom Price of the Northeastern Illinois Planning Commission (NIPC) gave an over-

view of urban watershed issues and potential solutions; then Patricia Werner and Sean Wiedel of LCSMC and Kirk Gregory of Northeastern Illinois University all presented assessment findings—their snapshot of the watershed.

Setting Priorities

The critical part of the River Rap was getting public input and consensus on issues and opportunities in the watershed. This stakeholder input allowed North Branch participants to refine draft goals developed by the planning committee.

The issue of when to set goals is a delicate one. You need to have working goals for initial participants, but you also need assessment information, public input and consensus. David Ramsay of the Friends of the Chicago River explains, “People vary in their need for structure; setting goals within the planning committee forces leadership to externalize the ideas that are the guiding force of the whole effort.” Price summarizes the dilemma of goals. “You need information to set realistic goals and objectives, but you need goals and objectives to know what information to collect.” Also, don’t jump to solutions or BMP selection before you are finished assessing your watershed.

On the North Branch the planning committee dealt with this dilemma by creating a rough initial set of goals, based on participants’ existing knowledge of watershed issues, then coming back to consensus goal setting and priorities after the assessment phase.

Initial goals for the North Branch Watershed Project were to:

- improve water quality.
- reduce flood damages.
- protect natural resources.
- develop a watershed-based public information and education program.
- increase participation of representative stakeholders including community governments, organizations, schools, and individual and business property owners in watershed improvement activities.
- develop a multi-objective watershed management action plan.

Facilitating to Consensus

We wanted to make sure that the action plan addressed the stakeholders’ key problems and concerns.

—Sean Wiedel, Lake County Stormwater Management Commission

Armed with shared information (as well as muffins and doughnuts), River Rap participants, after hearing about assessment findings, moved on to identifying issues and opportunities. Representatives of the Natural Resources Conservation Service (NRCS) led brainstorming and prioritizing sessions.

Sean Wiedel of LCSMC explains how it worked: “At our River Rap Session, [we] asked small groups of stakeholders to identify all of the problems [issues] and all of the opportunities they perceived in the watershed. After discussion,



What Does an Ideal Set of Goals Accomplish?

- It reflects knowledge of watershed conditions.
- It is broadly inclusive of constituents’ concerns and visions.
- It builds public interest in watershed improvement.
- It provides direction for the watershed management planning process.
- It inspires action.

*Setting priorities
is a critical phase in
the process.*

the problems and opportunities were prioritized through a weighted voting process called the nominal group process. The end result was a priority listing of the problems and opportunities in the watershed that will be utilized during the formulation of recommendations for our watershed [management] plan and to prioritize our action plan.”

What Are the Advantages of This Process?

Kent Sims of NRCS explains: “It’s efficient...it ensures the plan’s success, with local buy-in...it won’t sit on a shelf. You end up with a plan with commonalities and a broad base of support.” Tom Krapf of NRCS adds one caution about the process: “You need to make sure the consensus arrived at gets used. It’s not just what you want to see happen.”

River Rap Priorities

Despite the diversity of the River Rap participants, the brainstorming groups came up with very similar lists of top priorities. The following concerns emerged consistently:

- coordination issues—jurisdictional overlap/fragmentation
- public awareness and education about watershed issues
- development patterns and issues

These are all human problems with human solutions. Many participants emphasized the opportunities for education, promoting cooperation, and encouraging new thinking and change on a cultural level. Participants expressed satisfaction with the process. Everyone’s voice was heard. Gregory, after hearing so much about flooding concerns in meetings with municipal representatives, found it heartening to see River Rap participants take a more holistic approach. Gregory comments, “Not only were environment and habitat significant concerns, but there was consensus on priority issues.”

Setting priorities is a critical phase in the process. If you cast your net broadly you can bring in a diverse range of interests. This will help throughout your process in getting accurate information on public attitudes and concerns about the watershed. It will also provide credibility to your plan. For example, at the North Branch River Rap, a few developers and builders were among those invited who attended. One of them suggested that educating builders and developers about their impact on the watershed would be a good priority. Other participants agreed. The idea is greatly strengthened when it comes from a developer rather than someone else who might be perceived as antidevelopment.

One of the benefits of establishing priorities through a group process is the guidance it provides. It makes it easier to say no to add-ons that don’t reflect the highest priorities. It helps keep the focus on the tougher problems that have been identified as critical. It enables you to assess and integrate new opportunities into your process that will help reach agreed-upon priorities—to “go for the light”—in a sane, constructive way.

Solutions

As you close in on issues and opportunities in your watershed, take stock of what watershed solutions are being tried in other areas. Ask questions: What things have other people tried and with what success? How do you determine what will work for your watershed? Having a technical advisory committee or other means of accessing technical expertise is vital at this stage.

There is a wealth of information available on the technical aspects of many watershed solutions. Practices that improve watershed conditions or prevent further deterioration in water quality are called best management practices (BMPs). BMPs can be categorized as:

- preventative
- remedial
- maintenance

The first two categories can be viewed as prevention versus cure. For example, preserving an existing wetland versus restoring a damaged wetland. In densely developed watersheds opportunities for physical prevention solutions are often limited, though there is room for education and policy changes.

Where physical solutions are practical, they often look very different than those implemented a few decades ago. There has been an overall shift in physical solutions in recent years, reflecting a cultural change as well as a new body of technical expertise. In the 1950s and 1960s our culture dictated ways of dealing with water that involved mastery and hardening—dams, channelization, culverts—turning away from earlier expertise that worked with the natural movements of water. In this era, hydrological problems, often caused by channelization and other forms of concrete worship, were addressed with “solutions” or management practices that involved more concrete.

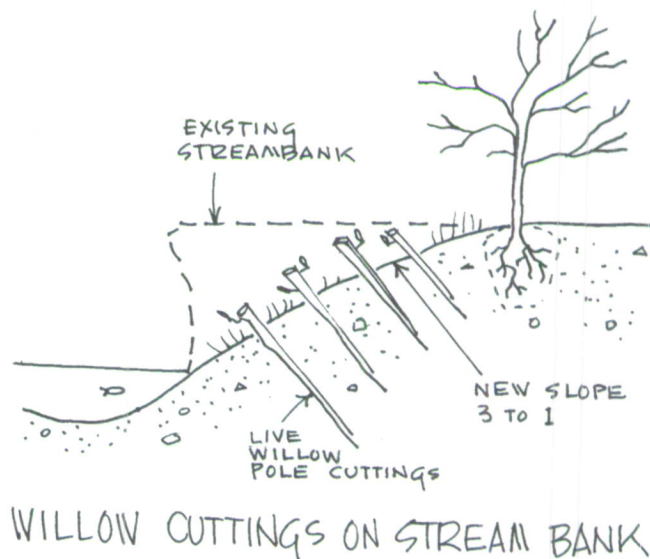
In recent years there has been a return to more naturalistic solutions, including such BMPs as restoring meanders and wetlands. Another term for these techniques is **bio-engineering**, which refers to the natural ability of vegetation roots to hold soil and control erosion. The methods of this new (or rediscovered) technology include using twig bundles to control erosion and planting willow cuttings and native vegetation in place of, or in conjunction with, materials such as steel-sheet piling and concrete. This trend is not universal, but it is growing and is successful in many areas.

Changes in People and Policy

Physical changes in the watershed are important, but most of these changes do not happen without human change. People determine—consciously and otherwise—how all kinds of resources are handled in a watershed. Issues as diverse as the width of streets and the rules for applying fertilizer on a golf course can impact water quality and the health of a water-

WORDS TO KNOW

bioengineering (or soil bioengineering): techniques for stabilizing eroding or slumping river banks that rely on the use of plants and plant materials such as live willow posts, brush layering, coconut logs and other “greener” or “softer” techniques in contrast to techniques that rely on creating “hard” edges with rip-rap, concrete and sheet piling (metal and plastic).





Demonstrating Best Management Practices

At the time of writing, selected demonstration BMPs approved for funding by the North Branch Watershed Project included:

Melody Farms: A floodplain restoration project on the Middle Fork coordinated by Lake Forest Open Lands Association. (See chapter 9.)

Wilmette Golf Course Project: A joint partnership with a local Girl Scout troop and the Wilmette Golf Course to improve water quality and habitat conditions on a golf course. (See chapter 9.)

North Chicago Detention Pond: The City of North Chicago is constructing a new detention pond on vacant industrial land to alleviate neighborhood flooding. The detention pond plan was redesigned to include several wetland pockets and native plantings to improve water quality. The plan also includes a trail and an educational component. Project partners to date include the City of North Chicago, Gillette Corporation, North Branch

Watershed Management Board (LCSMC), and the Illinois Environmental Protection Agency.

Several additional demonstration projects are being considered for funding by the planning committee. These include a neighborhood bank stabilization project in Glenview and restoring a section of stream and floodplain in Chipilly Woods, a part of the Cook County Forest Preserve District. The Chipilly Woods project would involve creating a series of riffles and pools in the stream.

These projects will address specific watershed issues, show what can be done, and spark further stakeholder interest and action in the watershed. (For more information on specific examples of implementing selected best management practices, see chapters 9 and 10.)

shed. Existing practices often are a reflection of the force of habit as much as the force of law. Changing human impacts on watersheds—whether through formal laws, policies, ordinances, or informal practices, habits, and behaviors—means cultural change.

When people understand what a watershed is and care about its future, effective change may come about in two ways. First, laws, regulations, and ordinances need to reflect or be supported by a public willingness to follow them. Second, many issues in urban watersheds stem from a lack of awareness—on the individual and institutional level—that policies and practices even affect watersheds. The explicit policies of agencies and landholders can be changed to reflect current best management practices. But there are also, often, behaviors and habits at both the agency and individual level that can have significant impacts on the watershed. Additionally, lack of coordination between various policies often has additional negative effects on water quality and watershed health. Addressing these types of watershed impacts depends on awareness. This is why a combination of structural and non-structural approaches—including education, outreach, and policy—is often more effective than an emphasis on direct physical solutions alone.

Strategies for Improving the North Branch

Additional stakeholder input was obtained in a meeting after the “River Rap” that helped refine the

understanding of the Planning Committee as to the specific BMPs needed to make improvements in the watershed. The committee used additional science and assessments to justify the “perceived” concerns before they were prioritized into the action plan. The BMPs that were identified as having promise on the North Branch included:

- Instituting environmentally friendly land management practices that improve water quality, reduce flood damages, and protect or restore natural resources.
- Upgrading stormwater detention facilities to provide water quality benefits and slower release rates.
- Devising alternative development designs that reduce urban runoff from new developments.
- Retrofitting or redesigning existing outfalls into the river to reduce erosion and improve filtration of stormwater runoff.
- Stabilizing streambanks to reduce erosion.
- Restoring wetlands to improve water quality, reduce flooding, improve habitat and create outdoor recreation and educational opportunities.

Doing the Right Thing for Your Watershed: Selecting Specific Best Management Practices

Don't limit your solutions to what has been done before or elsewhere. If conditions in your watershed suggest trying something new, don't rule it out. Consider the human dimension and the symbolic impact of your proposed solutions as well as their technical soundness and physical suitability to existing conditions. Change for the better in a watershed means a marriage of what is technically or scientifically “best” with the politically possible and culturally accepted. The most effective solutions incorporate multiple kinds of change, for example, combining physical improvements and educational aspects.

Tom Price of NIPC suggests that in very urbanized watersheds “a focus on the resource, on the stream itself, will have a lot of positive aspects.” People need to be able to see a tangible result. Price continues, “You can do all the BMPs you want up in the watershed [as a whole], but if you're protecting a straight, concrete-lined channel, you've wasted your time.”

Be certain, however, not to lose sight of addressing the most pressing concerns in your watershed as identified by your planning process. Dennis Dreher of NIPC agrees that “doing things people can see” does matter. But, he stresses that “it goes back to science.” Knowing the sources of watershed impairment should lead to your priorities in selecting solutions.

Lights, Camera...ACTION PLAN

With your mission statement, completed assessment, public consensus on issues and opportunities, and awareness of potential solutions, your planning team is ready to create an action plan. As suggested by LCSMC, make sure your action plan addresses the problems and opportunities identified in the watershed assessment and those generated by stakeholders at public input forums such as the River Rap. As Sean Wiedel of LCSMC points out, “To for-



Action Plan Questions

What? The action plan recommends specific actions—best management practices (BMPs)—and how they should be implemented.

Who? The action plan identifies stakeholder audience, authority, and responsibility for carrying out each action including multijurisdiction coordination of efforts where needed.

How much? Each specific piece of the action plan includes a cost estimate, payment responsibilities, and potential funding sources.

When? Each specific piece of the action plan also should have an implementation schedule.

Why? The action plan quantifies the objectives and benefits of recommended BMPs whenever possible. When you apply for grants for funding your BMPs, grant administrators will ask the why question.

multate an effective action plan, the recommendations must answer the questions of what, who, how much, when, and why.”

The North Branch Experience

At the time this handbook was written, an action plan for the Lake County portion of the project area had been drafted and had received stakeholder input. The Lake County action plan was created as a grid, which included a column for each of the following:

- specific action steps
- responsible parties
- supporting parties if any
- priority
- implementation date

When your plan is drafted you will need to take it back to the public for a reaction. On the North Branch this was done through a public meeting process. Ideally, you should allow six months to a year for this part of the process to fill in all the details of your plan and make sure that it has “buy-in,” or stakeholder backing. On the North Branch this time frame was much more compressed.

As Patricia Werner of the LCSMC notes, “People totally underestimate the time it takes to organize a watershed management plan.” She emphasizes that much of the time is devoted to getting and keeping people involved and coordinating meetings and other efforts to ensure that the process builds stakeholder ownership of the eventual outcomes. It is not glamorous work, but it is critical to creating watershed improvements through watershed management planning.

People totally underestimate the time it takes to organize a watershed management plan.

—Patricia Werner, LSMC



Examples of Watershed Issues and Types of Potential Solutions

Changing Maintenance Practices through Outreach to Targeted Stakeholders

As discussed elsewhere in this chapter, the policies and practices of agencies and major landowners can have significant impacts on the health of your watershed.

Examples of such agencies include drainage districts, the Army Corps of Engineers, and major landowners, such as forest preserve districts, corporations, and golf courses. Outreach to targeted groups—raising awareness about best management practices and providing examples of similar agencies or land managers who have had success with watershed-friendly practices—can be an effective tool for promoting watershed solutions. (See the sidebar, “Wilmette Golf Course Project,” in chapter 9 for an example of how the North Branch project partners worked with golf courses to share information and expertise on watershed-friendly golf course management.)

Changing Maintenance Practices through Changing Policy

The North Branch inventory of storm-water detention basins found that many

were not functioning adequately due to lack of maintenance. This is an issue that could be addressed at the policy level.

Currently, any time a new development involves stormwater drainage changes, such as the creation of a detention basin, the individual homeowners’ association is responsible for maintenance of the structure. Another way to handle it would be for the developer to set aside funds for a local unit of government to do the needed maintenance.

Changing Maintenance Practices through Coordination of Existing Policies

Stream maintenance on the North Branch is currently conducted by several agencies including four drainage districts and two forest preserve districts. Additionally, in areas of the Chicago River that are navigable waterways, the Army Corps of Engineers is mandated to keep the waterway passable. Currently, the drainage districts and the forest preserve districts all have their own policies or traditions in stream maintenance, whether it be for removing debris or stream blockages. A possible solution would be to

cooperatively develop a coherent set of practices, which could be collected in a guidance document that all participating agencies would share.

Changing Individual Behaviors through Education: Lawn Care and Native Landscaping Trends

Lawn owners in this country have a bad case of chemical dependency. Lawn care chemicals—herbicides, pesticides, and fertilizers—can all contribute to nonpoint source pollution in an urban watershed. Programs focusing on responsible lawn care by providing tips on watering and how to limit chemical use have been around for some time. In addition, there is growing interest in replacing lawns—in whole or in part—with more watershed-friendly forms of landscaping including native landscaping, which makes use of deep-rooted prairie plants. Over time, these deep roots greatly increase the infiltration and water holding capacity of the land where they are planted.



9. Hands-On Projects: Demonstrating Progress

Hands-on projects reawaken people's individual sense of hope and develop a community sense of hope. A sense that we can do something positive by acting together. That maybe we can heal our planet one step at a time.

—David Ramsay,
Friends of the Chicago River

This chapter examines the ingredients of successful watershed management planning demonstration projects by sharing the experience of the North Branch Watershed Project partners. Hands-on projects can test or demonstrate the effectiveness of best management practices (BMPs) that improve watershed conditions or prevent further deterioration in water quality. Projects highlighted in this chapter include both demonstration projects developed alongside the planning process, as well as Prairie Wolf Slough, a wetland project that was one of the activities that led to watershed management planning on the North Branch.

Why go to all the trouble of demonstration projects? Hands-on projects can provide the impetus for a watershed strategy in a community; they can also be an outcome of a planning process. Hands-on projects have no equal as a means of bringing together active stakeholders and building trust, developing constituency, raising awareness, and educating children and adults about water quality and watershed issues. Hands-on projects are a miniature version of watershed improvement in general and involve people in making the watershed better and building habits of collaboration. Action inspires shared vision and overcomes fragmented, overly narrow institutional agendas. Projects and hands-on work get people out of their offices and out of limited ways of thinking.

Hands-on projects provide a focal point for developing leadership, stewardship, and funding as well as being effective means to introduce, test, or win support for new ideas or techniques. Successful hands-on projects develop

Hands-on projects are a miniature version of watershed improvement in general and involve people in making the watershed better and building habits of collaboration.



What Makes People Commit to a Watershed Project

- An inspiring vision.
- Making the connection with personal/individual interests or goals and project outcomes.
- An understanding of why the project matters and what it will change.
- A well thought out plan.
- A careful, realistic budget.
- Seeing that the project is based on sound models or methods.
- Evidence of expertise.
- Seeing the project site or work in progress.
- Being shown what the site could look like when the project is completed.
- Seeing the involvement and commitment of a diverse range of partners.
- Personal motivation.
- Seeing a plan for long-term stewardship of the site.

credibility for organizations and partnerships and demonstrate an ability to organize and get things done. Projects can achieve all this in addition to tangible improvements in areas such as soil erosion control, runoff control, habitat, and water quality.

There are few, if any, hard and fast rules about how good projects happen. There are, however, some common ingredients and common spirit—combining vision, shared hard work, and ingenuity. It is no accident that this same spirit drives successful watershed change.

When Is It Time For a Demonstration Project?

Friends and other project participants emphasize the benefits of getting started with projects as soon as possible within your watershed. Rick McAndless of the North Cook County Soil and Water Conservation District comments, “Planning alone can get so dry, but demonstration projects give people a goal, something on the ground, so people can say ‘we’re getting somewhere.’” Tom Krapf of the Natural Resources Conservation Service (NRCS) adds, “Look at what you can do now, show some success early on.”

Getting Started: Ingredients

What are some of the specific components that successful watershed management planning projects tend to share?

Vision

Without vision there is no project. Any project—whether it’s a place for children to play, an experiment in bioengineering, a wetland restoration, or an urban wildlife preserve—depends on a driving vision shared by one or more people. Somebody has to have an idea, an inspiration, for how the watershed or river will be changed.

David Ramsay of the Friends of the Chicago River says it pays to “be bold at the beginning; people with bold plans inspire others to join them.” But vision alone is not enough; unimplemented ideas for watershed improvement abound. Why does one project get completed, while another remains a plan, gathering dust?

Need

Projects that meet a recognized need generate more support (of all kinds) and get implemented more quickly. If you have a proposed project that meets a need that is not commonly recognized, you need to make the case to the public and to agencies that you want to involve in the project.

Stakeholder Motivation

The committed interest of the local community can be a great driving force in making projects happen. The earlier in the process that stakeholders begin to take leadership roles, the brighter the future of the project. The interest of stakeholders can leverage the interest of others—for example,

continued on page 60



Melody Farm: Unlikely but Successful Partners



A 75-acre chunk of open, undeveloped land comes on the market in the established and affluent Chicago suburb of Lake Forest. The site includes a restorable section of the North Branch of the Chicago River. A real estate developer and a local land conservancy are among the interested buyers. The developer buys the parcel for \$60,000 an acre—not a bad price given that he stands to make many millions of dollars from 58 mansion-like homes that he plans to build there. Another familiar case of winners and losers, right? A vision of a restored, ecologically valuable nature preserve loses out to money and wall-to-wall housing development, right? Wrong.

The land trust, Lake Forest Open Lands Association, approached the developer, Richard Kender, about another outcome. The result, an award-winning conservation development that is the first completed demonstration project of the North Branch Watershed Project, has surprised and delighted many onlookers and participants. Kender sold 50 acres of the parcel to the land trust (at below what he paid for them), voluntarily reduced the number of houses he planned to build, and gave up estimated millions of dollars in profits.

The land trust parcel is being turned into a nature preserve, that includes an environmental learning center. The section of the Middle Fork of the North Branch, channelized almost 100 years ago to accommodate agriculture, is being restored to something resembling

its prechannelized condition, with a steep bank of old dredge piles being “shaved down” on one side so that the river, when it floods, can flow onto its natural floodplain, restoring the original wetland character of the area.

Stephen Christy of Lake Forest Open Lands says, “We had all the usual partners. The unusual partner was the developer. He was very enthused about the whole process. He paid to have all the brush and trees removed. This spring [1998] he’s restoring a historic bridge.”

Kender’s upscale homes will benefit from the views of the Melody Farm Nature Preserve, but his reasons for agreeing to the deal include more personal ones. Christy notes, “He’s really part of it. He liked the idea that the river be reintegrated as part of the landscape. He saw the wisdom of a good development that included conservation.” Kender himself says, “This was an opportunity the likes of which had never arisen in Lake County.”

Other partners include the Robert Donnelley family, which gave a conservation easement for an additional 10 acres of land for the preserve, Friends of the Chicago River, Lake County Youth Conservation Corps, and the Illinois Environmental Protection Agency, which gave financial assistance to the project.

People working together is both a necessary ingredient and an important outcome of hands-on projects and watershed management planning in general.

politicians or potential funders, many of whom rank community involvement very highly in their criteria for support. In addition, when citizens get involved early with a meaningful role in a process, they tend to stay involved.

One proven way to establish connections with community is to involve children. One of the strengths of the Wilmette Golf Course Project (see page 65), for example, was that a troop of Girl Scouts was a major partner and participant. According to Ramsay, "If you get young people involved, you can be sure that local officials will be there to associate themselves with the project. Who doesn't believe that children are our hope for the future?"

Collaboration

People working together is both a necessary ingredient and an important outcome of hands-on projects and watershed management planning in general. Hands-on projects are too complicated—and too much work—to undertake alone, and the experience participants gain working together on a project is a vital resource in watershed change. As discussed in chapter 5, collaboration is not always (or ever) easy. But it is at the heart of watershed change.

Jim Anderson of the Lake County Forest Preserve District gained extensive experience with partnership projects with the Prairie Wolf Slough project. He suggests, "Have well-defined roles in the beginning. [Ask] how are we going to do it? Who's going to do what?"

Diversity of Participants

There are many advantages to having a range of stakeholders involved in your project. Participants can be a source of funding, permits, and expertise; the fact that you are collaborating can itself generate interest in your project.

Necessary Know-How

Demonstration projects get done when participants possess or acquire the expertise needed to make the project a success. This expertise can be something shared by project participants or donated or contracted by an outside individual or firm.

Expertise is vital to avoiding disasters. It can also inspire people to trust your project. When people can see that you have lined up the technical expertise needed to successfully complete the project, they may be inspired to help you get funding or necessary permits or overcome a variety of hurdles. If your project is based on a new technique or model, the involvement of experts becomes vital.

Understanding a Specific Site or Issue

Successful projects are conceived and designed with reference to and a solid understanding of the physical, political, and social features of a specific site. It is impossible to know every detail about a place before you start digging or planting, but do the best you can.

Leadership and Stewardship

The passion and commitment that make projects successful can come from various sources. Leadership and stewardship can come from stakeholders or agencies and can include professional paid staff or volunteers. Whatever the source, however, a successful project depends on committed leadership, on individuals who want to see the project happen. Good coordination and project management is critical to sustaining leadership and stewardship. If a project is not well managed, volunteers and leaders may get burned out.

Dedicated leadership is vital throughout a project, from providing the vision to get a project started to the commitment to the long-term stewardship of a project (See chapter 11). Developing new leadership is also one of the most important outcomes of hands-on projects. There's something about getting hands dirty and feet wet that seems to create a sense of commitment.

Stages in a Demonstration Project

Keep in mind that these steps do not always happen "in order," and that one stage doesn't necessarily end when another begins. For example, locating necessary resources and funding will probably be ongoing.

Getting an Idea

Some demonstration projects arise because of one person's individual vision; others develop from a watershed or river corridor assessment process, formal or otherwise. Community interest may be identified by surveys or expressed by individuals or community organizations. Often projects get selected when a combination of these factors come together, resulting from a convergent evolution of interests.

Shopping the Idea Around

Before formal planning and permit stages, successful projects often go through an informal stage in which initial project participants talk up the project and get new ideas and involvement and support. The River Rap, for example, brought together public input in the North Branch Watershed Project. Some other possibilities include a series of meetings, brainstorming sessions, or a public design charette—a process during which stakeholders work with technical facilitators to create a design or visual plan for a stretch of river or section of watershed.

Make sure the idea fits with your planning effort. Don't lose track of your goals. Remember, sometimes it is your job to say "no" to projects, which while well-intentioned, just don't fit with the watershed management plan.

Design and Planning

What's in that soil? How steep is the slope of the river bank? Who owns the adjacent land? Where is that sludgy-brown runoff coming from? How does that downstream community feel about the project? This is the stage of getting down to the nitty-gritty that will enable the project to succeed, techni-

Dedicated leadership is vital throughout a project, from providing the vision to get a project started to the commitment to the long-term stewardship of a project.



Prairie Wolf Slough: A Volunteer Extravaganza

Prairie Wolf Slough touched a whole range of people, old, young, inner-city, suburban.

—Jim Anderson, Lake County Forest Preserve District



Once upon a time there was a cornfield near a river in Lake County, Illinois. A group of agencies and community leaders came up with the idea of restoring 28 acres of the site to the prairie wetland it had once been. The benefits would include improved water quality, floodwater management, environmental education, recreational opportunities, and increased habitat for wildlife. Prairie Wolf Slough, as the site was named, has come to pass, yielding the expected benefits and more due to the commitment of project partners and more than 700 volunteers.

"This project was a huge amount of work and it never would have succeeded without the contributions and leadership of volunteers," says David Ramsay of Friends of the Chicago River, "We certainly wouldn't have got those 51,000 plant plugs in the ground without that

effort." Site design and preparation, including breaking old drainage tiles, creating a water control structure, and regrading the land contours, were all done by professionals. The Lake County Youth Conservation Corps cut brush, built walkways and bridges, and helped with planting. Volunteers helped with clearing invasive vegetation and planting native wetland, prairie, and savanna plants. With additional training, volunteers are now taking on roles as long-term site stewards.

This did not all happen by magic. As Mike Martinez of Friends of the Chicago River says, "Volunteer participation needs to be properly nurtured and cultivated with at least as much thoughtful attention and care as native plant species." Volunteer training and establishing a sense of community at each work day were just some of the pieces. Polly

Greathouse, a project volunteer, remembers that "the tradition... of starting each workday in a 'friendship' circle created an excellent venue for overview, instruction for the day, and questions and answers. We as volunteers felt well directed and fruitful."

Prairie Wolf Slough is an example of blending the efforts of agencies and volunteers. Contributions of time, money, and expertise from agencies as well as the dedication of individual staff members were key components.

The Lake County Forest Preserve District, Lake County Stormwater Management Commission, U.S. Fish and Wildlife Service, Illinois Environmental Protection Agency, Lake County Youth Conservation Corps, National Park Service, Natural Resources Conservation Service, and Friends of the Chicago River all helped make it possible.

cally, financially, politically, and socially. Anderson observes, "Appropriate planning can save you a lot of trouble." Site designs, engineering plans, work plans, funding plans, planting schedules, and soil tests all help the work get done properly. Find your technical people as soon as possible, so that you can get answers to important questions. Knowing the issues and opportunities at a site as you plan and design can save countless headaches later on.

Develop a Written Proposal and Work Plan

Once you have gathered the initial partners together and developed the basic ideas behind the project, develop a written proposal that includes a work plan which outlines the basic elements of the project, specifies the roles and responsibilities of the various partners, includes a project schedule (time table) for getting the work done and develops a project budget. The document will make the partners feel more comfortable about the project and will serve as a basis for funding applications.

In your project schedule include dates for permits, grant applications, planting, and construction. Remember also that things usually do not go as planned, and it is a good idea not to base your schedules and budgets on best-case scenarios. Plan for rain or drought or bulldozer malfunctions; build some cushion into your planning, or develop both best-case and worst-case schedules and budgets.

Permits

David Ramsay of the Friends urges, "Don't forget permitting. It can stall or even kill a project [if ignored]. Contact permitting agencies as soon as you can in your project, definitely soon after you get funds and firm participant commitments." If public funds are being spent, you may need an archeological investigation. Most projects require a wetlands investigation and permits from the US Army Corps of Engineers and the state agency in charge of permitting work in streams or drainage modifications.

Project Budget

Developing a budget is one of the most important things that you will need to do at this stage. Remember that a budget is not set in stone; it is a planning tool, your best guess at how the project will proceed.

Anderson recommends "giving yourself time to think about everything that needs to be thought about. Give yourself lead time to make adjustments." If your project price tag seems overwhelming in relation to available resources, consider dividing the project into phases. A staggering price tag can make potential supporters hesitate. Divide the project up into more financially and organizationally manageable tasks. Once the first phase of the project is under way, you will be able to take people to the site and show them tangible benefits, which will enable you to round up support for later phases. Remember to include cost-of-living increases in your budgets.

Project Management and Coordination

It is important to define project management and coordination, for exam-

Projects tend to become things with a life of their own.

—David Ramsay,
Friends of the Chicago River



Projects at a Glance

Benefits

- Implementing water quality best management practices.
- Fostering watershed collaboration.
- Fostering watershed stewardship.
- Building constituency interest and awareness about watershed issues.
- Building working relationships between agencies and stakeholders.
- Creating measurable improvements in water quality, flood control, and biodiversity and increasing access to recreation and/or environmental education.

Ingredients

- Vision
- Need
- Stakeholder motivation and involvement (not just “acceptance”)
- Funds
- Collaboration
- Diversity of participants
- Technical expertise
- Understanding issues or site
- Leadership and stewardship

ple, who will actually supervise construction. Decide whether you will have all your work done by project partners or pay consultants or contractors for part or all of the work. Relying on consultants more than is necessary, however, can reduce volunteer involvement and reduce the sense of ownership of partners. On the other hand, if you have funds available, private firms may be able to provide needed expertise or help you meet a key deadline.

Line up participant commitments, including letters of support, official support from governing boards, city councils, village boards, and intergovernmental agreements, and permits.

Volunteers and Long-term Maintenance

Volunteers are another vital component of successful projects, for getting the work done, for ongoing stewardship, and for connecting people to the watershed. An investment in volunteer recruitment and training at this stage can have lasting benefits for your project and the watershed. Remember that one of the most important parts of your planning will be to identify who will have long-term responsibility for future maintenance of the project when work is completed.

Seeking Resources: Including Funding and Volunteers

This is truly an ongoing process. Some projects get funding for watershed management planning stages, but most interest and support comes for implementation stages. Armed with your planning products—a budget, a work plan, commitments from participants—you are best prepared to solicit support. Many funders are wary of supporting an open-ended project, but when asked to support a particular aspect of a specific demonstration project, they will be much more receptive.

Implementation

This is the moment everybody waits for, when the site is prepared, the hip-waders pulled on and everybody gets their hands dirty. Even though it is listed here near the end, getting to action can start much earlier in the process, for example, with site cleanups, brush clearing, or site tours to build interest and support. Remember that community and volunteer involvement does not have to wait until this stage. Volunteers can help with assessments and with recruiting other volunteers, for example.

Stewardship and Maintenance

Stewardship and maintenance are vital to any project. Whether your demonstration project includes wetland plantings or engineered water control structures or both, it will require maintenance. This is a practical requirement; it is also at the heart of why hands-on projects are important. Successful projects involve and expand the watershed constituency through tangible contact and exposure. Projects create a need for practical watershed stewardship. Including stakeholders in this stewardship can benefit the project and the watershed.



Wilmette Golf Course Project

Through the inventory process, the North Branch Planning Committee found that golf courses made up over 4,000 acres, or 7 percent, of the land area of the watershed. This meant that golf course management, which historically made heavy use of chemicals to maintain perfect green fairways, has a potentially significant impact on water quality in the watershed. So when the North Branch Planning Committee was approached by Mike Matchen, the superintendent of the Wilmette Golf Course, a Wilmette Park District facility on the Chicago River, naturally the North Branch committee was interested.

Matchen had already done much to manage his course with an ecosystem approach including progress toward certification as part of the Audubon Sanctuary program. Now he wanted to do more. He had already joined forces with a Girl Scout troop, led by Suzanne Kilner, that was interested in doing volunteer water quality testing and restoration work. Together they approached the North Branch Watershed Project and received a \$20,000 grant to complete a pond restoration project.

Matchen hired a consultant to do the design work and grow plants for the project. The Girl Scouts, in addition to learning monitoring techniques, painted informational signs and videotaped the whole process. Matchen doesn't see himself or his course as unusual. He sees environmental management as part of his job. "It's the right thing to do. We



Scout leader Suzanne Kilner and a girl scout planting native vegetation at the edge of a pond.



One year later—Laurene van Klan, Lionel Freeman and Mike Matchen look over native plantings.

are environmental stewards of the land." One of the most promising aspects of this project was Matchen's eagerness to share his work with other golf course superintendents.

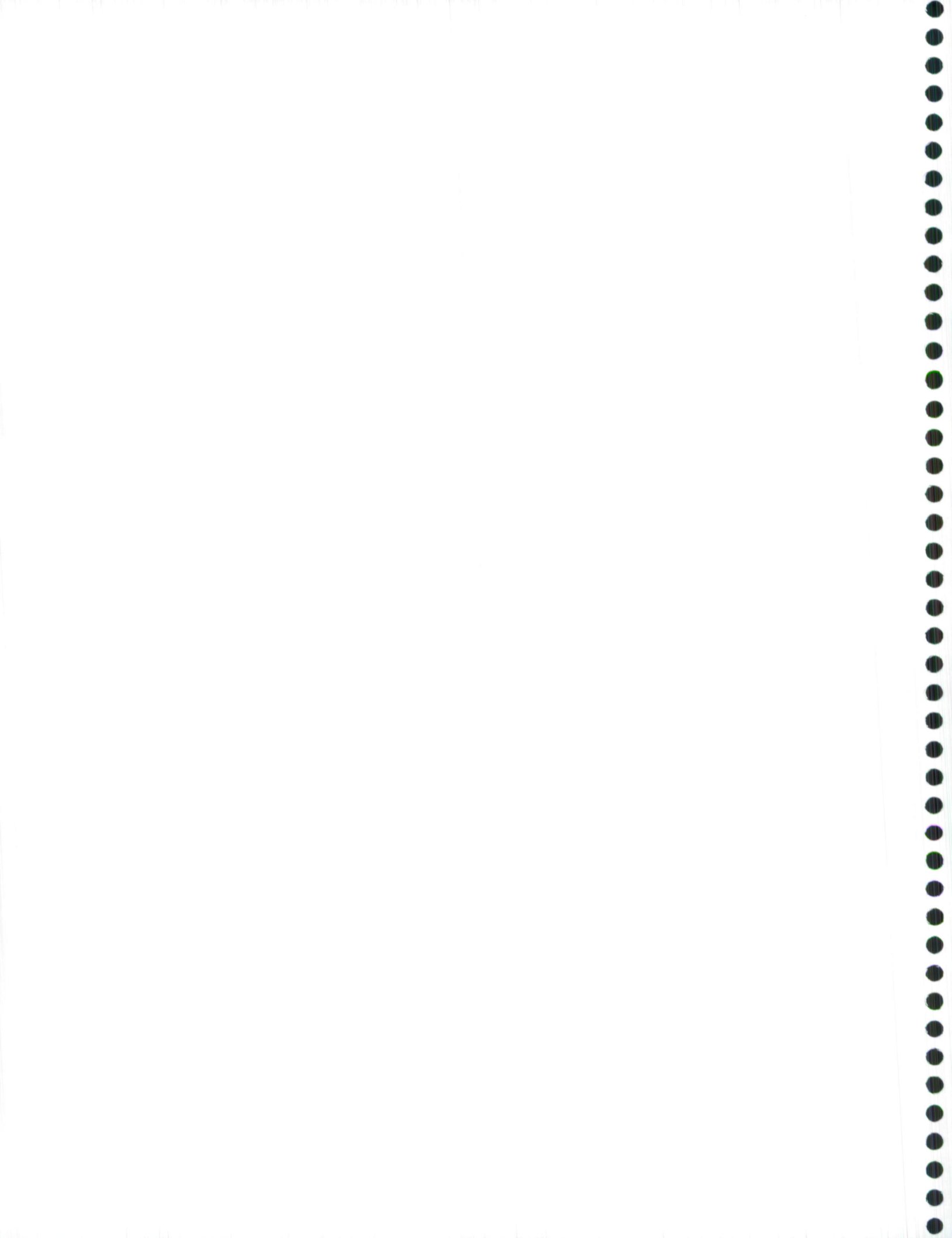
"The biggest thing is education," says Matchen. "It takes a lot of time and enthusiasm—that's what sells it." An important part of this educational effort was a seminar for other golf course superintendents. A North Branch partner, Openlands Project, organized the event. Matchen and his colleague, Don

Cross of the Skokie Country Club, spread the word about the event to other golf courses. Over half of the North Branch courses sent staff, representing 20 courses, demonstrating a high level of interest.

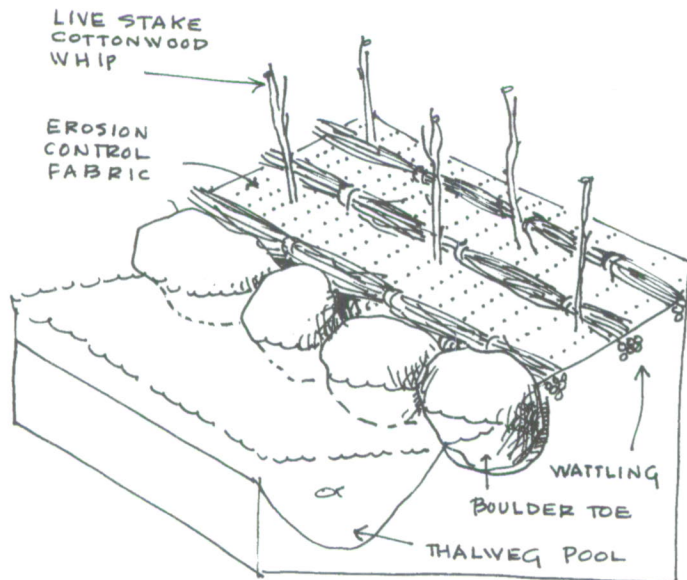
Matchen says most of the attendees were already aware of general concepts of ecosystem-based golf course management. The seminar, however, provided details and "made superintendents aware of different places to go for funding, even for private lands," according to Matchen. Even more important, golf course staff got "to look at Friends and Openlands and realize this is a partner and a good partner. We're all on the same team," says Matchen.

"This is how change happens," says Kent Taylor of Openlands Project. He says the event showed him that a number of courses are converting to in-depth ecosystem management. "Biodiversity is seen as a value. These courses are saving money, preventing disease problems. They're not a majority but it's a significant movement." These changes in golf course management will in turn benefit water quality in the watershed.

"One of the neat things about this project was that it was a learning process," says Matchen. "Environmental groups—Openlands and Friends—have done a turnaround in how they view golf courses. And we've learned that there are environmental groups willing to work with us."



10. Public Outreach and Education



PREVENTING STREAMBANK EROSION

Nurturing aware and active watershed stakeholders is central to healing watersheds. This is the job of public outreach and education.

The task of outreach can be divided into two basic categories: The first deals with getting meaningful input into the planning process (see chapter 8). The second involves building a watershed constituency. This chapter looks at these long-range aspects of outreach. Successful outreach depends on both techniques and on recognizing key truths. These key ideas include:

- Public awareness is inseparable from involvement. People learn from each other and through hands-on interaction with their watershed. Awareness developed through involvement creates motivation for change. Physical interaction with the watershed creates a psychological connection to the watershed.
- Successful outreach and education is a two-way street. Approach your education efforts with an open mind. People need more than information; they need opportunities to make a difference, to be heard, and to get involved.
- Change in public perceptions, awareness, and behavior happens one individual at a time, through personal human contact.
- Don't do it alone. Find partners with common concerns to expand the reach of your efforts.
- Encourage groups that are already formed to become involved. Don't just focus on individuals.

Outreach is at the heart of our approach. Outreach is integral to watershed management planning. We want people to make a connection, to care about the river, to understand watershed issues, water quality, habitat, and soil erosion and to be moved to take some action.

—Chris Parson,
Friends of the Chicago River

Demand [for watershed change] is not something you create over a year, but over time—through activities, education, canoe trips, and posters—people do become interested.

—Tom Price, Northeastern Illinois
Planning Commission



Artist Mikel Bresee instructs art student muralists. Their completed mural of the Gompers Park Wetlands Restoration Project is a powerful outreach and education tool.

As discussed in chapter 2, the attitudes and actions of individual members of the public have an enormous effect on the health of the watershed—what we flush down the toilet, how we dispose of used motor oil, how far we're willing to walk from our car or a bus to a store, whether we have a lawn and what we put on it. Many construction, road design, and real estate practices that are detrimental to watersheds are also defended as a response to public demand—how wide roads are, the number of parking spaces in a strip mall, use of curbs and gutters over grass swales. Many watershed experts believe that public education and involvement are essential to altering individual behavior and thus helping the watershed.

In addition to inviting and encouraging individual stakeholders to be active in every stage of your watershed management planning effort, think about general watershed education and public involvement. Take the time to find out the level of awareness about watershed issues in your area (see chapter 7). Knowing people's watershed attitudes is essential to designing your public outreach efforts. This is not always easy. In addition, even with a precise knowledge of people's current behavior and attitudes, you may not know in advance how human changes in awareness and action will translate into physical change in the watershed. (See the section "How Did We Do? Real-Life Evaluation" in chapter 11.)

On the North Branch watershed project, participants were in agreement that, whatever the challenges, individual behavior was a vital piece of the watershed puzzle and that public outreach needed to be an important and ongoing part of the watershed project.

Some General Things to Remember About Stakeholder Outreach

Public involvement and education can be a slow, unpredictable, and at times frustrating process. When the going gets tough, remember:

It Takes Time

Changing cultural attitudes about watersheds and rivers, one person at a time, takes time. As Carol Spielman of the Lake County Board says, "It is most frustrating to have to proceed slowly rather than look to one single solution for building public involvement. But there are no wand-waving solutions here [to change a watershed]."

Accentuate the Positive, Eliminate the Negative

Focus on what people have to gain by helping the watershed and on positive actions they can take. Tap into stakeholders' concerns and interests—their desire for clean, safe drinking water, relief from flooding, more open space, or a healthy environment for their children.

Design Your Public Education Around the Behaviors that Have the Biggest Impact

Link your education efforts to specific problems in your watershed. Base

your educational programs on an assessment of what people's attitudes and behaviors are and how these impact the watershed. Focus your efforts on the greatest challenges to the health of the watershed.

Lack of Public Comprehension of Science Is Not Always the Problem

To understand their watershed, people may need access to and comprehension of technical or scientific information. But often the limiting factor in public involvement is a lack of conscious connection. David Ramsay of Friends of the Chicago River emphasizes this point. "We tend to live in electronic worlds and fast-moving cars that disconnect us from the natural world and the daily, seasonal fabric of life. More abstract knowledge creates little impetus for change. Direct experiences through all the senses do create change. For example, educational curricula should be multidisciplinary, including the arts and humanities—drawing and journaling—as well as sciences. We must reach the whole person; only the whole person will care enough to act."

Reach Out Wherever Possible

Teachers in a well-funded school district may have more time and resources to collaborate with you or incorporate new material into their curricula. But don't write off less affluent public schools or settings. Successful education and outreach programs are possible in a broad range of settings.

Think Quality and Quantity

When planning outreach activities, aim for a mix of breadth and intensity. Plan some activities that will reach a broad range of people and others that may reach fewer people but build a connection and commitment to the watershed in a few individuals. For example, compare the impact of receiving a brochure in the mail about watershed-friendly landscaping with the more intensive experience of a personal guided tour of watershed conditions and innovative landscape solutions. Both the brochure and the tour have their uses. The brochure ensures that a large number of people have access to important information; the tour provides an experience that changes a small number of people but may have important ripple effects.

Be Willing to Publicize Your Efforts

It's tempting to believe or to hope that your good work will speak for itself. Tempting, but not wise. The success of your watershed initiative depends on helping people understand why your work is important and gives them reasons relevant to their own lives to share your enthusiasm. Publicity and public education overlap.

Take Me to the River

The river or stream that a watershed feeds is often an effective focal point for mobilizing public interest and involvement. Many people find the concept of a watershed abstract; the river is something tangible, a place you can show people, where they can get their hands and shoes dirty. For example,

Thanks for teaching me about the river...and how important the earth is. Now more than ever I really want to make the Laflin River Site a beautiful place where you don't have to jump the fence to get into...

**—Natalia Alcaraz,
Student at the Whittier School,
Chicago**



Tools of Outreach

- hands-on activities
- general education
- publicity
- educational settings

when the Friends formed a partnership with the Whittier School on Chicago's South Side, river visits and study became a very real part of the curriculum and led to an ongoing stewardship role for the school. (See the sidebar below, "Whittier School: A River-Based School Project.")

Hands-On Outreach Activities

Chris Parson, who runs the North Branch Watershed Project education program, emphasizes hands-on activities because they work. "People want examples, some kind of model. The most important tool of outreach and involvement for us is restoration hands-on activities. It's the activity that results in the greatest potential for changing behavior and thus the watershed."

Restoration Projects

Restoration projects generate a sense of ownership or stewardship that is essential to watershed improvement. There are many opportunities to protect or restore the banks of even the most urban rivers. It is in this type of project that participants learn about watershed issues and it is these people, who have had a hands-on experience, who are most likely to change their behaviors.

Cleanups

Watershedwide cleanups cast a wide net for volunteers willing to spend a morning or afternoon removing trash or doing restoration work in the watershed. Plus, if you get sufficient participation, you will be able to attract media coverage and get your issues out to an even larger audience. Friends of the Chicago River does an annual watershedwide river cleanup, River Rescue Day, organized by site captains who take responsibility for getting volunteers to one of dozens of sites. A picnic after the morning's work brings together all the volunteers—from high schools and elementary schools, canoe clubs, scout troops, corporate volunteer committees, and environmental groups—for lunch, entertainment, and a light helping of watershed education. The result is often increased numbers of committed volunteers. Whether a cleanup involves the entire watershed or is a smaller, more local event, it can be a great entry point for further involvement.

Storm Drain Stenciling

"Don't Dump, Drains to River" can be seen painted on the gutter near the storm drains of many urban communities, a daily reminder to residents of their connection to the watershed or sewershed. Stenciling events can be organized like cleanups, with similar benefits. The stenciled drains broadcast a message to large numbers of urban residents, while participants in the stenciling have an in-depth opportunity to learn about watershed and water quality issues. Some projects follow-up stenciling with a brochure campaign to reinforce the message.

Trips

Canoe or boat trips or walking tours along the river or through the watershed can help build interest and awareness about watershed issues.

They can also, potentially, raise a modest amount of funds for your effort. Friends of the Chicago River has developed a program called U-CAN, which annually recruits and trains a diverse group of young adults to lead canoe trips. The trainees learn canoe skills and gain awareness of river and watershed issues. They then go on to educate and inspire others. This is just part of the Friends' overall program of canoe trips, boat tours, and guided river walks.

General Public Education

Publications/Brochures/Posters

Many innovative watershed initiatives across the country have created and distributed educational materials on watersheds and on specific issues relating to urban runoff, such as lawn care and safe disposal of automotive chemicals. Many of these programs sound promising, although most are relatively new, and it is difficult at this stage to measure the impact they are having.

A downside of publications is that materials can be very expensive to produce and distribute, especially if you need materials in several languages to reach a broad spectrum of people in your watershed, as is often the case in urban watersheds. They are also resource intensive in terms of paper and water use for printing. It is also debatable what impact printed materials have. At the same time, alternative approaches, such as Internet-based distribution, while increasingly available in homes, schools, and libraries, are still limited in terms of who they reach.

If printing in multiple languages, be sure to have someone who speaks the language fluently review your work. Poorly worded messages or offensive language can sink your project.

Conferences, Workshops, and Training Sessions

Conferences can reach professional audiences or interest groups, such as golf course superintendents or landscaping professionals. The level of effort can range from attending or presenting at a conference to organizing your own. Conferences can also inspire and involve the general public, especially if there is already some level of interest in the watershed. From Voices of the Stream in the early 1990s to the Friends of Trashed Rivers Conference to the River Rap and Voices of the Watershed, events in the North Branch region have given everyone a chance to speak, resulting in high levels of public participation.

Networking/One-on-One

Never underestimate networking as a vehicle of change. Personal experience is a powerful motivation. If the individuals you reach go on to involve or educate other people, then your time sharing your expertise and concerns about the watershed will have been well spent.

If the individuals you reach go on to involve or educate other people, then your time sharing your expertise and concerns about the watershed will be well spent.

Getting the message out about the work you are doing and why it is important can help you build public support.

Publicity : What Can PR Do for You?

Getting the message out about the work you are doing and why it is important can help you build public support. It can help you raise money, recruit new volunteers, reach policy makers, and raise awareness about your watershed.

Be sure your message is positive. Don't alienate any of your stakeholders or potential partners. It will be hard enough to get them involved, even when they like you.

Fishing, Flooding, and Finding an Angle That Matters

Why would the media (or anybody else) be interested in what you are doing? How does it tie into current events that are gaining coverage? Can you make the connection between the watershed and water quality? If recent record-setting floods have been in the news, can you show how a healthier watershed could reduce flooding or how current development practices might be contributing to the problem?

Effective public relations relies on making connections: connecting the watershed with issues of pressing concern to the public and policy makers; connecting your work with change for the better; helping people become aware of their connection to the health of their watershed. Much of the information people get, most notoriously from the TV news, is disconnected and presents situations without delving into history or causes. Your message needs to reconnect cause and effect, for example, by showing how land use affects water quality and flooding.

There's Enough Butter to Go Around: Sharing Credit

When a reporter calls you, make sure to tell him or her about the role other stakeholders are playing and provide phone numbers the reporter can call. Having several voices will give the media coverage more depth. Sharing credit also goes a long way toward strengthening ties between project participants and can serve as a reward for hard work and cooperation. But be sensitive—if a participant or individual wants anonymity or doesn't enjoy speaking to the press, respect those wishes. (See the resource section to learn more about publicity and public relations.)

Educational Settings

Incorporating existing educational institutions and settings into your outreach is vital. Forming alliances with educators helps get the watershed into all areas of the curriculum and reaches an important group of people: children. Reaching children is important directly; also, many adults become interested in issues when their children express concern about them. On the North Branch, educational outreach program efforts focused on reaching and teaching teachers. "By reaching one teacher, you reach potentially hundreds of kids," observes Chris Parson.

Educational settings represent a wonderful outreach opportunity. In addition to schools, informal settings such as nature centers and park districts

should not be overlooked. Many of these have existing public education programs into which you can integrate watershed components. You can form partnerships with schools by working directly with individual classrooms, by providing teacher training, or by doing a combination of these.

Working within educational settings can be challenging, especially when working with larger school district administrations. Schools are being asked to take on an increasing number of societal tasks, especially in less well-funded inner-city schools. Be sensitive to the other demands being placed on the educators you work with. Nevertheless, a great variety of watershed-related projects can be done with schools and in other educational settings. Water quality monitoring, restoration projects, and storm drain stenciling are some specific school activities teachers and students have found useful. Writing, mural painting, and oral history projects are just a few examples of arts and humanities activities. Educational activities can also produce useful knowledge about a watershed. For example, school-based water quality monitoring, if properly conducted, can provide important information about the health of your river and watershed.

The North Branch Model

Before designing the North Branch Watershed Project educational program, the Friends assessed the current state of water- and river-related education in the area. At the time, the Chicago Academy of Sciences, the Chicago Botanic Garden, and the Illinois Rivers Program all offered comprehensive water quality education curricula. The Illinois Riverwatch Network also worked with schools and community organizations on biological water quality monitoring. Numerous other organizations and agencies provided specific programs or presentations on water quality.

What was lacking overall was an emphasis on change, on how to take appropriate action to address watershed and water quality issues. Another issue was coordination of water quality information gathered in educational settings. While many schools and classrooms were using the river as an outdoor classroom, these efforts were not adding to an overall, coordinated picture of the river. The assessment also found a need for facilitating the involvement of teachers. Friends, other collaborating organizations, and teachers designed the educational program to focus on coordinating new and existing educational programming to foster awareness about—and action on—issues facing the river and its watershed.

The North Branch Watershed Project included the creation of the Chicago River Schools Network (CRSN). The mission of the CRSN is to foster educational programs in the Chicago River watershed. The idea is to help teachers use the Chicago River as a resource to meet educational goals, while educating students (K-12) about watershed and river issues and the actions they can take to address those issues. The network functions as a graduated system of support and involvement for schools. At the introductory level, schools commit to studying the river and hosting a classroom presentation. More involved



Students learning water quality monitoring by looking for macroinvertebrates.

Source: Friends of the Chicago River



Whittier students sketching by the river.

Source: Friends of the Chicago River



River Rescue Day, 1995

Source: Friends of the Chicago River

and committed schools step up their level of teacher training, adopt a stretch of the river, participate in River Rescue Day, and take on an action project. Members of the network get support and resources from the Friends and other network partners.

Another component of the network was the compilation and distribution of a "Curriculum Resource Guide," a compendium of resources to help elementary and secondary school teachers integrate the Chicago River and its watershed into their curriculum and activities. It includes resources and information about K-12 activities, in-school programs, field trips, Internet resources, and references to agencies, professionals, and other resources. Through the resource guide and other means, the network emphasizes a comprehensive curriculum approach and maximizes the impact of existing resources.

Schools find a level of involvement within the network that is appropriate for them. The desired goal is that schools, teachers, and students will, as they learn more, be motivated to become more involved. Chris Parson says, "if river curriculum is not interdisciplinary...it's teaching the wrong lesson. We can't let kids leave class thinking that the river is just a place where bugs live."

One of the premier examples of this approach is the teacher training and river curriculum offered by Southern Illinois University at Edwardsville (SIUE). SIUE has teamed up with Chicago River Schools Network to bring its teacher training up to Chicago. Bob Williams, the program's founder says, "I've trained thousands of teachers." He explains that educators who "have a support network" are the ones who end up being able to incorporate the river into their teaching.

It is important for teachers to form teams within a school. Individual teachers benefit when they can find others to share the work. This also ensures that if one teacher leaves, the whole program doesn't collapse. For example, at Schurz High School in Chicago, there are half a dozen teachers who have taken SIUE training, so there is always someone teaching the river unit.

The idea of the network is that there is room for everybody to learn from each other. The network is based on working with teachers with varying needs and resources. This is a vital aspect of the network. "Everything about our watershed is diverse," says Parson. "So it only makes sense that the network would incorporate diverse programs and schools."



Whittier School: A River-Based School Project



Whittier students and teachers explore Laflin site with illegal dumping.

Source: Friends of the Chicago River

Whittier School is an example of a river-based school project that has blossomed into something special for students, the community, and the watershed. Whittier is an elementary (K-6) public school located just north of the Chicago River near Ashland Avenue on the South Side of Chicago.

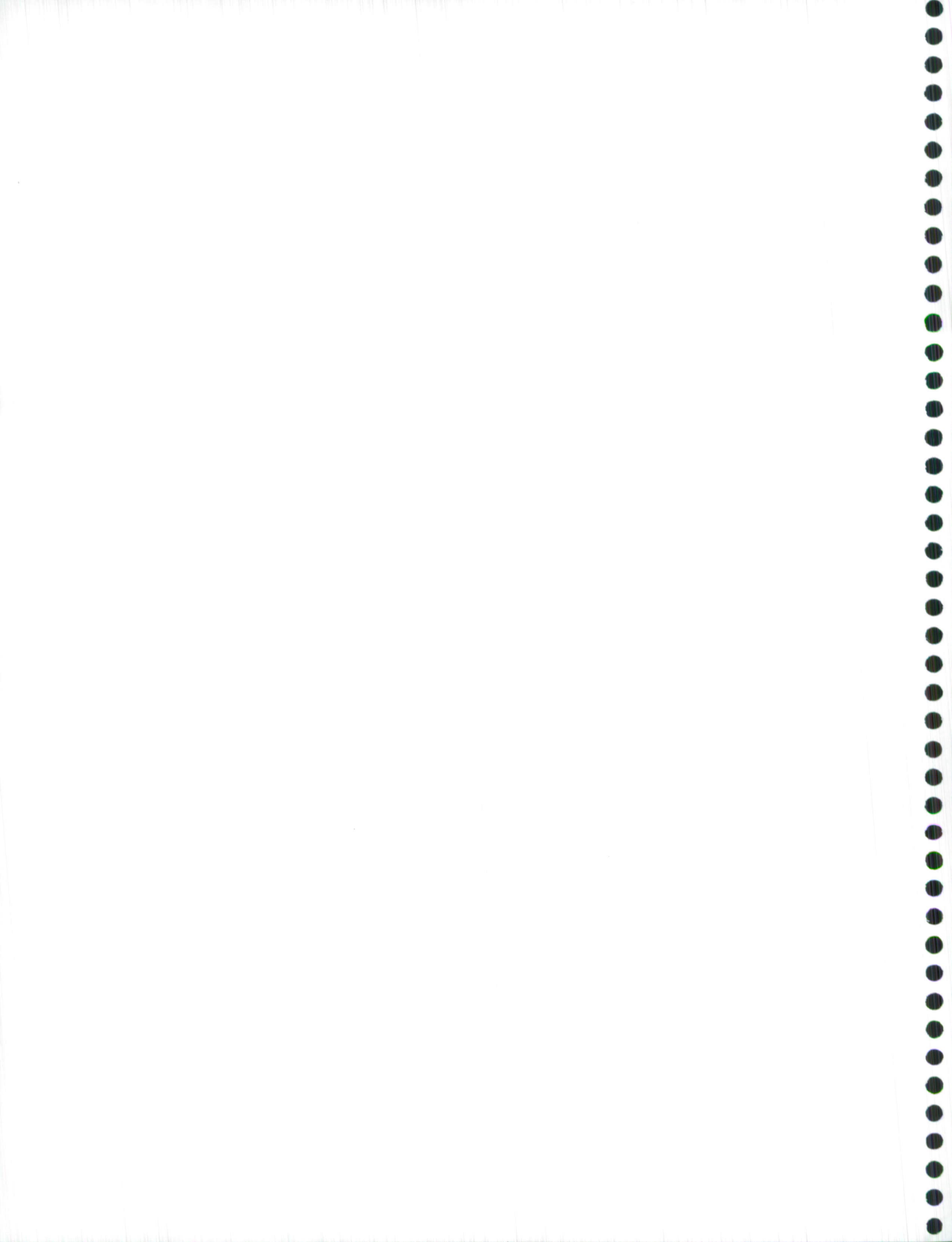
The partnership between Whittier and the Friends of the Chicago River started in the fall of 1996. Friends accompanied students, teachers, and some parents on a visit to a vacant site along the river. The site was in bad shape, in large part due to extensive illegal dumping. Even so, students saw potential for the site and were excited about the possibility of creating a river-study site there.

Working with the Friends, a team of seven Whittier teachers developed a yearlong curriculum for their 3rd-through 5th-graders. Their study of the river included field trips, murals, and a musical that students planned, wrote, produced, and performed. Students continued to focus on their dream of river improvement. They wrote to the landowner, the Metropolitan Water Reclamation District (MWRD), and sent pictures of the site. The MWRD responded, sending cleanup crews and erecting a barrier to prevent new dumping. Students learned that government,

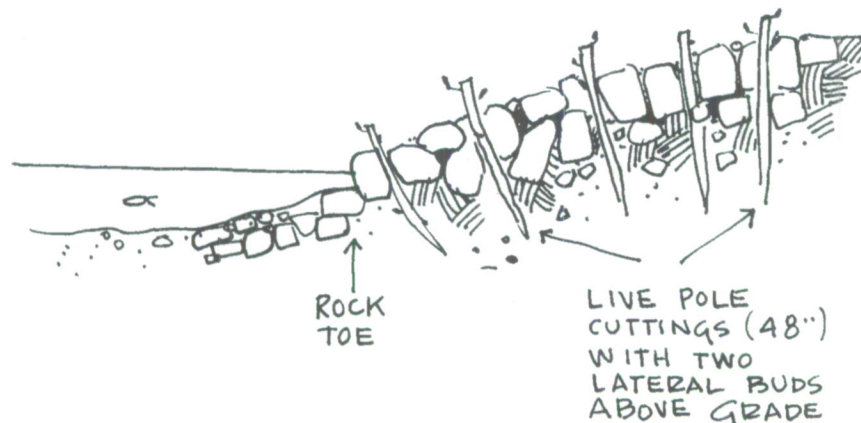
approached in a positive way, can take a positive role.

The story doesn't end there. Whittier is leading the development of a neighborhood land stewardship organization that would ultimately take responsibility for the site including a site plan, construction of the river lab, and maintenance. The MWRD, Neighbor Space (a city agency that works with communities on open space issues), and Whittier are currently negotiating a land transfer. Whittier continues to bring in new community partners, including enlisting the participation of Battaglia Foods, a local company located on the river that makes and distributes pizza supplies. Other partners include the Friends, the Parent Project, Mighty Acorns, Morton Arboretum, and the Chicago Academy of Science. The Oppenheimer Family Foundation supported the school's effort, while Kraft Foods, Albert Pick Jr. Foundation, and Dr. Scholl Foundation have supported Friends' participation.

The Whittier project continues to prove that river projects are not only for schools with ample financial resources. Whittier's resources are its teachers, students, and its initiative to involve the community.



11. Keeping It Going: Making Sure Planning Leads to Action



POLE CUTTINGS ON ROCK SLOPE

Now that you've come this far, how do you ensure that the progress you've made on implementing your watershed plan is documented and continues to be built upon? This chapter explores ways to keep your watershed management planning process growing and expanding and how to track or assess that progress.

Making the Transition from Planning to Action

Creating a watershed management plan, including an action plan with specific steps for improving your watershed, is an important accomplishment. But how do you take this document and translate it into positive change in your watershed? You will need to consider how to ensure broad stakeholder support beyond those who have already been actively involved. You will need to decide whether to get your watershed management plan formally adopted by city or county government.

These are important issues to consider, but perhaps even more important is considering how to keep interest in the watershed alive and growing. The principles are very simple. Good things can happen and can keep happening in your watershed when you keep attention focused on it, promoting steady and growing awareness about the watershed and its issues. This focused attention is the power that makes all the good ideas, policies, and intentions

*Good things can happen
and can keep happening
in your watershed when
you keep attention
focused on it...*

*People working together,
providing leadership and
energy and attention, is
what heals watersheds.*

of your watershed management plan become a reality. Keeping and building this attention depends on the same factor that got your initiative started—people. People working together, providing leadership and energy and attention, is what heals watersheds.

You probably also need some formal structure to keep your watershed initiative going. While individual people provide the spark, fire, and energy that lead to watershed change, most leaders, long-term, function better within a stable structure. Individual projects and initiatives may come and go; people may “retire” after years of service as leaders, but the overall need for a watershed strategy will likely persist. Keith Eichorst of Natural Resources Conservation Service (NRCS) advises asking yourself: “Can the group sustain the effort? Will the group or organization be able to live on with the loss of any one person?”

Another important component that helps keep your watershed effort going is staffing. Identifying funding for staff support and coordination can be invaluable in keeping things going. Staff may be entirely volunteer or a mix of paid workers and volunteers but having a structure and a watershed management plan to follow are vital. A structure and plan provide the context for different individuals to lead or be involved in watershed improvement and to lend their spirit and expertise. So what options are available?

Watershed Advocacy Organizations

A nonprofit organization that exists solely to promote the good of the watershed is an important option to consider. An independent, stable organization can be an important advocate and promoter of watershed change. Still, starting a new nonprofit organization is not a negligible effort; keeping one solvent and well run is a far greater task. The nonprofit sector has burgeoned in recent years and as governments, particularly the federal government, turn over more and more significant societal tasks to the private sector, competition will only increase.

Even so, a watershed organization has advantages. It can always put the watershed first, and it can keep attention on the issues. It can help the watershed directly through its programs and activities such as developing restoration projects, implementing plans, monitoring progress, and indirectly, through getting the watershed on other people’s agendas.

Housing Your Program within an Existing Agency

What about having the watershed initiative continue under the umbrella of an existing nonprofit organization or government agency? A significant advantage here is avoiding having to create and find financial support for a whole new organization. A potential disadvantage is that the watershed program may be just one project among many and thus receive less focus as compared with the situation of a specific advocacy agency. Another potential problem is that in budgetary belt-tightening periods, staff or even the whole watershed project may be jettisoned due to lack of funds or change in an agency’s agenda.

A government agency such as the Lake County Stormwater Management Commission (LCSMC), which has a watershed orientation and a sense of watershed stewardship, may be able to provide a stable home for its portion of a watershed strategy. Not all agencies, however, are equipped to fill this role. A genuine watershed focus needs to be within the agency's mission and jurisdiction; for example, a county agency might be limited in its ability to oversee a multicounty watershed.

Watershed Districts

One model for agency and local governmental cooperation is the use of Watershed Management Districts and Watershed Management Organizations. Minnesota led the way in creating these entities in 1957. The concept was to promote cooperation and coordination between local governments in dealing with stormwater and other issues affecting watersheds. The districts have control over watershed decisions and have taxing power to enact such decisions. Watershed Management Organizations are similar in concept but have a slightly different structure. Both districts and organizations require state law to form and empower. At this time Illinois does not have a similar structure in place.

The districts have demonstrated varying levels of activity—from comatose to aggressive. Two of the most active and effective have been the Ramsey-Washington and Minnehaha Creek organizations. The most active and progressive districts and organizations all have in common an active and involved community. According to Amy Middleton, an organizer working on watershed projects in the Twin Cities, "These structures have worked only where citizens have taken an active role." This reinforces the point that structures alone, whether physical or governmental, don't fix watersheds, people do.

Partnerships and Coalitions

Another option is to formalize the planning committee into an ongoing watershed coalition. In this case it is vital to have clear leadership.

From its own experience and from looking at other watersheds, Friends advocates forming an organization whose purpose and central focus is the improvement and protection of the river and its watershed. If an organization is not strongly focused on the watershed, how can it ask others to be so? A watershed-focused organization, alone or in partnership with others, is most likely to be an effective steward of the watershed.

Wink Hastings of the National Park Service emphasizes that strong citizen involvement is vital to getting from planning to action. "Government, at all levels, is famous for starting initiatives. Making sure it gets built depends on grassroots support. When government hears another trumpet call, it's the constituency that can pull focus back to a project."

But finally it is up to you and your watershed. There is no perfect structure. Your structure will only be a container, a vehicle for the leadership and enthusiasm of the people who come together to heal the watershed. Jim

This reinforces the point that structures alone, whether physical or governmental, don't fix watersheds, people do.

The river allows you to show what is at stake, what people will lose if they do not take care of their watershed, or what could be gained if they do.

Rospopo of NRCS affirms this: "Leadership and interest are key, structure is less important." Tom Krapf, also of NRCS, adds this: "What's most successful is a small group of people motivated to deal with a specific issue they want to solve."

Stakeholder Leadership and Stewardship

Where do these stakeholder leaders come from? Stewardship and leadership are closely linked, and stewardship often grows out of volunteering. Volunteers are a vital starting point for developing stewards, people with a long-term involvement in the watershed. This means developing the occasional volunteer into the committed steward. As discussed in chapter 9, hands-on restoration projects are a prime way of doing this. Prairie Wolf Slough, for example, was a model for developing leadership, stewardship, and collaboration. River Rescue Day, the annual watershedwide cleanup, is another example. David Ramsay of the Friends of the Chicago River says, "We're getting to the point where site captains are becoming permanent site stewards. These types of volunteer experience can be the engine of stewardship. Developing a stewardship ethic begins with volunteers. It's all about finding and developing critical leadership."

Keep in mind that leadership is both an individual and an organizational matter. Dennis Dreher of the Northeastern Illinois Planning Commission (NIPC) says, "Leadership is necessary at both the individual and municipality level." Ramsay says, "We're trying to develop groups outside the Friends and the original group of partners who will do the work with us...take an interest in the river and help ensure we lead agencies aren't too narrowly focused."

Other Considerations and Strategies for Keeping it Going

Remember the River

As discussed earlier, a river can be an effective focal point for watershed work, one that can tangibly command people's interest. The river allows you to show what is at stake, what people will lose if they do not take care of their watershed, or what could be gained if they do.

Getting the Watershed on Other People's Agendas

This is the heart of the matter. You need to make thinking and acting on behalf of the watershed something everybody does all the time. For example, it is critical to get the watershed and the river into all areas of the educational curriculum. As discussed in chapter 10, rivers make great hands-on learning labs for science, history, art, and more. With proper support, schools can help raise awareness about watershed issues and become involved in ongoing hands-on restoration projects.

Don't be limited in your thinking about organizations and institutions you might be able to work with. Be opportunistic in a positive way; pursue partnerships with realistic mutual benefits. Friends, for example, developed a very successful partnership with Gaia Theater, a nonprofit theater group that

creates and produces educational (and highly entertaining) plays on environmental themes for children. With the Friends serving as resource experts, Gaia wrote "One Fish Two Fish, Dead Fish Blue Fish", a detective play about nonpoint source pollution. Friends provided follow-up activities with selected schools. Gaia continues to perform the play in Chicago and nationally, spreading the word about urban river and watershed issues. The Friends gained a new ally in watershed education, while Gaia added a popular new play to its repertoire.

Putting and Keeping the Watershed and the River on the Calendar

Events like watershed cleanups keep the watershed and the river in the public eye. Scheduling ongoing activities also provides continuing opportunities for publicity. Events can also be an opportunity to raise funds for your effort. For example, Friends of the Chicago River has an annual Halloween Boat Float, a boat party that brings hundreds of Chicagoans out for a night on the moonlit river. The festivities include food, drink, costume prizes, tarot-card readings, and a silent auction. In addition to being a significant source of unrestricted funds for the Friends' programs, the event, now an annual tradition, also introduces new people each year to the river and its watershed.

Layering and Reinventing

Ramsay explains a concept learned from long-time activist and watershed citizen, Cynthia Gehrie, who "talks about layering, making connections to groups, organizations, interests, so the project becomes integral to the community. It's about continuing to reinvent, so the project takes on a life of its own in the community and different people find different ways to connect to it...and reconnect to a sense of place, whether through knowing the history or through volunteer bird, mammal, or amphibian surveys or other activities."

How Did We Do? Real-Life Evaluation

If you've just finished a watershed management plan or improvement strategy, probably the last thing you want to do is go back to the beginning. But looking at your mission statement, goals, and objectives and comparing them to how things turned out in real life can help you keep your watershed process on track.

Knowing (or Deciding) What Success Is

What areas can be evaluated? At the simplest level evaluation is asking the question: What's changed? An excellent place to start in designing your evaluation is to ask yourself and others: Did you meet your original objectives? Are there changes in the physical or biological conditions of the watershed? Has the amount of impervious cover gone up or down? Are there new policies in place? Have public perceptions changed? Has participation and interest in the watershed changed?

Chris Parson of the Friends reinforces the importance of evaluating your



Gaia Theatre performs "One Fish, Two Fish, Dead Fish, Blue Fish" at CRUW '96 Conference in Chicago.

Source: Friends of the Chicago River

"We're not as interested in whether people gained knowledge, what we're really interested in is did attitudes about watersheds change?"

—Chris Parson,
Friends of the Chicago River

educational efforts. "Evaluation is critical because funders need to know they funded a useful program. But also you need to know what outcomes you're getting, whether your educational initiatives are having the right impact. "It's really important whenever possible to evaluate attitude changes. We're not as interested in whether people gained knowledge, what we're really interested in is did attitudes about watersheds change?"

Assessing as You Go

Don't think of evaluation as something that happens when it's all over. First of all, if your watershed management planning is successful, it will continue to grow and evolve. Be sure you plan, at least informally, to evaluate your progress along the way.

Qualitative and Quantitative Evaluation

There is a tendency in evaluation circles to focus on numbers. Information on measurable factors in your watershed can be useful, but don't fall into the numbers game. Don't use numbers when they don't tell the real story. Take participation as an example. You may have had 500 people at one watershed event and 50 at another. By quantity the first event would appear to have been a greater success. But perhaps a qualitative examination shows a different picture. Perhaps most of the people at the larger event had only a fleeting interest in the watershed or showed up mainly for the free bagels and coffee, while many of the 50 participants at the second event had a much more committed, ongoing involvement in watershed improvement.

Informal, qualitative evaluation is always useful, whether done alone or in combination with quantitative methods. Getting a sense of how participants feel about the watershed is always worthwhile. While measuring changes in tangible aspects of the watershed—amount of impervious cover, water quality, and so forth—is extremely important, Friends believes that the essence of urban watershed change comes from people's actions and motivations and that these are best measured in terms of quality.

Don't Forget Documentation

Slides, photos, and videos can be an important part of documenting your efforts especially as you reach the hands-on, implementation phases of your process. Bring your camera along or bring someone who knows how to use a camera. This kind of documentation can prove invaluable later when you want to show others the work you have done.

Evaluate Early and Often

Whether you are a do-it-yourself evaluator or plan to bring in outside help, start thinking about evaluation early. Assess conditions when you start your project; it will make your findings as your project progresses more meaningful. Make sure your plan includes goals and objectives that can be assessed. Be sure funders and others who will be interested in your outcomes know at an early stage what the emphasis of your evaluation will be.

To Thine Own Self Be True

Make sure your evaluation will tell you things you need to know, and work with funders and others so they understand and accept the ways you will do your evaluation. Government agencies, corporations, and foundations who have invested in your efforts, may tend to emphasize measurable, and therefore quantitative, results. People need to understand that measurable change on rivers and watersheds takes time—on the order of years and decades. You do need to make sure these factors are being tracked, however, either by you or a participating agency. “It’s difficult but important to monitor your success,” says Dreher. “You can’t evaluate success in scientific terms for five to ten years.”

Plan to Plan Again

If your planning efforts lead to more watershed work, even to the need for an updated plan, view this as a success, not a failure. As discussed in chapter 4, even the best plans need to be updated over time. Patricia Werner of the LCSMC says, “As more people get involved, the plan will change over time.” And getting more people involved is, after all, what it is all about.



We wish you good luck in your planning efforts. Remember timing is everything and you cannot do it alone. If the crowds don’t burst your door down on the first day, keep inviting them until they do.

And getting more people involved is, after all, what it is all about.



Appendix A

Where to Get Help: Organizations and Publications

1. Organizations

Center for Watershed Protection

8391 Main Street
Ellicott, MD 21043

Phone: (410)461-8323
Fax: (410)461-8324
E-Mail: mrrunoff@pipeline.com

The Center publishes a periodic newsletter entitled: Watershed Protection Techniques. The newsletter contains articles and research concerning watershed management planning and best management practices. In addition the Center publishes numerous publications. Some relevant titles include: Rapid Watershed Planning Handbook (1998), Site Planning for Urban Stream Protection (1995), Urban Watershed Protection Reference Guide (1996) and Design of Stormwater Filtering Systems (1996).

City of Palo Alto

Public Works Department
2501 Embarcadero Way
Palo Alto, CA 94303

Phone: (415) 329-2598
Fax (415) 494-3531

The City of Palo Alto, the Santa Clara Valley, the County of Santa Clara and the State of California have developed innovative and comprehensive programs and BMPs to deal with stormwater runoff from industrial, commercial and construction-related sources including good brochures for specific industries such as automotive-related industries. Contact Leo Sarmiento, Public Works Department, City of Palo Alto, CA (415) 329-2292.

Coalition to Restore Urban Waters (CRUW)

Contact: Friends of the Chicago River
407 S. Dearborn, Suite 1580
Chicago, IL 60605

Phone: (312) 939-0490
Fax (312) 939-0931
E-mail: friends@chicagoriver.com

Coalition to Restore Urban Waters, also known as "Friends of Trashed Rivers," is a network of individuals and largely not-for-profit organizations concerned with restoring and enhancing urban rivers and their watersheds. CRUW holds periodic conferences and publishes an occasional newsletter. For newsletters and other publications contact the Isaac Walton League at (800) BUG-IWLA or E-mail at cruw@iwla.org.

Environmental Support Center

4420 Connecticut Avenue, NW
Washington, DC 20008-2301

Phone: (202) 966-9834
Fax (202) 966-4398
E-mail: general@envsc.org
Web site: www.envsc.org

The Environmental Support Center (ESC) provides environmental organizations with training and organizational assistance, technology assistance, an environmental loan program, workplace solicitation and state environmental leadership. The ESC can help organizations improve their effectiveness in areas such as planning, fundraising, organizing, board development, communications, computer skills, leadership development, diversity issues and financial management.

Illinois Environmental Protection Agency

PO Box 19276
Springfield, IL 62794-9276

Phone: (217) 782-3362
Fax: (217) 785-1225

Nonpoint Source Program contact: Richard Mollahan

The Illinois Environmental Protection Agency administers Section 319 of the Clean Water Act, which provides grants to states for implementation of approved nonpoint source (NPS) management programs. Funding under these grants has been used in Illinois to finance projects that demonstrate cost-effective solutions to NPS problems and that promote the public's knowledge and awareness of NPS pollution. Recent Section 319 grants place emphasis on correction of specific watershed problems and development of implementable watershed plans. The annual Section 319 Grant application deadline is February 1.

In addition to the Section 319 Grant program, Illinois EPA Regional Offices can provide technical assistance in developing watershed management plans and information on specific technical issues such as water quality monitoring. Consult the publications section for specific publications available from Illinois EPA concerning watershed management planning.

Know Your Watershed - coordinated by the Conservation Technology Information Center (CTIC)

1220 Potter Drive, Rm. 170
West Lafayette, IN 47906-1383

Phone: (765)494-2238
E-mail: kyw@ctic.purdue.edu

This national public/private partnership encourages formation of watershed organizations and keeps a list of them. Offers a starter kit for organizations, Watershed Management in a Box, plus a series of guides for voluntary partnerships of watershed stakeholders.

Natural Resources Conservation Service (USDA)

Check for address of your local NRCS office.

The US Department of Agriculture's Natural Resources Conservation Service provides a variety of technical assistance services to private landowners, local units of government, and organizations in the areas of watershed planning, designing and implementing best management practice projects and soil evaluation. In the area of watershed planning, NRCS staff can provide assistance to local groups in starting up a watershed planning effort and assistance in facilitation services at public meetings for developing the goals and objectives part of the plan. NRCS staff can also assist in developing, designing and implementing BMPs (see description of the NRCS 1995 Urban BMP Manual under BMPs). NRCS soil scientists can provide soil classification and evaluation for BMP projects, which is a critical factor in the design of an individual project.

Northeastern Illinois Planning Commission

222 South Riverside Plaza, Suite 1800
Chicago, IL 60606

Phone: (312)454-0400
Fax: (312)454-0411
Web site: www.nipc.cog.il.us

NIPC is the regional planning commission for the six-county Chicago Metropolitan Region. It conducts research and publishes data and reports on a variety of areas relevant to comprehensive watershed planning. Among the relevant topics are demographic and economic growth forecasts, landuse data and maps, wetland maps, model ordinances (such as stormwater), models of best management practices, flood hazard maps, aerial photographs, regional base maps and a regional greenway plan. NIPC also provides technical assistance to municipalities on watershed and river-related topics. The county or regional planning commission is a good source of data in many regions of the country. Several of their publications are listed below and in the resource section. A comprehensive list can be obtained from them.

Best Management Practices Guidebook for Urban Development, (July 1992)

Dreher, Dennis; *Handbook for Managing and Restoring Stream Greenways*, (Northeastern Illinois Planning Commission, December 1997)

Environmental Considerations in Comprehensive Planning—A Manual for Local Officials, (March 1994)

Landscaping Techniques and Materials for Urban Illinois Stream Corridors and Wetland Edges, (1991)

Model Stormwater Drainage and Detention Ordinance, (July 1990)

Natural Landscaping Sourcebook, (May 1997)

Reducing the Impacts of Urban Runoff: The Advantages of Alternative Site Design Approaches, (April 1997)

Schueler, T.R. and D.W. Dreher, *Homewood Prairie Lakes Stormwater Wetland Biofilter for the Control of Sediment Pollution*, (Northeastern Illinois Planning Commission, 1994)

Stormwater Detention for Water Quality Benefits, (January 1986)

River Network

P.O. Box 8787

Phone: (800) 423-6747

Portland, OR 97207

E-mail: rivernet@ipc.apc.org.

A national non-profit organization that helps people at all levels build effective organizations to protect and restore America's rivers and watersheds. Publishes a newsletter and a River and Watershed Conservation Directory.

Save Our Streams (SOS)

Izaak Walton League of America

Phone: (800) BUG-IWLA

707 Conservation Lane

E-mail: sos@iwla.org

Gaithersburg, MD 20878

Web site: www.iwla.org.

The Izaak Walton League of America is a national non-profit conservation organization. The Save Our Stream Program offers a variety of tools for watershed stewards including books, videos, monitoring equipment, workshops and a toll-free technical assistance hotline. SOS titles include A Citizen's Streambank Restoration Handbook, Hands-On Save Our Streams, The Save Our Streams Teacher's Manual and more. You may request a catalogue at the above address.

Terrene Institute

4 Herbert Street

Phone: (703)548-5473

Alexandria, VA 22305

E-mail: terrinst@aol.com

Web site: www.terrene.org.

The Terrene Institute provides numerous publications relating to watersheds, rivers and wetlands. It publishes Runoff Report, a bimonthly national watershed newsletter. Ask for their environmental products catalog for publications and audio-visual products. Their website has good linkages to other related governmental and nongovernmental organizations.

The Urban Streams Program of the Wetlands Conservancy

P.O. Box 1195

Tualatin, OR 97062

The Wetlands Conservancy, Urban Streams Program promotes a regional approach to stream management based on watersheds and ecosystems. The Conservancy publishes a newsletter, Freshet, and publications such as The Citizen's Watershed Handbook.

The Wild Ones—Natural Landscapers, Ltd.

P.O. Box 23576

Milwaukee, WI 53223-0576

The Wild Ones is a non-profit organization dedicated to promoting biodiversity through natural landscaping using native species in developing plant communities. It has chapters throughout the U.S. and in Illinois and publishes the Wild Ones Journal bi-monthly.

US Environmental Protection Agency (451F)

Washington, DC 20460

Web site: www.epa.gov

The US Environmental Protection Agency has a variety of publications such as EPA Watershed Events that provide good information and resources for watershed planning and BMPs (see Watershed section). For viewing a catalogue of more than 4,000 watershed groups and other organizations working to protect watersheds you may access EPA's Surf Your Turf Watershed (www.epa.gov/surf) and Adopt Your Watershed homepages (www.epa.gov/surf/adopt). Citizens can now "point and click" to find out about local environmental conditions as well as a listing of watershed groups and organizations active in their community.

In addition to the above mentioned organizations, Chapter 5 mentions several organizations that offer valuable services and information that may be of help to individuals or organizations seeking assistance in developing watershed management plans.

2. Publications¹

Source Reduction and Control, Native Vegetation, River-friendly Lawncare and Citizen Action (See also City of Palo Alto listing above)

Lake County Stormwater Management Commission, *Riparian Area Management: A Citizens Guide*, (Lake County Stormwater Management Commission, Libertyville, IL, Revised 7/96).

Minnehaha Creek Watershed District, *Improving Water Quality, Quality of Life* (Minnehaha Creek Watershed District, Excelsior, MN, 1997). The District provides a packet of valuable fact sheets and pamphlets on backyard conservation, responsible fertilizer practices for lawns, lawn management, composting and mulching, shoreline landscaping and household practices that benefit rivers and watersheds.

Potomac Basin Soil and Water Conservation Districts, *You and Your Land: A Homeowner's Guide for the Potomac River Watershed*, (Northern Virginia Soil and Water Conservation District, Fairfax, VA, July, 1997). Programs, practices and resources for river-friendly landscaping, lawn care, backyard wildlife habitats, and use of native plants.

Shreffler, Shelly; *Native Habitats For Our Urban Yards*, (Saint Paul Neighborhood Energy Consortium, St. Paul, MN, Spring 1998)

Siletti, Karen L. and Coalition to Restore Urban Rivers, *Conference Workbook from Friends of Trashed Rivers II*, New York City, 1994, (Watchung Publishing, Hackensack, N.J., 1996)

¹ An attempt has been made to group the publications by subject area, but by their nature watershed issues are interdisciplinary and there is much overlap among the categories and publications.

Wildlife Habitat Council, *Backyard Conservation: Bringing Conservation From the Countryside to Your Backyard*, (Wildlife Habitat Council, April 1998). Colorful brochure on backyard conservation activities. Good list of additional resources and contacts. Contact the Wildlife Habitat Council at (301) 588-8994; whc@wildlifehc.org; or <http://www.wildlifehc.org>.

Watershed Management Planning

Brown, Christopher N., "The Watershed Approach: Making the Transition for Corridors to Watersheds," *River Voices—The Quarterly Publication of River Network*, (Volume 7, Number 4, Winter 1997)

Center for Watershed Protection, *Rapid Watershed Planning Handbook* (Center for Watershed Protection, Ellicott, MD, 1998)

Dreher, Dennis, *Model Watershed Management Strategy for the Control of Urban Waterbody Use Impairments in Lake County, Illinois* (Northeastern Illinois Planning Commission, July, 1994)

Cole, Kevin J., *Watershed Conservation in America: The Swift River Principles, and Proceedings from the Watershed Innovators Workshop*, (River Network, Portland, OR, 1997). Proceedings from an innovative conference concerning new developments in comprehensive , ecosystem-based watershed protection, restoration and management programs

Illinois Environmental Protection Agency, *Guidance For Developing Watershed Implementation Plans In Illinois*, (Illinois Environmental Protection Agency Bureau of Water, Springfield, IL, March 1998)

Kendig, L., S. Connor, C. Byrd, and J. Heyman, *Performance Zoning*, (American Planning Association, Washington, DC, 1980)

Riverways Program, *Riverways Bylaw Guide: Strategies for Drafting and Passing Local River Protection Bylaws*, (Riverways Program, Boston, MA, 1997)

Winer, Micheal and Karen Ray; *Collaboration Handbook: Creating, Sustaining and Enjoying the Journey*, (Amherst H. Wilder Foundation, St. Paul, MN, 1994)

US Environmental Protection Agency, *EPA Watershed Events: A Bulletin on Sustaining Water Resources and Ecosystems* (US Environmental Protection Agency, Washington, DC, Government Publication: EPA840-N-98-002, Fall 1998). This newsletter reports on watershed success stories, national news, resources (e.g. publications, software and websites) and events. To receive the EPA Watershed Events mailing list, send your name and address to: Melissa Bowen, Tetra Tech, Inc., 10306 Eaton Place, Suite 340, Fairfax, VA 22030; or E-mail to bowenme@tetrattech-ffx.com.

US Environmental Protection Agency, *Watershed Protection: A Project Focus* (US Environmental Protection Agency, Washington, DC, Government Publication: EPA841-R-95-003, August 1995).

Education

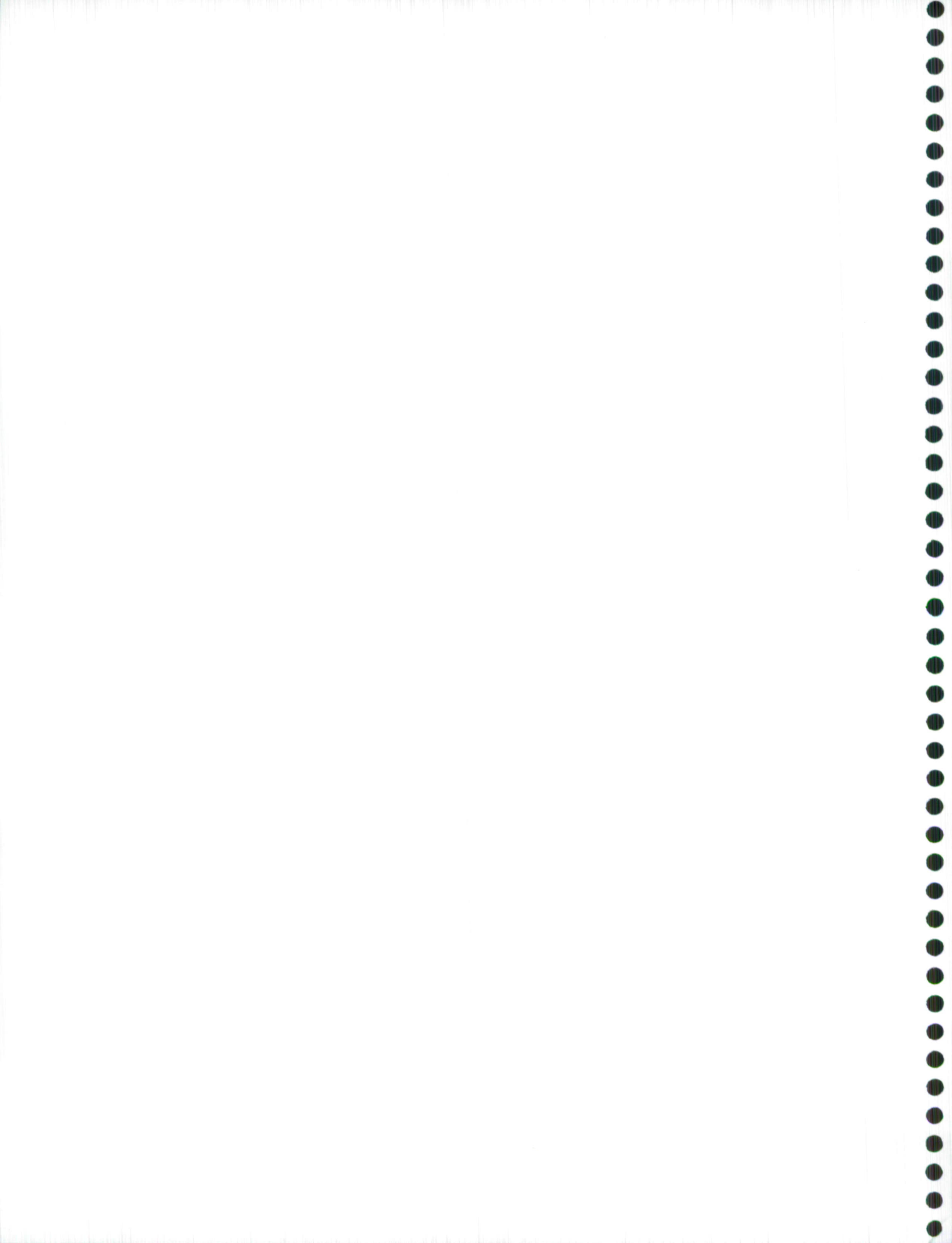
- Global Rivers Environmental Education Network (GREEN), *Sourcebook for Watershed Education*, (GREEN, Ann Arbor, MI, 1996)
- Leopold, Luna, Wolman, M. Gordon, Miller, John P., *A View of the River*, (Dover Publications, 1997)
- Mitchell, Mark and William B. Stapp, *Field Manual for Water Quality Monitoring* (Ninth Edition), (GREEN, Ann Arbor, MI, 1995)
- Save Our Streams—Izaak Walton League of America, Inc., *A Citizens Streambank Restoration Handbook*, (Save Our Streams—Izaak Walton League of America, Inc., Gaithersburg, MD, 1998)
- Save Our Streams—Izaak Walton League of America, Inc., *Hands on Save Our Streams—Teachers Manual*, (Save Our Streams—Izaak Walton League of America, Inc., Gaithersburg, MD, 1998)
- Save Our Streams—Izaak Walton League of America, Inc., *Monitor's Guide to Aquatic Macroinvertebrates*, (Save Our Streams—Izaak Walton League of America, Inc., Gaithersburg, MD, 1998)
- Stapp, William B. et. al. (eds.), *Investigating Streams and Rivers: An Interdisciplinary Curriculum for Use with Mitchell and Stapp's Field Manual for Water Quality Monitoring*, (Kendall/Hunt Publishing Co., Dubuque, IO, 1997)

Best Management Practices and Projects (Restoration, Habitat, Wetlands & Riverbank Restoration)

- Brandes, D. H. and J. M. Luzier; *Developing Difficult Sites: Solutions for Developers and Builders*, (Home Builder Press, Washington, DC, 1991)
- Department of Natural Resources, *A Guide to Aquatic Plants: Identification & Management*, (State of Minnesota, Department of Natural Resources, 1997)
- Dreher, Dennis; *Reducing the Impacts of Urban Runoff: The Advantages of Alternative Site Design Approach*, (Northeastern Illinois Planning Commission, 1997)
- Georgia Soil and Water Conservation Commission, *Guidelines for Streambank Restoration*, (Georgia Soil and Water Conservation Commission, 1996)
- Honer, Richard R., Skupien, Joseph J., Livigston, Eric H., Shaver, H. Earl; *Fundamentals of Urban Runoff Management: Technical And Institutional Issue*, (Terrene Institute, Washington, DC, August 1994)
- Minnesota Extension Service, *Protecting Minnesota Waters: Shoreland Best Management Practices*, (Minnesota Extension Service, Duluth, MN, March 1996)
- Natural Resources Conservation Services, *Native Plant Guide for Streams and Stormwater Facilities in Northeastern Illinois*, (USDA, Natural Resources Conservation Services, Chicago Metro Urban and Community Assistance Office, Naperville, IL, December, 1997)
- Natural Resources Conservation Service, 1995 *Urban Manual: A Technical Manual for Urban Protection and Enhancement*, (USDA Natural Resources Conservation Service, Champaign, IL, 1995). The manual describes 38 basic best management practices (BMPs) (including standards and specifications) for controlling nonpoint

source water pollution. The total scope of use for these BMPs also includes erosion and sediment control, water management, fish and wildlife habitat improvement, visual and environmental quality and other significant enhancement.

- Northeastern Illinois Planning Commission, *Urban Stormwater Best Management Practices for Northeastern Illinois*, (Northeastern Illinois Planning Commission, Chicago, IL, October 1993)
- Pullman, Douglas Ph.D., *Aquatic Vegetation Guide Manual, Vol. 1*, (Midwest Aquatic Plant Society, Flint, MI, 1992)
- Minnehaha Creek Watershed District, *Improving Water Quality, Quality of Life* (Minnehaha Creek Watershed District, Excelsior, MN, 1997)
- Regional Water Quality Control Plant, *Best Management Practices for Automotive-Related Industries and Sewer Use Ordinance for Vehicle Service Repair*, (Regional Water Quality Control Plant, 1998)
- Riemer, Donald N., *Introduction to Freshwater Vegetation*, (AVI Publishing Company Inc., Westport, CT, 1984)
- Riley, Ann L., *Restoring Streams in Cities: A Guide for Planners, Policy Makers, and Citizens*, (Island Press, Washington, DC 1998). One of the few resources concerning urban best management practices. Also, contains discussions regarding river and watershed planning in cities.
- Santa Clara Valley Nonpoint Source Pollution Control Program, *Best Management Practices for Industrial Stormwater Pollution Control*, (Santa Clara Valley Nonpoint Source Pollution Control Program, 1998)
- Santa Clara Valley Nonpoint Source Pollution Control Program, *Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction-Related Activities*, (Bay Area Stormwater Management Agencies Association, 1998)
- Schueler, Thomas R., *Watershed Protection Techniques: A Quarterly Bulletin on Restoration and Protection Tools*, (Center for Watershed Protection, Ellicott, MD, February 1994)
- Terrene Institute, *Clean Water In Your Watershed: A Citizen Guide to Watershed Protection*, (Terrene Institute, Alexandria, VA, October 1993, reprinted 1997)
- US Environmental Protection Agency, *Urban Runoff Impacts to Receiving Waters*, (US Environmental Protection Agency, Chicago, IL, Region 5, 1991)
- Williams, Jack E., Christopher A. Wood, Michael P. Dombeck,(eds), *Watershed Restoration Principles and Practices*, (American Fisheries Society, Sewickley, PA, 1995). The book consists of a series of articles mostly concerning rural streams. It talks about principles of watershed restoration and gives case studies, including an urban watershed, the Anacostia watershed in Washington, DC and Maryland.



Appendix B

Words to Know: Glossary

Action Teams or Subcommittees: these are the ongoing or temporary groups that are formed to carry out specific tasks of a more specialized nature such as planning special events or investigating specific issues such as wetlands preservation or best management practices.

Benthic macroinvertebrates: bottom dwelling (benthic) invertebrates which can be seen by the unaided eye (macro). Most benthic macroinvertebrates in flowing water are aquatic insects or the aquatic stage of insects, such as stonefly nymphs, mayfly nymphs, caddisfly larvae, dragonfly nymphs and midge larvae. They also include such things as clams and worms. The presence of benthic macroinvertebrates that are intolerant of pollution is a good indicator of good water quality.

Best management practices (BMPs): practices or techniques that are used to prevent or ameliorate damage to natural resources; some BMPs used in urban areas may include urban stormwater wetlands, dust control, urban filter strip, porous pavement, silt fence and vegetative streambank stabilization.

Bioengineering (or Soil Bioengineering): techniques for stabilizing eroding or slumping river banks that rely on the use of plants and plant materials such as live willow posts, brush layering, coconut logs and other “greener” or “softer” techniques in contrast to techniques that rely on creating “hard” edges with riprap, concrete and sheet piling (metal and plastic).

Channelized stream: a stream that has been artificially straightened, deepened, or widened to accommodate increased stormwater flows, to increase the amount of adjacent land that can be developed or used for urban development, agriculture or for navigation purposes. In addition to being unsightly, channelized streams have a uniform gradient, no riffle and pool development, no meanders (curves) and very steep banks. The vegetation is frequently removed and replaced with rip-rap, concrete or other hard surfaces. During low-flow periods in the summer, many channelized streams have low dissolved oxygen levels. Under these conditions, they provide poor habitat for fish or other stream organisms such as benthic macroinvertebrates.

Collaboration: a mutually beneficial and well-defined relationship entered into by two or more organizations to achieve results they are more likely to achieve together than alone.

Consensus: An inclusive form of decision making in which all of the parties discuss and debate the issues prior to reaching an agreement. All parties must either agree with the decision or at least agree that they can live with it. Any one party may block an agreement.

Geographic information system (GIS): a computer system that inputs, assembles, stores, manipulates and displays (usually in the form of maps) geographically referenced information.

Impervious surfaces: the land in a watershed—expressed in an area or percentage—covered by hard surfaces that prevent the infiltration of water into the soil. Impervious surfaces are the asphalt or concrete roads, parking lots, buildings or other “hard surfaces” that are relatively impenetrable to the movement of water.

In-kind contribution: a contribution of effort (labor or technical expertise) by a paid staff person or volunteer for a project that is documented and used to match other funding sources such as a government grant.

Multi-objective planning: using a planning process that incorporates multiple concerns—water quality, flooding, and natural resources—rather than attempting to address only one isolated issue.

Nonpoint source pollution: the diffuse, intermittent runoff of pollutants from various sources.

Partner: the watershed stakeholders who take an active role in the watershed management planning process.

Planning Committee: the group of stakeholders responsible for creating the watershed management plan.

Sewershed: an area of land whose stormwater drains into a common storm sewer.

Stakeholder: a person who has a legal, economic, personal or professional interest in the watershed.

Steering Committee: a steering or executive committee which forms the core leadership and decision-making group of stakeholders in the watershed management planning effort.

Technical Advisory Committee (TAC): the group of technically qualified ecologists, biologists, hydrologists, engineers, planners and others who advise the planning committee in performing the assessment and analysis phase and developing the best management practices and policies in the action plan.

Urban runoff: water from rain or snow events that runs over surfaces such as streets, lawns, parking lots and directly into storm sewers before entering the river rather than infiltrating the land upon which it falls.

Watershed: an area of land that drains into a given stream, river, lake or wetland.

