1997 Project Abstract
For the Period Ending June 30, 1999

Funding for this project was approved by the Minnesota Legislature, 1997 Minnesota Laws, Ch. 216 Sec. 15, Subd.6(d), as recommended by the Legislative Commission on Minnesota Resources from the Minnesota Future Resources Fund.

Title:	Evaluation of Watershed Based Water-Quality Management
Project Manager:	Kathryn J. Draeger
Organization:	Minnesota Association of Watershed Districts
Address:	3848 Westbury Drive, St. Paul, MN 55123
Website:	http://www.mnwatershed.org
Legal Citation:	ML 1997, Ch. 216, Sec. 15, Subd. 6(d)
Appropriation:	$150,000

Objective: Minnesota has diverse active citizen led watershed organizations that address water resource issues. Three categories of these organizations are formed voluntarily, by citizen action: Watershed Districts, Non-profits and Joint Powers Boards. The fourth, Watershed Management Organizations were mandated into existence by state law. This project identifies these organizations effectiveness in managing water quality and determines the barriers to success and resources they need to succeed. Information for this project was gathered from a variety of sources including, historical legislation, technical literature, a survey of watershed decision makers statewide, field studies on water quality implementation projects and finally case studies on six organizations that have been particularly successful in managing water-quality.

Results and Discussion: The three voluntarily formed watershed organizations proved to be more successful in managing water quality, than WMOs. However none of the organizations could be identified "the model for a successful organization." All the successful organizations in the different groups posses common characteristics that should be taken into account to ensure that water quality on the watershed landscape is being well managed. These characteristics include:

- Established infrastructure such as office space and equipment including the presence of full-time employees,
- Access to water quality information and water quality monitoring,
- High level of concern for water-quality among staff and managers,
- Interest in (and active encouragement of) citizen participation.

Based on the results of the study several recommendation were developed to ensure the continued successful functioning of these watershed organizations:
Don't Reinvent the Wheel: Build on existing options. The organizational types currently available to Minnesotans (Watershed Districts, Joint Powers Boards and Nonprofit Organizations) provides the organizational infrastructure to locally address water issues.
Continue the Tradition: Make the Most of Local, State-Empowered, Organizations. Foster an enabling approach toward building local watershed management capacity, improve communication from local organizations to state agencies; and utilize local watershed organizations to address water-quality issues.
Don't Mandate: Voluntary Organizations are More Successful. Convene a Citizen Jury to address issues facing urban watershed planning and implementation and make a recommendation on the fate of WMOs.
Watershed Effectiveness Evaluation. Watershed organizations should implement periodic self-evaluation and monitoring programs; state and federal agencies should also assess watershed organizations.

Dissemination: Results of this project were disseminated through a web page on the Minnesota Association of Watershed Districts (MAWD) website that provides an electronic version of the project results. Two reports, a smaller report, designed for a broader audience will be distributed to all watershed organizations and a larger more detailed report, available from the MAWD offices. A video was produced and is available to citizens interested in starting a watershed organization. Two training sessions on watershed self-evaluation were also held, a larger one with 150 participants at the MAWD annual meeting in December of 1998, and a more focused training for 30 watershed managers and staff in February 1999 in St. Paul.

Date of Report: July 1,1999
Project Completion Date: June 30, 1999

LCMR Work Program 1997

I. PROJECT TITLE: EVALUATION OF WATERSHED BASED WATER QUALITY MANAGEMENT

Project Manager: Kathy Draeger
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Total Biennial Project Budget: $225,000

$LCMR:	150,000	$Match	75,000
$LCMR Amount Spent	150,000	$Match Amount Spent	75,000
=LCMR Balance	0.00	= $Match Balance	0.00

A. Legal Citation: ML 1997, Chap.216, Sec. 15, Subd. 6 (d)
Subd. Management Approaches

EVALUATION OF WATERSHED BASED WATER QUALITY MANAGEMENT
Appropriation Language: This appropriation is from the future resources fund to the Board of Water and Soil Resources for an agreement with the Minnesota Association of Watershed Districts to evaluate the effectiveness of watershed district management of water quality. This appropriation must be matched by at least $75,000 of nonstate money.

B. Status of Match Requirement: MAWD has received $75,000 from the McKnight Foundation.

II. PROJECT SUMMARY AND RESULTS:

Natural resource management theory, in recent years, has evolved to the point where the watershed is considered the most appropriate unit of landscape from which to address water quality and other water and related land resource issues. Minnesota, because of the quantity and importance of water to the people of the state, has a variety of water management organizations/agencies across the landscape. In Minnesota watershed organizations have formed as non-profits, joint powers boards and watershed districts, watershed districts being the most prevalent. Watershed districts are special purpose local units of government based on the

hydrological boundary of the watershed. These citizen organizations regularly address, regulate and make decisions on water resource issues in their watershed. This project will evaluate watershed water quality management to determine the effectiveness, needs, and potential transferable models currently in place in Minnesota.

The theories on watershed management have been purported by academicians. However, there have been few studies of the practical application of this form of natural resource management on the watershed environment. In Minnesota, there are 42 watershed districts established in the 81 major watersheds in Minnesota, as defined by the DNR. This number of watershed districts merits examination to determine the ability of this local body to address water quality issues, the actual impact on water quality, and to determine whether further informational or resources needs would allow for greater grassroots involvement.

This project will study Minnesota's watershed organizations to determine the degree of involvement in water quality issues. Water quality efforts and projects will be cataloged for effectiveness and indicators of sustainability. Watershed areas that are not organized to address water issues will be studied to determine whether other watershed water quality efforts are underway or in planning stages. This project will promote watershed identity to the citizens of Minnesota. Specific information, outreach and training on watershed water quality issues will be addressed through internet application, informational pieces, training and education seminars with watershed managers, administrators and others.

July 1, 1999

The project produced two reports in addition to this LCMR report. The first is a 20 page summary of results and recommendations and the second report is a comprehensive 200 page report which includes:

- Review of legislative, historical and literature sources,
- Data results and analysis,
- Recommendations,
- Six in-depth case-studies,
- Compendium of water quality implementation projects undertaken by watershed organizations statewide.

Please refer to these two reports for more detailed project information.

The project examined the role of watershed based organizations in improving water quality. Several resources were consulted to obtain the information. These included historical records of legislation, technical literature, surveys of watershed decision makers themselves, field studies on water quality implementation projects, and finally, in-depth case studies with some of the most successful watershed organizations in the state. A brief description of each of these means of collecting information follows.

Historical Data Collection: Original legislation, technical literature, organizational reports and watershed plans were researched to determine the enabling legislation, responsibilities, authorities and activities of local watershed organizations.

Survey of Local Watershed Organizations: In order to gain first hand information from local watershed decision makers, we developed and sent a survey on watershed management to 580 staff and board members in each of the 79 different watershed organizations statewide. The response to the survey was remarkable according to the University of Minnesota Survey Center which assisted in the development, mailing and collection of the information. Of the 79 organizations surveyed, 98% returned at least one survey, and overall 70% of the individuals returned the survey, well above the expected 40 to 50% response rate.
Field Study: To find out what projects and practices are actually being implemented by local watershed organizations, we spent the summer of 1998 looking at local water quality projects. The results of this field research include:

- a comprehensive list of local water quality projects statewide,
- contact information for those interested in similar water quality efforts, and
- a comparative gauge of the extent of water quality activities for each watershed organization.

For more information on local water quality projects, please refer to Appendix 2 and 3 in the large report (included.)

Case Studies: To gain in-depth information on some of the most successful watershed organizations among the Watershed Districts, Watershed Management Organizations, Joint Powers Boards, and Nonprofit Organizations we conducted detailed case studies. The results of the case studies are seen throughout the two reports as examples and story boxes highlighting various points of information. In addition, the detailed case studies have been provided in their entirety in the larger report.

Based on the information gathered from the above mentioned sources, characteristics of successful organizations were developed. These include:

- Full-time employees
- Established office space and equipment
- Access to water quality information
- High level of concern for water quality
- Water quality monitoring program in place
- Interest in citizen participation and outreach program
- Actively engaging citizens

For more information on each of these characteristics please refer to the "Anatomy of a Successful Organization" in the printed project reports.

A series of recommendations were developed to provide suggestions for the management of water quality on a watershed basis. A brief synopsis has been provided below. For further details see the "Recommendations" section in the comprehensive project reports.

Don't Reinvent the Wheel: Build on existing options. This would include expanding watershed efforts statewide using the organizational types currently available to Minnesotans (Watershed Districts, Joint Powers Boards and Nonprofit Organizations).

Continue the Tradition: Make the Most of Local, State-Empowered, Organizations. Foster an enabling (as opposed to directive) approach toward building local watershed management capacity, improve communication from local organizations to state agencies; and greater utilization of local watershed organizations as a resource for addressing water-quality issues.

Don't Mandate: Voluntary Organizations are More Successful. Convene a Citizen Jury comprised of Watershed Management Organization staff, board, advocates, detractors and selected others to meet and address an array of issues facing urban watershed planning and implementation. The Jury should then make a recommendation on the fate of WMOs.

Watershed Effectiveness Evaluation. Watershed organizations should develop a system of periodic self-evaluation; they should develop and implement a monitoring program and or work with state and federal agencies to accomplish effective monitoring; state and federal agencies should also develop a standardized evaluation to assess watershed organizations.

III. PROGRESS SUMMARY:

April 1,1998

The project was delayed in startup due to the timing in securing the match from the McKnight Foundation. The project began in October and staff was hired in November. Despite the later start date, the project is well on track. A draft survey has been prepared and is being reviewed by a panel of experts. A database of watershed based organizations in the state is being developed. Potential firms have been identified for the production of the video, and the web sites for the watershed districts are up.

Oct. 1, 1998

Survey

The survey, one of the tools the project is utilizing to evaluate watershed based water quality management in the state, was sent out to the full sample of watershed based organizations' staff and managers on June 20, 1998. Five hundred and eighty individuals from 80 different organizations were asked to complete the survey for this study.

The survey is based on a set of indicators for organizational criteria that were developed by project staff with input from a variety of literature and expert sources including experts in the field of natural resources and organizational analysis, namely Dr. George Honadle and Dr. Cheryl Contant. The project contracted with the Center for Survey Research at the University of

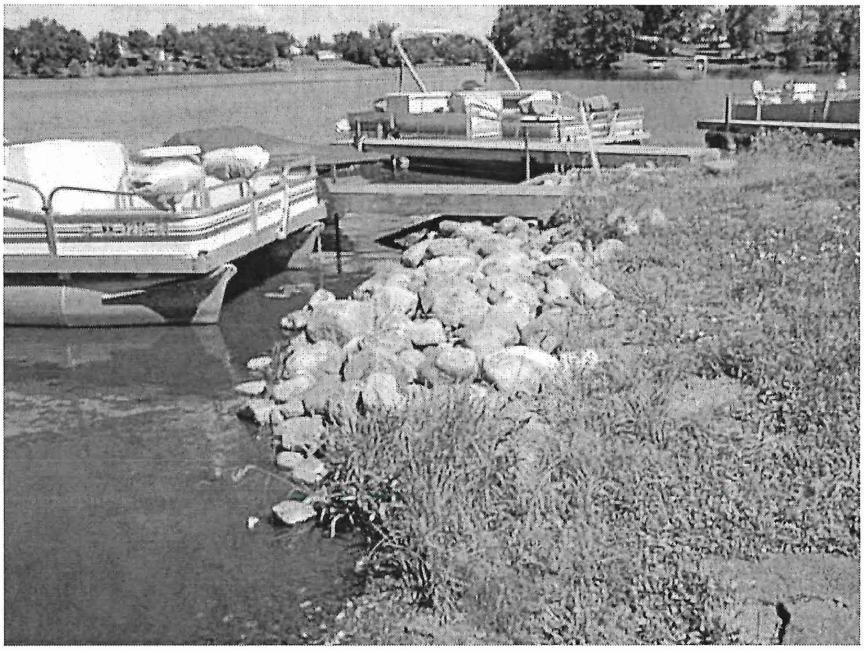
Minnesota. Responses were collected throughout the summer. Response rate varied by the different organizations surveyed and ranged from 60-77%. The total overall response rate was nearly 70%. The Center for Survey research compiled the raw data into a report. A copy of the survey that was distributed is attached as appendix A

Evaluation Criteria
The criteria for evaluation were developed before the survey was finalized. A draft chapter has been written detailing these criteria and their applicability to this evaluation.

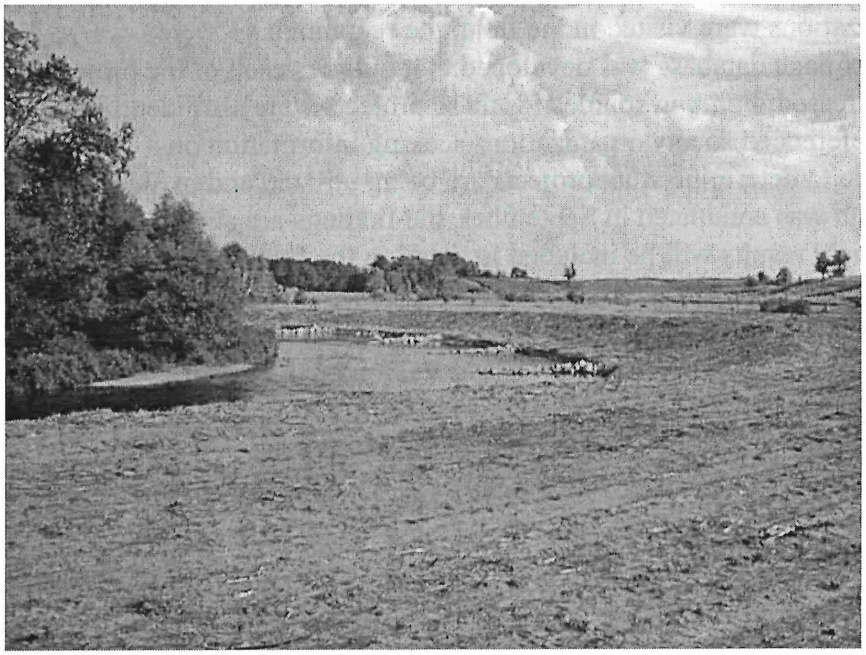
Database
The database of watershed organizations, the contact information of staff and board members has been complied. Meetings with BWSR were held to develop the list of organizations included in the project. The final list has 80 different organizations. As of June 18th, the database is completely updated and available on Microsoft Access. The contact information for watershed based organizations' on this database is the most up to date in the state. The database also includes current listings of the board and staff for each organization.

Historical Review
A review of the history of watershed organizations and water resource legislation dating back to the late 1800s has been conducted. A draft chapter has been prepared based on this information. The original legislation and other historical documents were utilized as a source for this chapter.

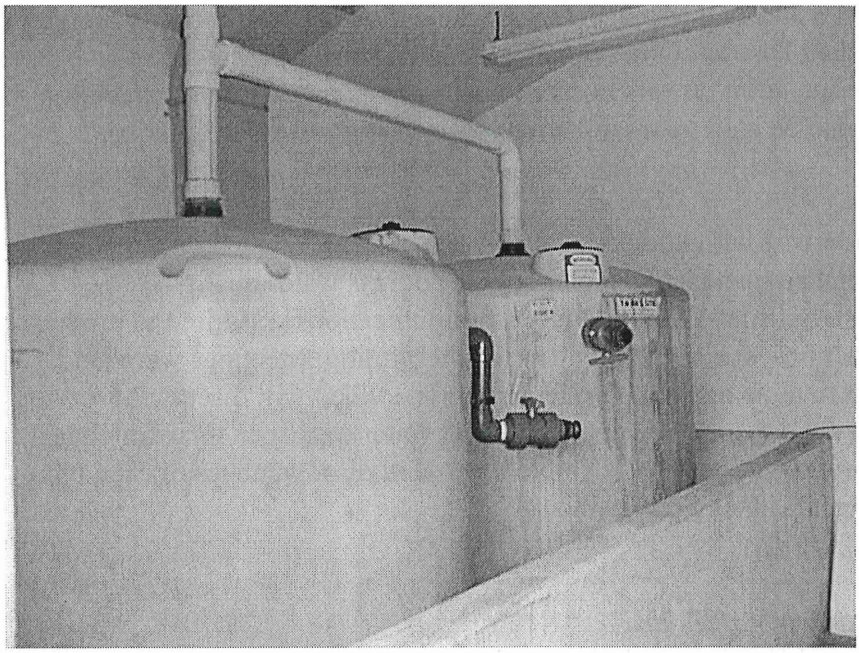
Database of watershed based water quality projects
Field research was conducted this summer to identify water quality projects undertaken by the various organizations. 36 organizations were visited in the field, the remaining 43 were interviewed by phone. A forty six page database was developed that outlines each of the projects as well as the issue that they addressed. Funding sources for these projects were also identified. This information will be cross-referenced so any organizations seeking information on a particular issue will easily be able to determine what projects are being utilized and by which organization. As the field research was conducted in September, the findings are still in draft form at the time of this report. Field results will be included in detail in the final report. Some of the examples of projects follow:



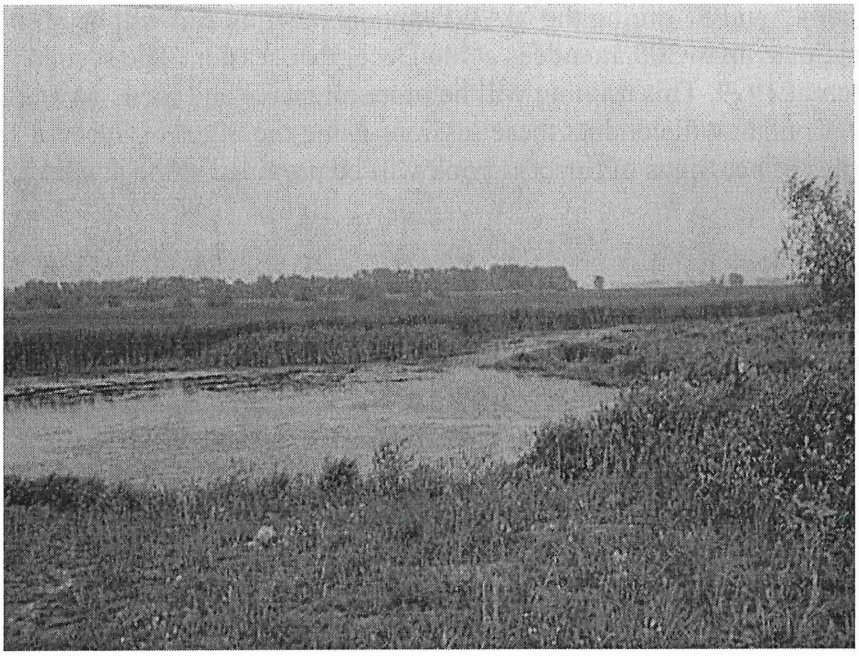
Rip-rap along Fish Lake to prevent shoreline erosion
Snake River Watershed Management Board
(Joint Powers Board)



Streambank stabilization with rock weirs
Red Lake Watershed District



Ferric Chloride tanks for phosphorous removal-Crystal Lake
Black Dog Joint Powers Board/Watershed Management Organization



Straight River Marsh Project
Restoration and conservation by the Cannon River Watershed Partnership (Non-profit organization)

Case Studies on Specific Organizations
Several watershed organizations have been identified that are undergoing a change in structure. These will be interviewed for further information. These include organizations such as the Central and South West Ramsey Watershed Management Organization that was recently merged to form the Capital Area Watershed District. Other organizations that will be included are representative of watershed districts, joint powers boards , watershed management organization and non-profits. Attention will also be paid to organizations located in rural vs. urban areas.

Video
Scripting and production are underway with audio/visual firms to produce a video that explains the different forms of local watershed management available to address water quality issues. Interviews were conducted with two firms. Cynthia Kreig Communications was hired to produce and direct the video. Real Productions was hired to undertake the filming. Meetings were held with Doug Thomas of BWSR to finalize material for the video. The video will discuss the options open to individuals who are concerned about addressing water quality in their watershed. It outlines each of the different organizations and the advantages and disadvantages of each type. A draft script has been prepared and is being reviewed.

Training for Watershed Organization Staff/Board
A meeting was held with Dr. Cheryl Contant to plan the training programs for watershed organizations. These sessions will provide tools to watershed staff and managers to aid in effective decision making, planning and implementation at the watershed level. The first of these sessions will be held on December 4th and 5th during the MAWD annual meeting and will be geared for a large group. We anticipate up to 300 attendees at the December session. The second session is planned for early March of 1999. This training will be more intensive and focus on a smaller group of individuals. Dr. Contant will conduct these sessions using the Signs of Success program she has developed. Copies of her Signs of Success book will be provided at the annual meeting workshops.

IV. OUTLINE OF PROJECT RESULTS

Result 1. Determine the role of Minnesota watershed districts in addressing water quality issues. Surveys will be developed that inquire about the system that each district has developed for identification of point and non-point pollution sources. Results from this study will be compared and evaluated between watershed organizations. Individual districts will be selected for on-site interviews based upon the unique qualities or approaches to point and non-point source pollution that the district revealed in the survey. All information and available documentation on projects and efforts in each watershed will be gathered.

This project will objectively look at the capacity of Minnesota watershed districts to address water quality issues, specifically in term of nonpoint source pollution. If watershed districts are to fulfill their role in addressing water quality issues, then an evaluation of educational,

informational and financial resources will be needed. As part of result one, watershed districts will be analyzed as to their charge and mission in addressing both point and nonpoint source pollution. There is a great deal of variation between watershed districts, such as urban and rural, population base, major waterways, land area and other factors. This project will take this diversity into account.

In order to determine whether a given organization is suited to manage water quality on a watershed basis, criteria of good water quality management will be established. The criteria for a sustainable water quality will be developed upon project startup, but may include motivation to improve water quality, available resources, cost effectiveness and unbiased perspectives. By applying the criteria to different organizations, we can evaluate their ability to address water quality issues.

Some watershed districts have specific water quality programs and personnel in place. Other districts have varying degrees of involvement with water quality issues. Water quality issues and projects will be assessed on a watershed district basis through cataloging specific projects and techniques employed by the districts in the past and present and assessing their accomplishments. This part of the project will require site visits to the districts to see the impact of past water quality projects and determine their current impact. An example of relevant information from the watershed project is, did landowners who had previously enrolled in best management practices (BMPs) under a district water quality program continue those practices after the incentives had expired? In addition to specific technical BMPs, did the farmer learn a decision making process important to improving water quality?

The effectiveness of various water quality programs is often linked to incentive based or regulatory based programs. Where examples of these types of programs exist, information will be collected as to the impact on water quality measure implementation. One issue relevant to watershed district in particular, is the capacity of local unit of governments to address water quality issues. From the information collected about watershed water quality programs in the state, indicators of sustainability can be developed for water quality programs. One measure of sustainability is the availability of project/program funding. Potential forms of financing various watershed organizations will be examined. The potential audience for this information includes state agencies, legislators, and foundations funding water quality work.

Budget:	$75,000	Balance:	$0.00
Match:	$40,000	Balance:	$0.00

Completion Date:	
Develop criteria for evaluation	September 1997
Develop survey/interviews	October 1997
Conduct survey/interviews	December 1998
Gather existing and historical documentation	June 1998
Catalog water quality projects	January 1999

Analyze information	March 1999
Report on results	May 1999

Final Project Results July 1,1999

All results are reported in length in the two reports produced for this project. For detailed results and analysis and recommendations, please see the two reports.

Watershed Districts, created by legislation in 1955, are Minnesota's only form of local government to be based on watershed boundaries. Originally, Watershed Districts dealt primarily with issues pertaining to drainage and flood control. In 1981, their mandate was expanded to include water quality. While many Watershed District projects still focus on flood control, our survey of watershed staff and managers showed that water quality has now surpassed flood control as the primary issue of concern. At present, there are 44 Watershed Districts across the state, and the numbers have continued to increase.

For more detailed information on the above organizations, including information on their authorities and funding sources, please refer to the "Watershed Based Organizations" section of the larger report.

The study examined the capacity of the different forms of Minnesota's watershed organizations to address water quality issues. Issues such as, motivation to improve water quality, availability of funding and funding strategies, staff resources and access to information were discussed. The information obtained from the survey sent to watershed organization decision makers statewide, as well as from field research and case studies was utilized in a comparative study of the four organizational types that manage water quality in Minnesota. Please refer to the large report for detailed results.

April 1,1998

The draft survey to evaluate the effectiveness of watershed districts has been prepared. The draft survey has been distributed to experts from several organizational types such as non-profits, watershed districts and government agencies for verification of scope and content, as well as for further information on evaluating watershed based projects. The survey addresses programmatic, organizational, including contextual issues, as well as individual manager questions. Taken together these questions will provide an in-depth analysis on the functioning of watershed organizations and the ability of these organizations to carry out their mandates successfully. At present we have estimated that approximately 500 surveys will be sent out.

Discussion is underway with the Minnesota Center for Survey Research at the University of Minnesota, to handle the logistics of the survey and to act in an advisory function to ensure statistical accuracy as well as confidentiality.

A detailed database of watershed based organizations, is being developed. The database will be used to determine the individuals and organizations that will receive copies of the survey, and will also help track the programs that are undertaken by these organizations.

As part of the evaluation of watershed based organizations, historical data has been collected from a variety of sources. These include information from the original legislation as well as a literature review and direct interviews. Research was conducted at the legislative library and the University of Minnesota libraries to obtain this information. In addition, some of this information was obtained through the Board of Water and Soil Resources (BSWR) and the Minnesota Association of Watershed Districts. The background information on non-profit organizations was obtained through interviews with staff at the organizations.

A seventeen member advisory board was set up to provide technical input for the project. The board members were selected from several different organizational types including non-profits, government agencies, and the University. The board members have experiences in either watershed management or organizational evaluation. The first board meeting was held on February 27th, and are expected to meet every quarter.

April 28, 1998
A bid was obtained from the Minnesota Center for Survey Research to carry out the survey. The center will act a neutral third party to ensure confidentiality of the responses. We expect that this will allow for a better response rate as the surveys will be sent utilizing the University of Minnesota letterhead.

The survey, which was reviewed by the project advisory board as well as by the board of managers or Ramsey-Washington Metro Watershed District, covers four main areas. A personnel section, a structure/organizational section, a project section and finally a section on specific water quality issues.

Result 2. **Addressing water quality issues in areas where there are no organized watershed districts.** This project will seek out other forms of watershed natural resources management found in Minnesota. Organizations will be listed and specific water quality implementation techniques will be catalogued. The relative success and failure of these techniques will be analyzed. In some areas where watershed districts are not organized, other forms of watershed management can be found. The same criteria and indicators that are used to assess water quality programs for watershed districts will be applied to the other water management organizations. Such forms of organization include nonprofit organizations, such as the Chippewa River Partnership, metro area joint powers water management organizations, joint powers such as the Redwood-Cottonwood Joint Powers Board, and Lake Associations. These organizations will have unique approaches, methods and results from their water quality initiatives.

Limited examples from outside Minnesota will also be compiled. For example, the Raccoon River Watershed Project in Iowa is a coalition of farming commodity organizations and non-profits working to implement water quality measures along the Raccoon River in Iowa. The unique combinations of project partners provide another potential watershed model.

Budget:	$35,000	Balance:	$0.00
Match:	$15,000	Balance:	$ 0.00

Completion Date:	
Develop criteria for evaluation	September 1997
Develop survey/interviews	October 1997
Gather existing and historical documentation	June 1998
Conduct survey/interviews	December 1998
Catalog water quality projects	January 1999
Analyze information	March 1999
Report on results	May 1999

July 1, 1999

All results are reported in length in the two reports produced for this project. For detailed results and analysis and recommendations, please see the two reports.

Joint Powers Boards (JPBs) are multiple government units that voluntarily sign an agreement to work together to address (amongst other issues) local water quantity and quality concerns. They serve an important function in coordinating local units of government and local organizations to help prevent conflicting programs and duplication of effort. All of the JPBs discussed in this report were formed voluntarily and are located outside of the metro area.

Watershed Management Organizations. The passage of the 1982 Metropolitan Water Management Act mandates that comprehensive surface water management plans be developed for all of the 46 sub-watersheds in the seven county metro area. This planning is undertaken by 36 local authorities called Watershed Management Organizations (WMOs). Thirteen of these WMOs are also Watershed Districts. This means that they have the responsibilities of a WMO and are either pre-existing Watershed Districts or they have adopted, through petition, authorities of a Watershed District. WMOs cannot be formed in outstate Minnesota.

Watershed-Based Nonprofits In Minnesota, watershed-based nonprofit organizations play a unique role in organizing citizens. There are at least two formally organized watershed-based nonprofits active in the state. As with all nonprofits, these have incorporated as a private 501(c)(3) organizations defined by federal tax laws. These organizations are extremely diverse in their scope of work and even in their structure.

For more detailed information on the above organizations, including information on their authorities and funding sources, please refer to the "Watershed Based Organizations" section of the larger report.

The study examined the capacity of the different forms of Minnesota's watershed organizations to address water quality issues. Issues such as, motivation to improve water quality, availability of funding and funding strategies, staff resources and access to information were discussed. The information obtained from the survey sent to watershed organization decision makers statewide, as well as from field research and case studies was utilized in a comparative study of the four organizational types that manage water quality in Minnesota. Please refer to the large report for detailed results.

Result 3. **Promoting Watershed Identity and Water Quality Training**
National efforts are underway to promote citizen's awareness of the watersheds in which they live. Promoting watershed identity is another tool to engage people in considering their influence on the water environment. In addition to promoting watershed identity, two training sessions will be held with the board of managers from watershed districts throughout the state. The annual meetings will address incorporating water quality into water management decisions. Watershed district boards of managers are made up of local citizens representing various regions in their watershed. These local boards regularly make decisions on water project, programs and activities. These individuals and local water quality will benefit from training on how to incorporate water quality considerations into decision making.

Other avenues to educate and inform the citizens of Minnesota and elsewhere of the role watershed districts in water quality management are internet applications, such as a web site, newsletters, and an informational video. A web page for Minnesota watershed districts will be developed in conjunction with a similar effort at the Board of Water and Soil Resources, with each district having a separate informational page. The information on watersheds and watershed districts will be presented with a public audience in mind. Information will also be addressed to a legislative audience. At the state level of governance, information is needed about the various watershed water quality management options available, potential financing needs, cost effectiveness and ability to impact the water resource.

Budget:	$40,000	Balance: $0.00
Match:	$20,000	Balance: $ 0.00

Completion Date:	
Plan training seminar 1	November, 1997
Conduct training seminar 1	December, 1997
Plan training seminar 2	November 1998
Conduct training seminar 2	December 1998
Develop web sites 1-20	July 1998
Develop web sites 20-end	June 1999

Video scripting	June of 1998
Video production	March of 1999
Newsletters	Quarterly

July 1,1999

Website
Web pages for each of the individual watershed districts have been set up and are fully functional. They provide information on the location of the districts, information on the Board of Managers and contact information on the District as well as information on the rules for each Districts. They also provide links to other water quality management organizations such as the BWSR, MPCA etc. These webpages can be accessed through the MAWD website at http://www.mnwatershed.org.

Some of the other information available on the website is:
- The two project reports
- Project information that is valuable for watershed managers to utilize in their programs, as well as for policy makers and the general public.
- Links to other watershed based organizations statewide

Video on Local Watershed Organizations in Minnesota

An information video on the different forms of watershed management organizations in Minnesota was produced. It was titled *Rescue My Lake.* A brief synopsis of the video is provided below as well as some suggested uses. The video has already been used by the Board of Water and Soil Resources to provide option for citizens interested in starting their own watershed organization.

The video provides an overview of the different types of watershed based organizations in the state. It opens with "Marvin" a lakeshore property owner who is interested in cleaning up his lake, and who has been charged by his neighborhood group to form an organization that would be able to undertake the task. The video explores the different watershed based organizations through Marvin's eyes. Marvin meets representatives from Watershed Districts, Joint Powers Boards and Watershed Based Non-Profits who talk about their organization and describe its advantages and disadvantages.
This video can be used for:
- Outreach to other groups of citizens looking to manage water quality
- Education on watershed management in Minnesota, for schools, community groups, churches, lakeshore associations, and others
- To stimulate conversation with citizens about watershed issues

A copy of the video has been included with this report.

Training for Watershed Managers
Two training sessions led by Dr. Cheryl Contant from the University of Iowa, were held for watershed organizations. These sessions provided tools to watershed staff and managers to aid in effective decision making, planning and implementation at the watershed level. The first of these sessions was held on December 4th and 5th for Watershed District Managers, during the MAWD annual meeting and was geared for a large group. We approximated about 100 attendees at the that session.

The second session was held in late February 1999. This training was more intensive and focused on a smaller group of individuals from diverse groups, including non-profits, Joint Powers Boards, WMOs and Watershed Districts. There were a total of thirty attendees, and were both staff and managers.

Dr. Contant conducted these sessions using the Signs of Success program she has developed with others.

April 1, 1998

Web pages for each of the individual watershed districts have been set up and are fully functional. They provide information on the location of the districts, information on the Board of Managers and contact information on the District. They also provide links to other water quality management organizations such as the MPCA, the USGS and the Army Corp. These webpages can be accessed through the MAWD website at http://www.mnwatershed.org. At present these websites are being evaluated on how they can be best disseminated to the general public.

Some of the next steps planned for the webpages are:
- Structure set in place to upload all project information that would be valuable for watershed managers to utilize in their programs, as well as for policy makers and the general public.
- Links to the LCMR Project
- Links to other watershed based organizations statewide

Work is ongoing to produce the educational video on the watershed districts. At present discussions are being held with firms that could produce the video and that have some experience working with watershed issues.

Planning process for training on the Signs of Success evaluation for watershed managers with Dr. Cheryl Contant at the University of Iowa. Dr. Contant will be providing input for the surveys as well as for the training sessions.

At the annual MAWD meeting in December 1997, the project manager gave a slide presentation on the project. In addition, plans have been made to visit project sites of several watershed

districts. Information on the watershed districts was also gathered at that meeting. Copies of the newsletters published by the districts were collected.

V. DISSEMINATION

This project is conducted through the Minnesota Association of Watershed Districts (MAWD), in collaboration with the Board of Water and Soil Conservation (BWSR), and nonprofit organizations. MAWD's membership is composed of the citizen's boards of Watershed Districts throughout the state. MAWD currently disseminates information to all watershed districts through a quarterly newsletter and also holds annual meetings. The annual meetings bring together water managers from across the state, state agencies, and outside resource people to discuss water management issues that arise at the local level. This forum will be used in 1997 and 1998 to hold workshops on incorporating water quality into decision making at a local level.

BWSR produces an annual directory of water quality organizations from state to local levels. We will draw upon this resource and work in collaboration with BWSR to contact many water management organizations during the project period, with an emphasis on watershed based organizations.

MAWD will work with BWSR to develop web pages for each watershed district in the state of Minnesota and the ongoing projects within each of those watershed districts. All watershed district capitol improvement projects will be listed along with other pertinent activities, ongoing or planned. Development of web pages is an increasingly effective interactive form of information exchange between state and local agencies, organizations and citizens.

VI. CONTEXT

A. Significance:

In the course of developing and refining approaches to natural resource management, the watershed model has emerged as the preeminent theory to date (Doppelt et al., 1993; Hornbeck and Swank, 1992; Thurow and Juo, 1995; Wilson, 1987). The defined drainage pattern of water on the landscape makes it a natural planning unit for natural resource management. Energy flow and nutrient cycling can be placed within the framework of the watershed. Water resource management based on other units of landscapes, whether political or ecosystems based, must continually account for nutrient and energy inputs from outside the watershed area (Thurow and Juo, 1995).

Practical approaches to watershed management and nonpoint source pollution are now being studied intensively (Perciasepe, 1995). While some watershed based organizations have existed for many decades, they have not received or sought recognition as natural resource management

organizations. For example, Minnesota has local forms of governance based upon the natural drainage patterns of water known as watershed districts, formerly known as drainage districts. Some of these local units of government date back to around the turn of the century. The longevity of this local unit of government provides information on the historical perspective of water management in the state of Minnesota. The individuals making regular decisions on water resource issues serve on citizen's boards in place in the districts.

Local community members have a significant impact on farmer participation in agricultural water quality projects. The 10 year, $64 million national Rural Clean Water Program was initiated in 1980 and implemented on selected watersheds throughout the United States to address a variety of agricultural issues and land practices affecting water quality, specifically non-point source pollution. This program had a test site in Minnesota. The success of the program in Minnesota is attributed to a local community member selected to deliver information to neighboring farmers (Osmond et al., 1995).

Local community leadership can greatly increase the effectiveness of water quality programs. Local governments, however, must be empowered to include water quality issues into their decision making (Minton, 1980). This has applications to the watershed, where local community residents serve as watershed managers. Local efforts may be more likely to include the variety of stakeholders in water quality planning and decisions, thereby increasing the likelihood of program success (Connelly et al., 1992).

To determine the effectiveness of local organizations in achieving improved water quality, selected criteria or indicators can be used (Dr. Cheryl Contant, pers. comm) Indicators of sustainability have been and are being developed by a number of authors (Kaul and Draeger, 1995). This project will look for indicators of sustainability in watershed water quality management, which will include technical, policy and social indicators. One issue in determining the effectiveness of a given water quality project is the lag time between changes in land use practices and the resulting impact on water quality . Water quality changes due to the implementation of best management practices can take 3-5 years before monitoring data reflects changes (Spooner and Line, 1993).

This project is occurring at a time in our history when federal government resources are diminishing, there is a movement afoot to return decision making to local governments, and the public has unprecedented concern for water quality issues. In order to continue making advances in our water quality efforts, we need to have the information and analysis of the current forms of watershed water quality management in place on the Minnesota landscape, the effectiveness of such programs, and the sustainability of these organizations and their water quality efforts.

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B. Time: This project will be completed in the two-year period of this project.

C. Budget Context:

	July 1995-June 1997 Prior expenditures on this project	July 1997-June 1999 Proposed expenditures on this project	July 1999-June 2001 Anticipated future expenditures on this project
1. LCMR	$	$150,000	$
2. Other State	$	$	$
3. Non State Cash	$7,730	$ 75,000	$
Total	$7,730	$225,000	$

BUDGET	Original	Modified
Personnel		
Project Manager	$58,000	$58,000
One FTE	$94,000	$94,000
MAWD part-time person	$10,000	$4,500
Interns/consultants	$13,000	$13,000
Travel	$6,000	$4,000
Equipment (computer, scanner)	$4,500	$4,500
Acquisition	$0	$0
Development	$0	$0
Web site development and support	$6,000	$3,500
Video	$12,000	$12,000
Communication	$2,500	$2,500
Printing	$2,000	$2,000
Office supplies	$2,000	$2,000
Conference	$1000	$1000
University of MN, survey center	$14,000	$14,000
Design, Layout and Printing		$10,000
Total	$225,000	$225,000

April 28, 1999-Workplan Amendment
We are modifying the budget to produce a abbreviated report on the results of our evaluation of watershed organizations to be distributed to all the watershed organizations, interested state agencies and citizens. The relocated funds will be used for layout, printing and mailing of a concise 16 page report and a comprehensive report with full results (approximately 180 pages) for limited distribution. An editor will also be hired for the final proofing. The printing quote is for 1,000 copies. Funds will be drawn from three of the existing categories within our current budget; $5,500 from MAWD part-time personnel category, an additional $2,500 from website

development and $2,000 from travel. The funds are available within the MAWD part-time budget because we will be using a designer instead of a MAWD staff person. The savings in website development came from a reduction in costs to set up the websites as well as through a collaboration with the Board of Water and Soil Resources. We are transferring these savings into the report as it is one of the primary tools for disseminating our project results.

April 28, 1998-Workplan Amendment
The quote for services from the Survey Center is $14,000. This will include the printing, mailing, data entry and analysis costs for approximately 650 surveys. Funds will be drawn from two of the existing categories within our current budget, $5,000 from MAWD part-time personnel category and an additional $9,000 from Website development. The funds are available within the MAWD part-time budget because we will be using the center instead of a MAWD staff person. We will be utilizing $9,000 from the Website Category of our budget. The savings here came from a reduction in costs to set up the websites as well as through a collaboration with the Board of Water and Soil Resources. We are transferring these savings into the survey as it is one of the primary tool for gathering our project information.

VII. COOPERATORS:
Doug Thomas, Board of Soil and Water Resources, 5% time, $5,000 in-kind; Chippewa River Stewardship Partnership, 5% time, $1200; Roger Wolf, Raccoon River Watershed Project, 2% time, $500.

VIII. LOCATION: Please see attached map of Minnesota's major watersheds.

IX. REPORTING REQUIREMENTS: Periodic workprogram reports will be submitted on or by February 1, 1998, and October 1, 1998.

A final workplan report and associated products will be submitted by June 30, 1999, or by the completion date as set in appropriation.

APPENDIX A : SURVEY ON LOCAL WATERSHED MANAGEMENT

Please take time to fill out this survey. Although others in your organization will receive the same survey, we are interested in your individual perspective. Please return the survey even if you are unable to answer all the questions.

I. **Water Quality** The following questions ask about water quality issues in your watershed.

Q1. In your opinion, is water quality in your watershed: (*Circle one.*)

1. A serious concern
2. A moderate concern
3. A minor concern
4. Not a concern

Q2. Based on the length of time you have been associated with this watershed, would you say that water quality is better, worse, or about the same? (*Circle one.*)

1. Better today
2. Worse today
3. Has stayed about the same
4. Don't know

Q3. Based on the length of time you have been associated with this watershed, is water quality for each of the following better, worse, or about the same? (*Circle one response for each item.*)

	Better	Worse	About the Same	Don't Know
a. Swimming	1	2	3	4
b. Fishing	1	2	3	4
c. Other recreational activities	1	2	3	4
d. Aesthetic value of water resources	1	2	3	4

Q4. What is the greatest water-quality concern in your watershed? (*Circle one.*)

1. Sediment
2. Nutrients
3. Microbial
4. Toxic chemicals
5. Exotic species
6. Other (*Specify*:_____)
7. Don't know

Q5. Which of the following has the most negative impact on water quality in your watershed? (*Circle one.*)

1. Industry
2. Urban runoff
3. Flooding
4. Wastewater
5. Mining
6. Forestry
7. Agriculture
8. Stream bank erosion
9. Natural causes
10. Other (*Specify*:_____)
11. Don't know

Q6. When making decisions about water quality issues, how important are the following sources of information? (*Circle one response for each item.*)

	Very Important	Somewhat Important	Not Very Important	Not At All Important
a. State agencies	1	2	3	4
b. Federal agencies	1	2	3	4
c. Books	1	2	3	4
d. Organizations or associations (e.g., MAWD)	1	2	3	4
e. Internet (not e-mail)	1	2	3	4
f. Articles from journals/trade publications	1	2	3	4
g. Seminars/conferences	1	2	3	4
h. Consultants	1	2	3	4
i. Other (*Specify*:_____)	1	2	3	4

II. Projects The following questions address specific projects that your watershed organization may work on and the decision-making processes involved.

Q7. Please indicate if your organization has or plans to implement projects to address the following issues. (*Check all that apply for each issue or circle "DK".*)

	Have addressed in the past	Current Project	Plan to address in the future	Do not plan to address this issue	Don't Know
a. Flood control	_____	_____	_____	_____	DK
b. Stream channelization	_____	_____	_____	_____	DK
c. Wetland drainage	_____	_____	_____	_____	DK

d. Wetland creation	_____	_____	_____	_____	DK
e. Wetland regulation	_____	_____	_____	_____	DK
f. Irrigation	_____	_____	_____	_____	DK
g. Regulate flow of streams	_____	_____	_____	_____	DK
h. Alter watercourse	_____	_____	_____	_____	DK
i. Water supply	_____	_____	_____	_____	DK
j. Sanitation	_____	_____	_____	_____	DK
k. Modify/repair drainage systems	_____	_____	_____	_____	DK
l. Erosion control	_____	_____	_____	_____	DK
m. Riparian property management	_____	_____	_____	_____	DK
n. Hydroelectric power	_____	_____	_____	_____	DK
o. Water quality	_____	_____	_____	_____	DK
p. Groundwater	_____	_____	_____	_____	DK
q. Other (*Specify*:_____)	_____	_____	_____	_____	DK

Q8. In your opinion, what are the three most important issues addressed by your organization?

1.

_____

2.

_____

3.

_____

Q9. Is there any overlap between your organization's water QUALITY and water QUANTITY projects?

1. Yes
2. No
3. Don't know

Q10. Please give us your best estimate: What percentage of your organization's projects can be classified as:

Percent

a. Water QUALITY projects _____%

b. Water QUANTITY projects _____%

c. Don't know

Q11. About what percentage of your organization's time resources are spent on:

		Percent
a.	Water QUALITY projects	_____%
b.	Water QUANTITY projects	_____%
c.	Don't know	

Q12. About what percentage of your organization's financial resources are spent on:

		Percent
a.	Water QUALITY projects	_____%
b.	Water QUANTITY projects	_____%
c.	Don't know	

Q13. If finances were not a limiting factor, would your organization's water quality programs: (*Circle one.*)

1. Increase
2. Decrease
3. Stay the same
4. Finances are not a limiting factor
5. Don't know

Q14. As a result of your water quality projects/programs, about what number of landowners have changed practices that would improve water quality? (*Circle one.*)

1. Many
2. Some
3. None
4. Don't know

Q15. How frequently do the following influence your decision making for water quality projects? (*Circle one response for each item.*)

	Never	Infrequently	Occasionally	Very Frequently	Don't Know

a.	Public opinion	1	2	3	4	5
b.	Staff advice	1	2	3	4	5
c.	County commissioner	1	2	3	4	5
d.	Citizen petition	1	2	3	4	5
e.	Your own experience	1	2	3	4	5
f.	Peers	1	2	3	4	5
g.	State agency	1	2	3	4	5
h.	Federal agency	1	2	3	4	5
i.	Consultant recommendation	1	2	3	4	5
j.	Board member suggestions	1	2	3	4	5
k.	Local interest	1	2	3	4	5
l.	Data from your organization	1	2	3	4	5
m.	Books or journals	1	2	3	4	5
n.	Combination of sources (*Specify*:_____)	1	2	3	4	5
o.	Other (*Specify*: _____)	1	2	3	4	5

Q16. Have you ever attended a training on program evaluation?

1. Yes
2. No

Q17. Would you be interested in attending a training program about watershed program self evaluation?

1. Yes
2. No
3. Maybe (*Please explain*:_____)

Q18. Have you ever received input from the Minnesota Pollution Control Agency (MPCA) about water quality projects?

1. Yes
2. No

Q19. How much water quality information would you prefer to receive from the MPCA? (*Circle one.*)

1. More
2. Less
3. The same amount

Q20. What kind of support is your organization currently receiving from the MPCA? (*Circle all that apply.*)

a. Information
b. Technical assistance
c. Enforcement coordination
d. Financial support
e. Other (*Specify*:_____)

Q21. What kind of support for your organization would you LIKE to have from the MPCA? (*Circle all*
that apply.)

a. Information
b. Technical assistance
c. Enforcement coordination
d. Financial support
e. Other (*Specify*:_____)

Q22. Does the MPCA utilize information or findings from your projects or programs?

1. Yes
2. No
3. Don't know

Q23. Have you ever received input from the Minnesota Department of Natural Resources (DNR) about water quality projects?

1. Yes
2. No

Q24. How much water quality information would you prefer to receive from the DNR? (*Circle one.*)

1. More
2. Less

3. The same amount

Q25. What kind of support is your organization currently receiving from the DNR? (*Circle all that apply.*)

a. Information
b. Technical assistance
c. Enforcement coordination
d. Financial support
e. Other (*Specify*:_____)

Q26. What kind of support for your organization would you LIKE to have from the DNR? (*Circle all that apply.*)

a. Information
b. Technical assistance
c. Enforcement coordination
d. Financial support
e. Other (*Specify*:_____)

Q27. Does the DNR utilize information or findings from your projects or programs?

1. Yes
2. No
3. Don't know

Q28. In the past three years, which of the following has your organization worked with regarding water quality issues? (*Circle all that apply.*)

a. MN Dept. of Agriculture (MDA)
b. MPCA
c. DNR
d. MN Dept. of Transportation (MN DOT)
e. Board of Water and Soil Resources (BSWR)
f. US Fish and Wildlife Service
g. US Geological Survey
h. MN Planning
i. Army Corps of Engineers
j. US Dept. of Agriculture (USDA)
k. Natural Resource Conservation Service (NRCS)
l. Environmental non-profit organization(s)
m. University of Minnesota
n. Minnesota Extension Service
o. Soil and Water Conservation District
p. Other (*Specify*:_____)

Q29. Does your organization have access to current water quality data for your area?

1. Yes

2. No
3. Don't know

Q30. Is your organization currently implementing any programs to monitor water quality?

1. Yes ------->
2. No
3. Don't know

IF YES: Please describe these programs:

_____

_____

_____

Q31. Do other agencies or organizations currently monitor water quality in your area? (*Circle one.*)

1. Yes ------->
2. No
3. Don't know

IF YES: Please list the organization(s):

_____

_____

_____

Q32. What do you believe is your organization's most successful project to date? (*Please fill in the information requested.*)

Name of project:_____

Type of project (water quality, flood control, etc.)_____

Reasons why this project was successful:_____

_____

_____

III. **Organizational Structure** The next questions address the operation and authorities of your organization.

Q33. Does your organization have an updated, comprehensive watershed plan?

1. Yes ----------> **IF YES:** How often is this watershed plan used by your organization? (*Circle one.*)
   1. Never
   2. Infrequently
   3. Occasionally
   4. Very frequently
   5. Don't know
2. No
3. Don't know

Q34. Does your organization: (*Circle one response for each item.*)

		Yes	No	Don't Know
a.	Prepare an annual workplan (report)	1	2	3
b.	Prepare an annual budget	1	2	3
c.	Have access to a fax machine	1	2	3
d.	Have access to a computer	1	2	3
e.	Have access to AND use e-mail	1	2	3

Q35. Does your organization employ staff?

1. Yes ----------> **IF YES:** Please indicate the number of each:
   Full-time staff _____
   Part-time staff _____
2. No **(PLEASE SKIP TO Q36)**

Q35a. **IF YES TO Q35**: Which of the following staff positions does your organization have? (*Circle all that apply.*)

a. Administrative
b. Technical, water quality
c. Technical, engineering

d. Secretarial
e. Educational/Outreach
f. Other (*Specify*:_____)

Q36. Does your organization employ consultants?

1. Yes ------->

IF YES: Which types of consultants are employed? (*Circle all that apply.*)

a. Legal
b. Engineering
c. Other (*Specify*:_____)

2. No

Q37. Are watershed board meetings held at your organization's office?

1. Yes
2. No ------->

IF NO: Where are board meetings usually held?

_____

Q38. How frequently are board meetings held? (*Circle one.*)

1. Weekly
2. Twice per month
3. Once per month
4. Quarterly
5. Twice per year
6. Once per year
7. As needed (*Approximately how often*:_____)
8. Other (*Specify*:_____)

Q39. Do you feel your organization's funding is stable?

1. Yes
2. No

Q40. In your estimation, approximately what percentage of your organization's funding for fiscal year 1997 was from the following sources? (*Fill in a percentage for each.*)

Percent

a.	Grants	_____%
b.	Taxes	_____%
c.	County appropriated funds	_____%
d.	Loan (e.g., Clean Water Partnership, Phase II)	_____%
e.	Other (*Specify*:_____)	_____%
	TOTAL	100%
f.	Don't know	

Q41. What vested authorities does your watershed organization have? (*Circle all that apply.*)

a. None **(PLEASE SKIP TO Q42)**
b. Permitting
c. Taxing
d. Other (*Specify*:_____)
e. Don't know

Q41a. What authorities are exercised by your watershed organization? (*Circle all that apply.*)

a. None
b. Permitting
c. Taxing
d. Other (*Specify*:_____)
e. Don't know

Q41b. Which type of taxing authority does your watershed organization use? (*Circle all that apply.*)

a. None
b. Ad valorem
c. User fees
d. Special assessments
e. Other (*Specify*:_____)
f. Don't know

Q41c. How does your watershed organization enforce its rules and regulations? (*Circle all that apply.*)

a. Fines
b. Civil action
c. Criminal action
d. Other (*Specify*:_____)
e. Don't know

Q42. Does your watershed organization work with other regulatory government units to pursue known violations of water quality regulations?

1. Yes
2. No
3. Don't know

Q43. How satisfied are you with citizen participation in your organization's water quality projects? (*Circle one.*)

1. Very satisfied
2. Somewhat satisfied
3. Not very satisfied
4. Not at all satisfied

Q44. Would you like citizen participation in your organization's water quality projects to increase, decrease, or stay about the same? (*Circle one.*)

1. Increase
2. Decrease
3. Stay about the same

Q44a. Please explain your reasons for your answer to Q44:_____

_____

_____

_____

Q45. Which of the following does your organization use for motivating citizen cooperation with its water quality projects? (*Circle all that apply.*)

a. Incentives
b. Regulations
c. Peer participation
d. Other (*Specify*:_____)
e. Don't know

Q46. Does your organization utilize the following methods for public outreach? (*Circle one response for each item.*)

		Yes	No
a.	Publicity through the news media	1	2
b.	Public notices	1	2
c.	Educational programs	1	2
d.	Brochures	1	2
e.	Newsletter	1	2

Q47. Does your organization currently have a citizen advisory board?

1. Yes -------> **IF YES:** Is the advisory board currently active or inactive? (*Circle one.*)
   1. Active
   2. Inactive
2. No

Q48. Does your watershed organization utilize OTHER methods of public outreach?

1. Yes -------> **IF YES:** Please describe these outreach efforts:

   _____

   _____

   _____
2. No
3. Don't know

Q49. What is your organization's mission?

_____

_____

_____

IV. **Other Information** *Please answer the following questions about yourself. The information will be used only to compare people's answers. It will not be used to identify you in any way.*

Q50. For your watershed organization, are you: (*Circle one.*)

1. Staff ----------> **IF STAFF:** Are you full-time or part-time staff? (*Circle one.*)

2. Board manager or director

1. Full-time
2. Part-time

Q51. In what year were you born? ___ ___ ___ ___

Q52. What is the highest level of school you have completed? (*Circle one.*)

1. Some high school
2. High school graduate or GED
3. Some technical or two-year college
4. Technical or two-year college graduate
5. Some four-year college
6. Graduate of four-year college
7. Graduate or professional degree
8. Other (*Specify*:_____)

Q53. What is your current occupation?

_____

Q54. How many years have you worked in your current occupation? _____ years

Q55. What do you consider to be your main area of expertise?

_____

Q56. What are the reasons you became involved with this watershed organization? (*Circle all that apply.*)

a. Hired for position
b. Appointed to position
c. Actively campaigned for appointment
d. Interest in local governance
e. Interest in watershed issues
f. Other (*Specify*:_____)

Q57. How many years have you served with this watershed organization? _____ years

Q58. What is the name of your watershed organization?

_____

Q59. What other information would you like us to know about your watershed organization?