

THE DEVELOPMENT OF THE  
*WISCONSIN SUPPLEMENT TO NATIONAL PROJECT WET:*  
*A WATER RESOURCES GUIDE FOR EDUCATORS*

by

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A Thesis

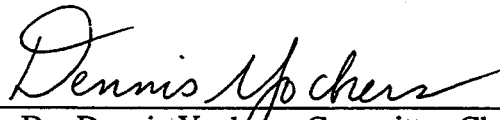
submitted in partial fulfillment of the  
requirements of the degree  
MASTER OF SCIENCE

College of Natural Resources

UNIVERSITY OF WISCONSIN  
Stevens Point, Wisconsin

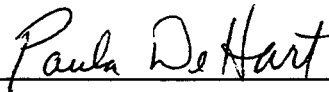
December, 1997

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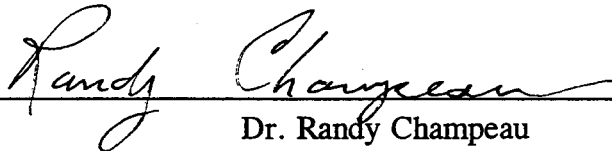
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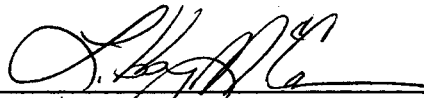
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## Abstract

In July 1995, the national water education program, Project WET (Water Education for Teachers), was brought to Wisconsin. The program trains teachers to use the Project WET Curriculum and Activity Guide (Guide) to enhance their water education programs. Four statewide surveys in Wisconsin, Missouri, Colorado, and Iowa have indicated that teachers want environmental education (EE) materials specific to their state and region. Based on the interests of teachers for regional EE materials, a graduate research project was undertaken to make the national Project WET Guide more specific to Wisconsin.

The result of this project will be a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators (Wisconsin Supplement)* to be completed in fall 1997. The purpose of this *Wisconsin Supplement* is to assist Wisconsin educators in making the national Project WET activities more relevant to their students. In addition, the *Wisconsin Supplement* will help educators identify other state and local educational materials, organizations, field trip ideas, and guest speaker contacts to compliment their water education efforts.

The Educational Research and Development process was used to create and validate this educational product. Literature reviews of state agency reports and a teacher survey were utilized to identify Wisconsin's water education priorities and educators' needs. Phone interviews were conducted with water resources specialists to identify Wisconsin water resources information, materials, and organizations available to educators. Six 'Wisconsinized' Project WET activities were written by state teachers to include in the *Wisconsin Supplement*. Those teachers were interviewed to provide suggestions for other educators planning to adapt Project WET activities to their region of the state.

The draft *Supplement* was field-tested through two teacher training workshops (38 participants) where evaluations were completed by participants immediately after the workshop. A validity panel of nine water resources specialists and educators also evaluated the draft *Wisconsin Supplement*. Revisions were made based on those qualitative and quantitative evaluations. The final *Wisconsin Supplement* will be disseminated to educators through six-hour training workshops.

## Acknowledgments

One of the most wonderful aspects of working in water education is that it literally involves everything. And in terms of this project, it included the involvement of a watershed of people overflowing with support, advice, patience, love, and trust. This project was only possible because of the help of so many people.

First and foremost, I want to send a huge thank you to Libby McCann who has been there every step of the way; providing support, guidance, and a clear vision. You are by far the best model I have known of someone who is truly passionate and dedicated to the goals of EE. Thanks for all you have given to me and this project, BOSS!

To my advisor, Dr. Dennis Yockers, thanks for always letting me barge in on a moment's notice with questions and for always cranking through drafts at lightning speed. Thank you for all of your support and trust. Many thanks to Randy Champeau and Paula DeHart, for being clairvoyant and supportive throughout the foggy times of this project.

Thanks to the Wisconsin Lakes Partnership (UWEX, DNR, and WAL) and WEEB for supporting this project and my position. Many thanks to Dorothy Snyder for your patience, calming force, and support.

There is no way I could have made it through this experience with a huge smile on my face and great warmth in my heart if it hadn't have been for my dear clan of buds. To Nicole, Robert, Erik, Leigh, Michelle, and John: thank you for the laughter, songs, amazing stories, many adventures, never-ending support, and love that flows across oceans and mountains. May the sun shine warm upon your face wherever your road takes you and know that we will always be together. To Cheryl: I'm so glad we had the chance to live together and share our happy home. Thank you for introducing me to grad school, for your guidance and patience. Thanks to many other folks who have filled the days with smiles!

Here's to my wonderful and growing family! Thank you all for your support, patience, and understanding. I am so lucky to be a part of this incredible tribe of people! Mom and Dad, thank you for always hearing me out, no matter how late I called, and how little sense I was making at the time, and for learning to be ever patient. You have been my rock of support! The most patient and forgiving of all has been my best buddy, Scooch.

This project wouldn't have been possible without the input of the many dedicated Wisconsin educators and water specialists. Thank you for being the stewards of our waters.

# Table of Contents

Abstract.....	iii
Acknowledgments.....	iv
List of Figures.....	vii
List of Appendices.....	viii
Chapter One: THE PROBLEM AND ITS SETTING.....	1
A. Importance of the Study.....	1
B. Problem Statement .....	2
C. Subproblems (Objectives) .....	3
D. Limitations.....	3
E. Definitions of Terms.....	4
F. Abbreviations .....	5
G. Assumptions.....	5
Chapter Two: THE REVIEW OF THE RELATED LITERATURE.....	6
A. Water Education in the Classroom.....	6
B. Project WET Goals.....	7
C. State Specific Adaptations to National Environmental Education Curriculum... 8	
D. Wisconsin Water Education Needs.....	10
E. Educational Research and Development.....	11
F. Interviews as a Research Tool .....	13
G. Field Test and Evaluation for Educational Products.....	15
H. Teacher Training as an Effective Dissemination Technique for Educational Materials.....	18
I. Summary.....	19
Chapter Three: METHODS.....	21
A. Overview.....	21
B. Planning.....	21
C. Educational Research and Development Process.....	23
D. The Data.....	26
E. The Research Methodology.....	27
F. Objective One Methods.....	27
G. Objective Two Methods.....	29
H. Objective Three Methods.....	31
I. Objective Four Methods.....	34
J. Summary.....	37
Chapter Four: RESULTS .....	39
A. Preliminary Assessment.....	40
B. Objective One.....	41
C. Objective Two.....	49
Phone Interviews.....	49
D. Objective Three.....	52

Wisconsin Supplement Development by Section.....	53
E. Objective Four.....	57
Field-Test Workshops.....	57
Field-Test & Evaluation Responses.....	58
Revisions.....	61
F. Summary.....	63
 Chapter Five: SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS.....	65
A. Summary.....	65
B. Review of Results by Research Objective.....	66
C. Objective One.....	66
D. Objective Two.....	67
E. Objective Three.....	68
F. Objective Four.....	70
Revisions.....	72
G. Recommendations for Future Use and Development of the <i>Wisconsin Supplement</i> .....	73
H. Conclusion.....	75
 REFERENCES.....	77
 APPENDICES.....	81

## List of Figures

Figure 3.1	Final Research Design.....	26
Figure 4.1	Research and Development Process Steps.....	40
Figure 4.2	Priority Water Education Topics and Major Subtopics Chosen by DNR, UWEX, and Selected Wisconsin Teachers.....	42
Figure 4.3	Compiled Validity Panel Responses from Review of Priority Water Education Topics List.....	45
Figure 4.4	Final Priority Topics List: Water Quality Education Topics and Major Subtopics Chosen by DNR, UWEX, and Selected Wisconsin Teachers.....	46
Figure 4.5	Phone Interview Questions.....	51
Figure 4.6	Phone Interview Questions for Teachers who Have 'Wisconsinized' Project WET Activities.....	56
Figure 4.7	Evaluation Statements Regarding the Overall Value of the <i>Wisconsin Supplement</i> .....	60
Figure 4.8	Eight Evaluation Form Statements with Means Less than 4.0.....	61

## List of Appendices

A. Letter sent to Project WET-Wisconsin Advisory Committee Members Requesting their Participation as the Validity Panel.....	81
B. Project WET Curriculum Framework.....	85
C. Water Quality Education Topics and Major Subtopics.....	86
D. Letter sent to Validity Panel Members to Review List of Wisconsin's Priority Water Education Topics and Draft Phone Interview Questions.....	87
E. Confirmation Letter and Phone Interview Questions Sent to Water Resources Specialists to be Interviewed.....	94
F. 'Wisconsinize' a Project WET Activity Assignment.....	97
G. Confirmation Letter and Phone Interview Questions Sent to Teachers to be Interviewed.....	101
H. Letter and Draft <i>Wisconsin Supplement</i> Evaluation Form Sent to Validity Panel Members to Review.....	104
I. Objective One Literature Review Documents.....	111
J. Water Quality Education Topics and Major Subtopics Chosen by DNR, UWEX, and Selected Wisconsin Teachers/Cross-Referenced with the Project WET Curriculum Framework.....	114
K. Responses to Draft of Phone Interview Questions (for Review by Project WET Validity Panel Members).....	120
L. Letter Sent to Organizations Included in the <i>Wisconsin Supplement</i> .....	124
M. <i>Wisconsin Supplement</i> Evaluation Form.....	127
N. Letter Sent to Validity Panel Members Requesting their Review of the Draft <i>Wisconsin Supplement</i> .....	136
O. Draft <i>Wisconsin Supplement</i> Qualitative Evaluation Form Responses.....	138
P. Draft <i>Wisconsin Supplement</i> Quantitative Evaluation Form Responses.....	149
Q. Project Timeline.....	153
R. Project WET-Wisconsin Field-testing Workshop Agenda.....	156
S. <i>Wisconsin Supplement to National Project WET: A Water Resources     Guide for Educators</i> .....	158



# Chapter One

## The Problem and Its Setting

### The Importance of the Study

Project WET (Water Education for Teachers) is an international, interdisciplinary water education program for K-12 educators and their students. The goal of Project WET is to increase people's awareness, understanding, and stewardship of water resources. This goal is being addressed through Project WET's teaching materials and state programs. The national program was established in 1989 and is currently being utilized in 43 states in the United States, Saskatchewan, Canada, and the Northern Mariana Islands. Similar to its predecessors, Project Learning Tree and Project WILD, the *Project WET Curriculum and Activity Guide* (Guide) is disseminated to educators through educator training workshops. These environmental education (EE) materials are designed to supplement a school's curriculum or nonformal EE program.

Each state develops its Project WET program independently and implements the program however it chooses within certain guidelines. In July 1995, Project WET was established in Wisconsin by the Wisconsin Lakes Partnership, a collaborative effort among the University of Wisconsin-Extension (UWEX), the Department of Natural Resources (DNR), and citizens, primarily represented by the Wisconsin Association of Lakes (WAL). As Wisconsin began to plan its strategy for implementing Project WET, the state coordinator and advisory committee members decided that state-specific materials should be produced for Wisconsin educators.

Wisconsin is blessed with a wealth of water resources. Over 15,000 lakes, 40,000 miles of rivers and streams, 5.3 million acres of wetlands, and enough groundwater that if it were all brought to the surface it would cover the entire state in thirty feet of water. In addition, to this vast array of inland waters, the state borders two Great Lakes, Lake Michigan and Lake Superior, and the Mississippi River. Wisconsin is truly a water-rich state.

The Wisconsin Department of Natural Resources has taken an innovative step to integrate its programs by creating an "ecosystem approach" to natural resources management

where regional offices are designated by watershed boundaries not county boundaries (DNR 1994). "The water quality issues for a water-rich state such as Wisconsin are vastly different from the desert southwest, and each state has in place different structures for addressing pollution problems (DNR 1994)". The abundance of waters, diversity of aquatic ecosystems and issues, and that Wisconsin's waterways attracts thousands of state residents and visitors each year all contribute to the unique nature of Wisconsin's water resources. Because of the unique quality of the state's waters, it is important to create water education materials specific to Wisconsin.

Further justification for creating a Wisconsin-specific supplement to national Project WET is exemplified by four statewide surveys conducted in Wisconsin, Missouri, Colorado, and Iowa that indicate teachers want environmental education materials specific to their state and region. A 1996 Wisconsin teacher survey also identified local water resources information as a top resource need of state educators (Dixon 1996). Based on the interest of teachers and Project WET-Wisconsin coordinators, a graduate research project was undertaken to create a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators (Wisconsin Supplement)*.

The purpose of this *Wisconsin Supplement* is to assist Wisconsin educators in making the national Project WET activities more relevant to the state's citizens. The goal of this project is to provide Wisconsin educators with state-specific water resources information to assist them in adapting the national Project WET activities to Wisconsin water resources and issues. In addition, the *Wisconsin Supplement* will help educators identify other state and local educational materials, organizations, field trip ideas, and guest speaker contacts to compliment their water education efforts. The addition of these materials to the existing Guide could potentially create a well-informed citizenry on Wisconsin water resources and issues.

### **Problem Statement**

This research proposes to identify water resource education topics of concern to selected Wisconsin educators and water resource professionals; to identify Wisconsin water resources information available to educators based on these concerns; to create a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators (Wisconsin*

*Supplement*) as a supplement to the *Project WET Curriculum and Activity Guide*; and to field-test and evaluate the effectiveness of this educational product.

### **The Subproblems**

The subproblems are the following:

1. Determine aquatic education topics of greatest concern to selected Wisconsin educators and water resource professionals.
2. Identify Wisconsin water resources information available to educators.
3. Create a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators (Wisconsin Supplement)* as a supplement to the Project WET Curriculum and Activity Guide.
4. Determine selected Wisconsin educators' attitudes toward the effectiveness of the *Wisconsin Supplement*.

### **The Limitations**

1. In Subproblem One, the literature review will not include responses from all educators and water resource professionals from the state of Wisconsin. The Wisconsin priority water education topics list will be a compilation of information obtained through existing state reports and surveys followed by the Wisconsin Project WET advisory committee members validity review of the chosen topics.
2. The study will not determine all of the aquatic education topics of concern. In addition, not every chosen topic will be addressed in a Wisconsin version of a Project WET activity found in the *Wisconsin Supplement*.
3. The *Wisconsin Supplement* will be as comprehensive as possible but will not contain all available water-related resources within the state.
4. The activities included in the *Wisconsin Supplement* will be appropriate for certain grade levels. Educators may need to adapt activities to the grade level of their students.
5. The workshop participants involved in evaluating the effectiveness of the *Wisconsin Supplement* will not be randomly chosen.

## The Definitions of Terms

Formal Educators. Classroom teachers (Pre K-12)

Greatest Concern. Greatest concern in reference to the aquatic education topics means that the topics are of priority focus for the state agencies and teachers included in the literature review for Subproblem One. The organizations or individuals decided which topics interested them the most, are critical for students to understand, are underrepresented in water education at present, and/or are perceived as of vital concern in protecting water resources.

National Project WET Activities. These are the existing activities found in the *Project WET Curriculum and Activity Guide* developed and pilot-tested by teachers from throughout the United States and produced by The Watercourse and the Council on Environmental Education (formerly Western Regional Environmental Education Council).

Non-formal Educators. Educators who do not teach in a traditional school setting. For example, nature center staff, county 4-H/Youth Development Agents, scout leaders, etc.

Relevant Modifications. Relevant modifications to Project WET activities might include altering the original Project WET activity to make them more specific to Wisconsin water resources and issues, providing additional material about Wisconsin water history, etc. These modifications consist of content changes made to existing WET activities that will not change the objectives or structure of the *Project WET Curriculum and Activity Guide* or the individual activities.

Selected Project WET Activities. Activities that can be adapted to Wisconsin water resources will be pre-selected for potential modification based on the results of Subproblem One.

Water Resource Professionals. They would include water resource related staff from the Wisconsin Department of Natural Resources, University of Wisconsin-Extension, Central Wisconsin Groundwater Center, University of Wisconsin-Sea Grant staff, environmental education center staff, non-profit environmental organizations, and others.

Wisconsin-specific or 'Wisconsinized'. These are adaptations of existing national Project WET activities which are specific to Wisconsin's water resources, species, and issues.

## Abbreviations

DNR is the abbreviation used for the Wisconsin Department of Natural Resources.

DPI is the abbreviation for the Wisconsin Department of Public Instruction.

EE is the abbreviation for Environmental Education.

PLT is the abbreviation for Project Learning Tree.

R & D is the abbreviation for Research and Development.

USDA is the United States Department of Agriculture.

UWEX is the abbreviation for the University of Wisconsin - Extension.

UWSP is the abbreviation for the University of Wisconsin - Stevens Point.

WET is the abbreviation for Water Education for Teachers.

WI is the abbreviation for Wisconsin.

WILD is the abbreviation for Project Wildlife in Learning Design.

*WISCONSIN SUPPLEMENT* is the abbreviation for the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*.

## Assumptions

The assumptions are that:

1. There are aquatic education topics of greatest concern to Wisconsin natural resource agencies and educators.
2. Enough resource personnel will agree to be interviewed to provide a nearly complete listing of available Wisconsin water resource materials and organizations.
3. Educators will be willing to evaluate the effectiveness of the *Wisconsin Supplement*.
4. Educators will use the *Wisconsin Supplement* to enhance their water education efforts.
5. The *Wisconsin Supplement* will assist educators in adapting Project WET activities to Wisconsin and thus make them more relevant to students.

## Chapter Two

# Literature Review

### Water Education in the Classroom

Water is the common ingredient needed for all life forms to exist; it is vital to humans' personal, economic, and political survival. Yet, as the world's need for food continues to dramatically increase, it becomes increasingly difficult to supply life-giving water to farmers (Postel 1996). Meanwhile, water use worldwide has more than tripled since 1950 (Postel 1996). Water use experts believe that water will be the crisis of the next century, and that water issues will continue to create escalating strife between and within nations (Theroux 1997). Some of the threats to freshwater systems include competition for water, pollution, habitat degradation and fragmentation, introduction of nonnative species, commercial exploitation, and climate change (Abramovitz 1996). It is because of these concerns, that the importance of aquatic education both in and out of the classroom has been escalated. Education is the link to informed decision-making regarding water use and management. Aquatic education is critical to our successful livelihood as individuals, nations, and as a planet.

The challenge of environmental educators is to help produce an electorate informed in environmental matters and able to make wise decisions for our planetary future (Fortner 1981). With water comprising 70% of the Earth's surface, it was nearly inevitable that aquatic education should become a major tributary of environmental education. The critical importance of water education should be emphasized in proportion to its importance in the ecosphere (Fortner 1981).

In 1988, Cooperative Extension directors and administrators named water quality the greatest national priority for cooperative extension. In 1990, USDA Cooperative State Research Education and Extension Service made youth water education a priority for that agency. As a result of these decisions, state Cooperative Extension programs throughout the nation focused on water education of youth and adults (Andrews 1992).

Peterson (1982) found that an adult's environmental sensitivity was formed, on

average, by the age of twelve. It is therefore critical that we increase youth awareness and understanding of our water resources and the potential effects of our actions. Hungerford, et. al. (1978) feel that the forum for environmental problem solving lies within the classroom. Water education units taught in the classroom can affect the knowledge and attitudes of students regarding water conservation (Birch and Scwaab 1983). After a group of seventh grade students were taught a unit on water conservation, Birch and Schwaab (1983) found that their knowledge and attitudes about water conservation had changed as a result. Water education in the classroom is crucial to ensure the protection and conservation of our water resources.

One of the goals of aquatic education as described by Goodwin and Schaadt (1978) is to develop a 'water ethic' that includes the "proper uses, protection and conservation of water resources." To achieve that water ethic, educators must be able to provide learning opportunities and information to help students make informed decisions. Project WET aims to achieve those same goals through state programs and the Project WET Curriculum and Activity Guide.

### **Summary**

As water issues become more critical at the local, national, and global levels, water education in the classroom also becomes more critical. One of the goals of aquatic education is to develop a "water ethic." To achieve this water ethic, educators must be equipped to prepare students to make informed decisions about water use and management. Project WET aims to help teachers and students develop awareness, understanding, and stewardship for the world's water resources.

### **Project WET Goals**

*"The goal of Project WET is to facilitate and promote awareness, appreciation, knowledge, and stewardship of water resources through the development and dissemination of classroom-ready teaching aids and through the establishment of state and internationally sponsored Project WET programs (Project WET 1995)."*

Project WET concentrates on strengthening educators' understanding of the

importance of water for all water users and that informed water management is critical to the future social and economic prosperity of all nations. Informed educators are then able to share water education programs with their students that are balanced and based on well-understood concepts. The activities are process-oriented and incorporate a wide variety of teaching techniques.

The *Project WET Curriculum and Activity Guide* is designed to provide teachers with an interdisciplinary, easy-to-use supplement to their curriculum (Brody 1995). Educators can use Project WET activities to supplement their curricular units or to use as a core element of program development.

### **Summary**

Project WET provides an interdisciplinary program for educators designed to promote knowledge, awareness, appreciation, and stewardship of water resources.

### **State-specific and Local Adaptations to National EE Curricula**

Three teacher and superintendent surveys in Missouri, Colorado, and Iowa show that educators want local information about environmental education topics (Botinelli 1976, Trojcak and Harvey 1976, Gigar 1996). The authors of a Missouri survey of 270 superintendents, administrators, and curriculum and science specialists concluded that teachers prefer to “develop and use more ‘customized’ EE materials to fit the unique needs of their districts (Trojcak and Harvey 1976)”. A 1975 survey of Colorado superintendents found that there was a need for “inexpensive and easy-to-administer materials that relate to local problems (Botinelli 1976).”

In terms of teacher inservice education, Wade (1996) argues that the current “fast food approach to EE inservice education does little to promote local cuisine or culinary experimentation.” As a result, teachers are not being encouraged to explore learning opportunities available through their local communities (Wade 1996).

It was recommended in *Assessing National Water Quality Education Needs for the Nonformal Youth Audience* (Andrews 1992) that regionally-specific environmental education materials be developed. This report states:



*"With respect to existing materials, an ideal water curriculum package might include: a general curriculum, like Aquatic WILD or another well rounded curriculum, to provide a general overall choice of activity topics, levels, and types; accompanied by materials which provide education about a regional water resource and materials which provide information about drinking water education (Andrews 1992)."*

The Iowa Department of Natural Resources has taken the initiative to develop supplemental Iowa guides to be distributed to educators attending PLT, Project WILD and Aquatic WILD workshops. The Iowa DNR compiled 95 evaluations of the Aquatic WILD program completed by workshop participants and found that 82% of respondents stated that they used *An Iowa Supplement to Aquatic WILD* (Gigar 1996).

Interest among Project WET coordinators to create state-specific materials has increased over the last few years, motivating several states to develop their own state supplements. Nevada was the first state to create a companion piece for Project WET, focusing on the unique hydrology of Nevada and its effects on water use and water rights issues. Virginia has developed a supplement that recommends specific Virginia and Chesapeake Bay publications to enhance certain Project WET activities. Saskatchewan Project WET is creating a Canada Supplement that will include a directory of Canadian water education resources and a variety of Canada-adapted Project WET activities.

Some Project WILD coordinators have pursued the development of state supplements to their national program. In 1992, Hawai'i Project WILD created a Hawai'i Supplement to Project WILD Aquatic to make certain activities more relevant to Hawai'i's environment, and therefore, more useful to Hawai'i teachers and students. New Mexico Project WILD has also created a state supplement.

A Summary of Project WILD research findings (from surveys conducted around the U.S. from 1983-1995) included a "Needs Expressed by Educators" section. Some of the educators' needs included: "state-specific resources," "information on state-specific wildlife," "information on speakers, materials, and artifacts available for loan from the state agency," and a "need for links to current events" (Project WILD 1996).

The need to create a state-specific water education curriculum was determined as important in Wyoming by Beiswenger et al. (1992). The Wyoming elementary educators'

water education questionnaire indicated the need to develop a water curriculum for Wyoming's elementary grade levels and concluded that:

*"These efforts will undoubtedly increase Wyoming students' water literacy and result in wiser decisions concerning the long-term uses of Wyoming's water."*

Previous research suggests Wisconsin teachers and students would benefit from a water education curriculum specific to Wisconsin's unique water resources, history, and water-related issues (Dixon 1996, Botinelli 1976, Trocjak and Harvey 1976, Gigar 1996, Wade 1996). These educational tools would provide a sense of appreciation, understanding and stewardship of Wisconsin's waters.

### **Summary**

Several state surveys indicate that teachers want EE materials specific to their state or region. A number of national EE programs have developed state-specific supplements to enhance their programs. Project WET-Wisconsin is interested in providing a *Wisconsin Supplement* to Project WET. This *Wisconsin Supplement* will help teachers increase student awareness and understanding of the importance of Wisconsin's vast water resources and the challenges we face in our state's water use and management.

### **Wisconsin Water Education Needs**

Several documents and teacher surveys have indicated a need for further water education implementation strategies for Wisconsin. Preliminary results of a study, "Evaluating Wisconsin K-12 Teachers' Perceived Environmental Education Resource Needs," highlighted local water resources information as one of the needs addressed by teachers (Dixon 1996). The 1993 teacher survey, "Educational Inventory of Water Related Subject Needs," indicated that K-12 teachers perceived a need for a wide variety of information on water resources in order to teach those concepts to their students (UWEX 1993).

In 1990, the University of Wisconsin-Extension Water Issues Team, compiled a final report entitled "Addressing Water Resources Education Needs in Wisconsin." This document identified five broad areas of emphasis to focus water education priorities for

statewide UW-Extension staff including: groundwater education, surface water (quantity and quality) education, water-related land management education (agriculture, urban and rural development, solid waste management), water-related education pertinent to human well being, and ecosystem education (UWEX 1990).

These studies indicate a continued need for statewide water education curriculum development and enhancement. There is a multitude of water-related educational resources in Wisconsin. The challenge is to make that information accessible to educators by identifying and locating the sources of relevant materials and organizations. The *Wisconsin Supplement* will provide a tool to assist educators in helping students develop a 'water ethic' and stewardship for local water resources.

### **Summary**

Several statewide surveys and state agency reports indicate a need to develop water education programs and materials specific to Wisconsin. The *Wisconsin Supplement* will provide a tool to assist educators in finding state-specific water education resources to use with the national Project WET materials.

## **Educational Research and Development**

The process of educational research and development (R & D) is used to develop and validate educational products (Borg and Gall 1983). Educational research and development unites research with actual practice. R & D draws from applied research to develop and implement educational products.

Wittrock (1967) emphasized the importance of research when developing educational products. If the product developer foregoes conducting research, the product outcome is purely based on his or her own opinions and priorities without scientific inquiry and support for his or her choices. Basic research generally does not create educational products of value to students and instruction (Wittrock 1967). Both basic and applied research should involve theory and well developed experimental designs for data collection and analysis. There are four scientific research elements that Wittrock suggests to make the results of product development general to new problems:

1. **Attitude:** A researcher needs to be willing to modify his or her procedures, ideas, and beliefs in response to the empirical data.
2. **Experimentation:** A change in attitude often requires a change in methodology and therefore experimentation in research design.
3. **Theory:** The theory behind the product development methodology may change as a result of a change in attitude and experimentation through data results.
4. **Communication of Results:** It is important to both review related literature on product development as well as share the final project results for other educational product developers to use as a model or source of insight in developing their own projects.

The design of the R & D process used in this study was developed by the Far West Laboratory for Educational Research and Development in San Francisco, one of ten regional laboratories of the U.S. Office of Education focused on the improvement of education through research and development. The R & D cycle includes:

1. Study of research findings pertinent to the product to be developed.
2. Development of the product based on those findings.
3. Field-testing the product where it will eventually be used.
4. Revisions of the product based on field-testing results.

Evaluation plays a major role in the R & D cycle. Ideally, there are several field-test and revision cycles in order to focus on different aspects of evaluation to insure the product meets its developmental objectives.

Schutz (1979) provides evidence that "professional advances in education can be visibly demonstrated through programmatic R & D which produces useful educational products. Today, thirty years after these early research papers were written about educational R & D, the educational community is much more involved with educational research and development methods in product and program development.

## **Summary**

Educational research and development is used to develop and validate new educational products. The research and development process appropriately fits the design of

this research project. The R & D cycle employed in this study includes the four major steps:

1. Study of research findings pertinent to the product to be developed.
2. Development of the product based on those findings.
3. Field-testing the product where it will eventually be used.
4. Revisions of the product based on field-testing results.

### **Interviews as a Research Tool**

This project required the input of many state water resource specialists and educators regarding questions about Wisconsin-specific water education resources available to educators. Interviews can provide the researcher with detailed information and lengthy answers to questions (Borg and Gall 1983). One definition of interviewing according to Stewart and Cash (1991) is “a process of dyadic, relational communication, with a predetermined and serious purpose designed to interchange behavior and involving the asking and answering of questions.” The type of interview relevant to this study is considered “information gathering” to obtain facts, information, available resources, and attitudes. Interviews allow for greater depth of qualitative data collection than questionnaires (Borg and Gall 1983). Opinions and feelings are easier to reach while conducting interviews (Borg and Gall 1983) and respondents are more accessible through personal interview techniques. For example, it has been found that a higher proportion of respondents completed an interview item when compared to the same questionnaire item (Jackson et al. 1961). Ninety-eight percent of the planned interviews were completed for that study while only 83% of the mailed questionnaires were completed.

#### **Semi-structured interview**

Semi-structured interviews include structured questions but allow room to delve further into responses to find the information desired. This allows for objective questioning but leaves room to explore the responses further. This type of interview is considered to be most appropriate in educational research (Borg and Gall 1983).

## Telephone Interviews

To satisfy the timeline of this project, telephone interviewing provides an efficient, inexpensive method to gather Wisconsin water-related educational resources, organizations, and other information to include in the *Wisconsin Supplement*. Through phone interviews:

- a. water resource specialists can recommend Wisconsin resources and organizations available to educators.
- b. teachers who have adapted Project WET activities to Wisconsin or their local region can provide detailed and valuable suggestions for other educators using the *Wisconsin Supplement*.

Telephone interviews tend to cost half as much as face-to-face interviews. In cases where the interviewees are spread across a large region, it is much easier to interview by phone. According to Jaeger (1988), advantages include:

1. The researcher can select subjects from a large geographic area, and is therefore less limited in the section population.
2. Because the interviews are from one location, there is more consistency and quality control for the researcher.
3. If the interviewee forgets the appointment, little time or expenditures are lost.
4. Due to the nature of their jobs, many people are easier to reach by telephone than in person.

A few disadvantages or potential errors of using interviews include:

1. The "response effects" where the responder is untruthful in their responses (this is not an issue in this research project where only impersonal questions are asked).
2. The interviewer is uncomfortable in her or his role, her/his opinions influence what she/he hears and/or records, she/he has expectations of the interviewee's responses.
3. The procedures are inconsistent or not explained to the interviewee (i.e. length of interview, interviewee distractions).

Thorough planning and practice help alleviate these concerns.

## **Summary**

In the case of this study, semi-structured phone interviews provide a more reliable, detailed, inexpensive, and efficient method of retrieving information, although, from a smaller population than a mailed questionnaire. Water resource specialists will be interviewed to recommend the resources and organizations to be included in the *Wisconsin Supplement*. Interviews of individuals who have adapted state-specific information to national curricula can provide detailed and valuable suggestions to be included in the *Wisconsin Supplement*.

## **Field Test and Evaluation of Educational Products**

### **Field-testing**

Field-testing is considered an integral part of the research and development process (Rogers 1991). The purpose of field-testing is to evaluate the new educational product and to determine whether it meets the objectives of its development (Borg and Gall 1983). The process is used to assess the product's overall quality, effectiveness of intent, usability, amount of information, and relevance to the audience. Through field-testing, information is obtained to improve the product through revisions.

Borg and Gall (1987) emphasize that the field-testing site should be similar to the actual site of the final product use. In addition, the field-testing format should mimic the format for use of the final product. Ideally, a cycle of field-testing and revisions continues until the product has met its developmental objectives.

### **Evaluations and Questionnaires**

This research proposes to identify Wisconsin water resources information available to educators through the use of phone interview questionnaires and to evaluate the draft *Wisconsin Supplement* through evaluation form questionnaires. Questionnaires for evaluation are an effective method of reaching the attitudes and feelings of people (Leedy 1989). They are efficient in terms of this project's timeline requirements and they provide the ability to reach a large audience of respondents (Forcese and Richer 1973). The questionnaire format could provide the data needed and be an efficient method to obtain the

responses of potentially more than fifty water resource professionals.

An evaluation-type questionnaire would be useful to assess the effectiveness of the draft *Wisconsin Supplement*. Michael Scriven (1974) developed suggested criteria for evaluating educational products that include:

- Need
- Market
- Performance - True Field Trials
- Performance - True Consumer
- Performance - Critical Comparisons
- Performance - Long Term
- Performance - Side Effects
- Performance - Process
- Performance - Causation
- Performance - Statistical Significance
- Performance - Educational Significance
- Cost-effectiveness
- Extended Support

Although these are strict standards and most curricula and educational products do not meet these standards, they are worth achieving and considering during evaluation where appropriate. There are a number of other evaluation checklists developed by other consumer-oriented evaluation researchers (Worthen 1987). These can be very useful tools in developing evaluation strategies for new educational products being developed by educators, agencies, or corporations.

### *Questionnaire Development*

It is critical to create a questionnaire that is valid, reliable, and meets the researchers' objectives. The following steps provide a guide to follow in the development of questionnaires (Berdie 1986):

1. Determine objectives of the questions.



2. Determine types of questions (open-ended, multiple choice, etc.).
3. Develop draft questions to address objectives.
4. Evaluate the questions for bias, redundancy, clarity, ability to elicit the intended responses.
5. Revise the questions based on the evaluation.

### **Formative Evaluation**

Formative evaluation is designed to evaluate educational programs while they are being developed. Michael Scriven (1967) explains that “the role of formative evaluation is to discover deficiencies and successes in the intermediate versions of a new curriculum.” The formative evaluation data can be used to mold the product according to the evaluator’s recommendations and needs. This type of evaluation allows the researcher to improve the product and gauge the quality, relevance, and accuracy of the product before it is completed. Formative evaluation is also desirable when under time and money pressures to create the best educational product as possible in a limited time, with limited funds. The evaluators must therefore represent the future audience of the product in order to provide adequate and relevant data.

One hidden benefit found through field-testing a new educational product is that teachers become interested in the project and committed to using the materials with their students (Rogers 1991).

### **Summary**

Formative evaluation through field-testing and evaluation (questionnaire) provides an efficient and effective method for evaluating the attitudes of educators toward a new educational publication as the product is being developed.

## **Teacher Training as an Effective Dissemination Technique for Educational Materials**

The 1977 Tblisi Conference highlighted pre-service and in-service teacher training as a top priority for the effective development and implementation of EE programs (UNESCO 1977). Teacher training workshops are considered an effective strategy for increasing teacher use of environmental education materials (Wilke 1979). Ruskey (1994) explains that, "Teachers play a key role in both developing and delivering quality environmental education programs at the local level." Project WET has followed the successful models of its predecessors, Project WILD and Project Learning Tree, by requiring at least six-hour workshops to receive the *Project WET Curriculum and Activity Guide* and soon the *Wisconsin Supplement*.

Volk, Hungerford, and Tomera's research (1983) revealed teachers' inservice needs of EE goals as perceived by environmental education professionals. At the elementary level, ecological foundations were the primary need for teacher inservice education. For middle school, citizenship action, ecological foundations, issue investigation/evaluation and awareness areas were also high. Conclusions included that teacher education needs improvement in the areas of content and skills development in EE and that all goal levels should be addressed during training at all grade levels.

Mayer and Fortner's (1987) research has shown that short, intensive workshops are the best method for dissemination of curriculum materials to teachers. Bollwinkel's research in Iowa revealed that weekend teacher training workshops make a difference in the activities teachers use with their students (1990). Because teacher training workshops can impact an educator's curriculum, it appears that when developing new educational materials, it is important to extensively evaluate the effectiveness of the product and involve teachers and EE professionals in the development process.

Project WET is designed to facilitate local implementation of water education through its states' facilitator networks. The state facilitators can choose to offer workshops specific

to their area of the state or workshops focused on special topics (i.e. groundwater issues, Great Lakes, the local watershed, etc.). Local EE programs provide training and materials specific to a community, addressing the community's issues, needs, natural, and cultural sites (Ruskey, 1994).

It appears that local teacher training workshops could provide an ideal forum to field-test and disseminate a state supplement to a national EE program. To that end, the *Wisconsin Supplement* will be distributed to teachers by facilitators with the national *Project WET Curriculum and Activity Guide* during local Project WET workshops, and will be an integral part of those workshops.

### **Summary**

Teacher training workshops are an integral component to disseminating new EE materials and programs. These workshops make a difference in the activities teachers' use with their students. Teacher training appears to be the best method for both field-testing and disseminating the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*.

### **Chapter Summary**

Water can be considered Wisconsin's most valuable natural resource. Without our vast water resources, we would not experience the personal, social, and economic prosperity that we do in this state. It is evident that there is still a need for quality water education materials that specifically address Wisconsin's aquatic ecosystems, history, and water-related issues.

Teachers throughout the U.S. and in Wisconsin have expressed a need for educational materials specific to their region. By using these materials in their classrooms, students could more easily relate what they learned in the classroom to their own lives and communities. Water education units taught in the classroom can affect the knowledge and attitudes of students regarding water conservation. Project WET provides an excellent teaching guide of activities to assist teachers in developing water education programs. It is

also important to provide Wisconsin educators with state-specific water resources information to assist them in adapting the national Project WET activities to Wisconsin's water environment and water-related issues.

To collect the information needed to complete this state supplement, phone interviews of water resources specialists and state educators would provide an inexpensive and efficient approach. Field-testing through teacher training workshops and the use of evaluation/questionnaire forms would allow the draft *Wisconsin Supplement* to be introduced to and evaluated by its future audience.

## Chapter Three

### Methods

#### Overview

In July 1995, Project WET was established in Wisconsin. At that time, the Project WET-Wisconsin Coordinator and Project WET Advisory Committee members were interested in creating a Wisconsin supplement to accompany the national Project WET materials.

Two surveys of Wisconsin teachers indicate that teachers want information about a variety of water-related topics and about their local water resources (Dixon 1996, UW-Extension 1993). In August of 1995, a graduate assistant position was developed with Project WET-Wisconsin, University of Wisconsin-Stevens Point, and University of Wisconsin-Extension to develop a state supplement to accompany the national Project WET Curriculum and Activity Guide.

The purpose of this Wisconsin supplement is to assist teachers in making the national Project WET activities more relevant to Wisconsin students by providing: a directory of Wisconsin water education materials (publications, videos, models, etc.) organized by priority water education topics; water-related organizations to contact for further information; suggested Wisconsin resources to use with each national Project WET activity; suggestions from teachers for how to localize Project WET; and examples of Project WET activities adapted to Wisconsin and local communities. One of the goals of Project WET is to develop stewardship of water resources. The *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* is being developed as a way to connect state educators and youth with Wisconsin's vast water resources. This chapter describes the methods utilized to develop and evaluate the *Wisconsin Supplement*.

#### Planning

The planning for this project began in fall 1995. The Project WET-Wisconsin Advisory Committee members, a group of eighteen water resource specialists, water educators, environmental educators, education specialists, and classroom teachers expressed

an interest in developing a state-oriented resource guide to supplement the national Project WET materials (see "Acknowledgments" in the *Wisconsin Supplement*, Appendix S, for the list of Project WET-Wisconsin Advisory Committee members). In spring 1996, a preliminary assessment was conducted asking whether this *Wisconsin Supplement* would be duplicating previous efforts in the state. To investigate this question, current compilations of water resources information were reviewed including *Wisconsin Water Resources Catalogue* (DNR), the *Wisconsin Groundwater Education Resource Directory*, and the *Directory of Great Lakes Education Material*. Key Wisconsin water resource educators were informally interviewed by phone to determine their attitudes about this project (April 1996).

After preliminary project approval, an investigation was initiated to find other states that have created state-specific adaptations to national curricula. The national offices for Project WET, Project Learning Tree (PLT), and Project WILD (Wildlife in Learning Design) were contacted to see if their state programs had created supplements specific to their state. In addition, a detailed request for information was included in a "Project WETFAX" sent to each Project WET state coordinator. Several state coordinators of Project WILD and Project WET were contacted and their state supplements reviewed (Hawaii Project WILD Aquatic, Iowa Project WILD and PLT, Nevada Project WET, New Mexico Project WILD, and Virginia Project WET). The state coordinators were asked to describe their purpose and process for creating their state supplement and to provide suggestions for the development of the *Wisconsin Supplement*.

The Project WET-Wisconsin Advisory Committee members were sent a project proposal and letter requesting their assistance throughout the development of this project as members of the project's Validity Panel (see Appendix A). The initial idea of creating a 'Wisconsinized' Project WET activities packet was revised by the researcher and graduate committee members and evolved into the development of a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* that would include six Wisconsin-specific Project WET activities in addition to: Wisconsin water education resources, organizations, and field trip contacts; Wisconsin resources recommended for each national Project WET activity; and teachers' suggestions to other educators planning to adapt Project WET activities to their region. The general format for the *Wisconsin Supplement* was developed through meetings with graduate advisor and committee members.

The final plan for the *Wisconsin Supplement* (spring 1996) included four main sections:

1. **Resources:** "People, Places & Things" listed by water topic (e.g. wetlands, groundwater, nonpoint source pollution).
2. **Organizations:** State government offices, statewide organizations, computer networking sites, and organizations listed by watershed, region, and counties.
3. **Wisconsin water resources information recommended for Project WET activities:** Each of the 91 Project WET activities listed with recommended Wisconsin resources (same resources and organizations as in Sections One and Two).
4. **Suggestions for localizing national curricula and examples of six 'Wisconsinized' Project WET activities:** This section will include suggestions for incorporating the *Wisconsin Supplement* information into Project WET activities. Examples of six 'Wisconsinized' activities will be included in this section for educators to use and assist them in creating their own local adaptations to Project WET activities.

### **Educational Research and Development Process**

The research and development (R & D) process was employed to create and evaluate this new educational product. This section will focus on the research and development cycle used in this study that includes the following steps:

1. Study research findings and other information pertinent to the product being developed
2. Product development based on those research findings
3. Field-test/evaluation of product
4. Product revisions based on field-testing

### **Selection of Methods for Each R & D Cycle Step**

#### **Literature Review (April 1996)**

*R & D Cycle: Study research findings and other information pertinent to the product being developed*

The literature review method was selected because of the existence of appropriate state reports and surveys pertinent to this educational product. Priority water education

topics to accomplish Objective One<sup>1</sup> were addressed by state reports to Congress, a state agency committee planning report, and a teacher survey of water related subject needs.

### **Phone Interviews (Summer-Fall 1996)**

- R & D Cycle:** - *Study research findings and other information pertinent to the product being developed*  
- *Product Development based on those research findings*

In order to create the *Wisconsin Supplement*, a great deal of information was needed from state water specialists. Phone interviews were chosen instead of questionnaires because the likelihood of receiving responses was more reliable. Although a questionnaire could easily be sent to hundreds of people around the state, phone interviews provide the depth of information needed from the water specialists. Phone interviews tend to cost half as much as face-to-face interviews, are logistically easier to conduct, and allow the researcher to obtain in-depth responses and detailed information.

### **Field Testing Workshops (Winter 1997)**

- R & D Cycle:** *Field-testing/Evaluation of product*

Field-testing is a critical part of the R & D cycle. It allows the future audience of this educational publication to use and evaluate the product's ability to meet the objectives of its development, while in a setting similar to the actual setting of dissemination of the product. This setting will be a six-hour Project WET educator workshop where participants are exposed to at least six Project WET activities through peer and facilitator teaching and also have time to plan how to use Project WET in their own curriculum (see Appendix R for a workshop agenda). In addition, the six 'Wisconsinized' Project WET activities could be practiced with workshop participants to assess their effectiveness. Field-testing results provide the information needed to improve the product through revisions.

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<sup>1</sup> Determine aquatic education topics of greatest concern to selected Wisconsin educators and water resource professionals determined by summary reports of the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), 1994 teacher survey "Educational Inventory of Water Related Subject Needs" conducted by UWEX, and selected Wisconsin educators and water resource professionals who are members of the Project WET Advisory Committee.



## **Evaluation Forms/Questionnaires (Winter 1997)**

### ***R & D Cycle: Field-testing/Evaluation of product***

As part of the field-testing process, evaluation forms were the most appropriate evaluative tool for workshop participants and Advisory Committee members to complete after reviewing the *Wisconsin Supplement*. Formative evaluation (evaluation that occurs during the development phase of a product) is considered an excellent method for creating successful educational products when under time and money pressures. Evaluation or questionnaire forms provide a direct, fast, and inexpensive method for analyzing the quality of the reviewed document.

Both qualitative and quantitative questions will be used in order to elicit the information needed from evaluators. The open-ended, qualitative questions allow the evaluators freedom to provide detailed responses in their own style and language, while the quantitative responses provide quantifiable data for efficient analysis (Borg and Gall 1983, Oppenheim 1966). Likert scale statements will be used for evaluators to rate their responses according to the following scale: Strongly Disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5. Likert scale items were chosen as a method of evaluation because they provide accurate information regarding the evaluators' degree of agreement or disagreement with the statement in question (Likert, 1932). Both qualitative and quantitative methods were used to compliment each other in the evaluation process. This way, evaluators' responses could provide both detailed, personal opinions and data that was easy to quantify and compare.

Through this format, evaluators can assess the product's overall quality, effectiveness of intent, usability and format effectiveness, value, amount of information available, relevance to students, and their own plans for product use.

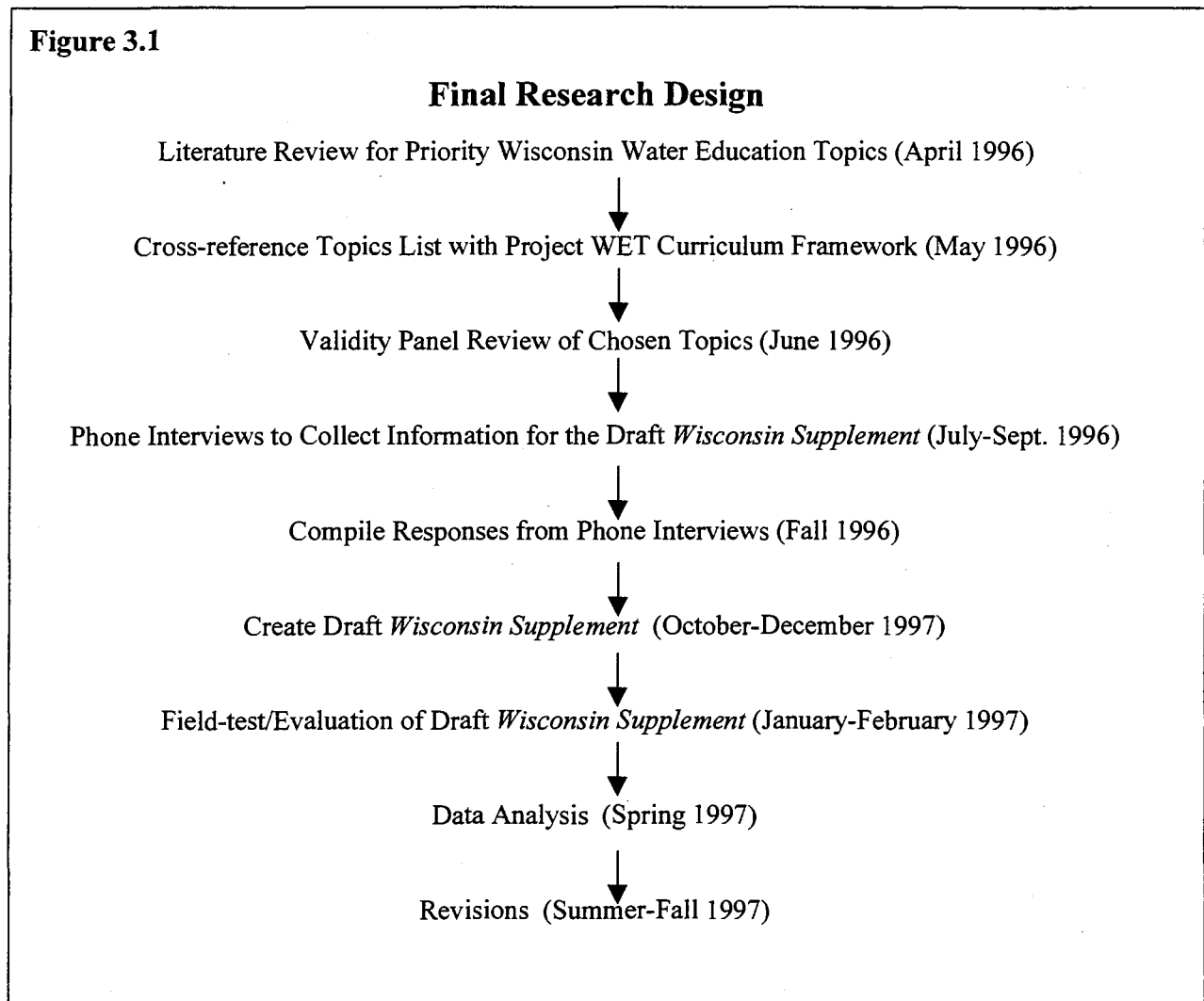
## **Quantitative and Qualitative Data Analysis (Spring-Summer 1997)**

### ***R & D Cycle: Product revisions based on field-testing***

The qualitative and quantitative data will be compiled for each section and category of the *Wisconsin Supplement*. All qualitative data will be incorporated unless it is absolutely impossible due to time and document size constraints. The quantitative data responses will be incorporated if the mean score for that item is below 4.0=agree (although all responses

will be looked at closely and considered for inclusion in revisions). Compiled responses will be reviewed by the researcher and graduate committee members and incorporated through revisions to the draft *Wisconsin Supplement*.

**Figure 3.1**



### **The Data**

1. *The primary data:* The primary data will include qualitative data derived from the review of existing state reports and surveys; qualitative data compiled from phone interview responses; qualitative data from the returned evaluation forms; quantitative data from the returned evaluation forms; and qualitative data from direct edits to the draft *Wisconsin Supplement*.

2. *The secondary data:* Secondary data includes verbal qualitative comments expressed during the field-testing workshops included in the study.

### **The Criteria for the Admissibility of the Data**

The criteria used will include:

1. Partially completed evaluation forms of the draft *Wisconsin Supplement* will be considered if more than half of the questions have been answered.
2. Only participants who remained for the entire six-hour Project WET workshop will complete an evaluation form.

## **The Research Methodology**

### **Objective One Methods**

**Objective 1:** Determine aquatic education topics of greatest concern to selected Wisconsin educators and water resource professionals determined by summary reports of the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), 1994 teacher survey "Educational Inventory of Water Related Subject Needs" conducted by UWEX, and selected Wisconsin educators and water resource professionals who are members of the Project WET Advisory Committee.

*R & D Cycle: Study research findings and other information pertinent to the product being developed*

#### **A. Data needed:**

1. Water education topics of greatest concern to selected Wisconsin educators and water resource professionals.
2. Topics cross-referenced with Project WET Curriculum Framework that includes the following sections (see Appendix B for detailed curriculum framework) :
  - Water has unique physical and chemical characteristics.
  - Water is essential for all life to exist.
  - Water connects all earth systems.

- Water is a natural resource.
- Water resources are managed.
- Water resources exist within social constructs.
- Water resources exist within cultural contexts.

**B. The Location of the data:** This information will be found in state government reports on water education priorities in Wisconsin (DNR, Cooperative Extension), the Wisconsin teacher survey conducted by UWEX entitled "Educational Inventory of Water Related Subject Needs," "Water Quality Education Topics and Major Subtopics," Project WET Curriculum Framework, and review of the chosen topics by the Wisconsin Project WET Advisory Committee.

**C. How the data will be secured:** Report and literature review.

During the winter of 1996, two state government reports and one statewide teacher survey were reviewed for Wisconsin's priority water education topics. The following documents were chosen because they are statewide in focus and highlight water quality issues and education topics of priority for the entire state:

- "State of the Waters: Report to Congress, Executive Summary 1994" (DNR)
- "Addressing Water Resources Education Needs in Wisconsin" 1990 (UWEX)
- "Educational Inventory of Water Related Subject Needs" Wisconsin Teacher Survey, 1993 (UWEX)

**D. How the data will be treated and interpreted:** A priority list of water education topics of greatest concern will be compiled as a result of the overlapping priorities of the organizations and individuals listed above. The information will be categorized according to "Water Quality Education Topics and Major Subtopics" (see Appendix C) framework developed by Andrews (1995) and placed in a priority list of water education topics. This organized list will be cross-referenced to see that the topics fit within the Project WET curriculum framework. Finally, the list of water education topics of greatest concern was sent in June 1996 to the Wisconsin Project WET Advisory Committee (the project's

Validity Panel) to review for accuracy and adequate coverage of critical topics (see letter to Validity Panel members, Appendix D).

### *Validation of Literature Review Results*

The Validity Panel includes the Project WET-Wisconsin Advisory Committee members, consisting of eighteen water resource specialists and educators. They reviewed the list of water education topics of greatest concern for accuracy and adequate coverage of their perceived Wisconsin priority topics. Revisions were made to the list based on their comments.

## **Objective Two Methods**

**Objective 2:** Identify Wisconsin water resources information available to educators.

*R & D Cycle: Study research findings and other information pertinent to the product being developed*

- A. Data needed:** Phone interview responses from Wisconsin water resources specialists and follow-up literature review findings.
- B. Where the data are located:** The data are located with selected Wisconsin water resources professionals from around the state and Wisconsin water resources directories.
- C. How the data will be secured:** The Wisconsin water resources information will be collected through phone interviews and follow-up literature review.

### **1. Phone Interview Question Development**

- 1. Determine objectives of questions.
  - a. What Wisconsin water resources education materials or publications relevant to these priority topics are recommended for state educators to use in developing water education programs for their students?
  - b. What state and regional organizations are recommended for educators to contact for information about these topics?

- c. What state and regional organizations are recommended for educators to contact for information about field trips and classroom presenters related to these topics?
  - d. Who else should I contact for further information related to these topics?
2. Determine type of questions (open-ended or qualitative).
  3. Develop draft questions to address objectives.
  4. Evaluate the questions for bias and/or redundancy.
  5. Review by Validity Panel (Project WET-Wisconsin Advisory Committee review).

The open-ended questions were developed during the spring of 1996. Validity Panel members evaluated the draft questions for clarity and ability to draw the intended responses from the respondents (see Appendix D for the letter and phone interview review questions sent to Validity Panel members). Revisions were made to the questions based on Validity Panel edits and comments.

## **2. Select Interviewees**

Project WET-Wisconsin Advisory Committee members recommended people to interview based on their perception of the individual's expertise regarding education related to each priority water topic from Objective One (e.g. groundwater education). One interviewee was selected for each topic based on their expertise. If little information was received on a particular topic from the primary interviewee, additional water specialists were contacted for that topic. The individuals were selected to represent different locations of the state and a diversity of organizations (see p. 5, "Acknowledgments" in Appendix S, *Wisconsin Supplement*, for the list of interviewees).

## **3. Contact Interviewees**

Each person was contacted by phone to see if they were interested in being interviewed. The project and purpose for the interview was explained to them. If they agreed to the interview, an interview date was set for a 1-1 ½ hour period. A confirmation letter including the interview date and time was sent with the interview questions approximately 2 weeks before the scheduled interview (see Appendix E).

#### 4. Conduct Interviews

The individual was called, asked if this was still a good time to conduct the interview, and whether they would mind being recorded for back-up purposes in case information was omitted in the computer recording. While on the phone, the information was recorded directly on the computer as well as on audio tape.

**D. How the Data will be treated and interpreted:** See Objective Three, Product Development)

### Objective Three Methods

**Objective 3:** Create a *Wisconsin Water Resources Guide for Educators (Wisconsin Supplement)* as a supplement to the Project WET Curriculum and Activity Guide.

**R & D Cycle:** *Product Development based on those research findings*

- A. Data needed:** Phone interview responses from water resources specialists and teachers.
- B. Where the data are located:** The data are located with selected water resource professionals and teachers and Wisconsin water resources directories.
- C. How the data will be secured:** The data will be collected through responses from Objective Two and phone interviews of teachers who have developed 'Wisconsinized' Project WET activities.
- D. How the data will be treated and interpreted:** Refer to each section of the product below.

#### Product Development

The *Wisconsin Supplement* will be comprised of four sections:

1. **Resources:** Listed by water resource type as defined by the chosen water education topics from Objective One (e.g. wetlands, groundwater, nonpoint source pollution, etc.). This section provides a list of educational materials (e.g. models, videos, publications,

fact sheets, etc.) and their sources, related statewide and regional organizations, and field trip location contacts.

### **Analysis of Phone Interview Responses**

Resources were chosen based on how well they addressed the priority list of water education topics of greatest concern (results from Objective One). A selection criteria was implemented to determine which materials (if not all) identified by respondents would be included in the *Wisconsin Supplement*. For example, certain suggested items may be excluded due to their degree of relevance to Wisconsin educators and/or if the resource or organization is nationally-oriented, not specific to Wisconsin.

2. **Organizations:** State government offices, statewide organizations, some national and international organizations, computer networking sites, and organizations listed by watershed, region, and counties.
3. **Wisconsin water resources information recommended for Project WET activities:** Each of the 91 activities is listed with recommended Wisconsin resources (same resources and organizations as in Sections One and Two).
4. **Suggestions for localizing national curricula and examples of six 'Wisconsinized' Project WET Activities:** This section includes suggestions for adapting national Project WET activities to Wisconsin and local regions. Examples of six 'Wisconsinized' activities are included for educators to use and assist them in creating their own local adaptations to national Project WET activities.

### **Selection of 'Wisconsinized' Project WET Activities**

In the summer of 1996, a Project WET Leadership Institute was offered for one graduate credit to educators as part of the summer Master's degree program, EE Institute, at UW-Stevens Point. As part of their graduate assignment, students were offered the option to adapt a Project WET activity to Wisconsin or their region (see assignment, Appendix F). Several of their activities were chosen to represent a variety of grade levels based on how well they were adapted to Wisconsin or a local region of the state.



## **Phone Interviews of Wisconsin Teachers Who Have Developed 'Wisconsinized' Activities**

This section of the *Wisconsin Supplement* will include synopses of structured phone interviews with teachers who have modified Project WET activities with state or locally-specific information. The objective for interviewing teachers who have developed 'Wisconsinized' Project WET activities is to provide other educators with suggestions for adapting Project WET activities to Wisconsin or their region.

### **1. Phone Interview Question Development**

1. Determine objectives of questions.
  - a. What suggestions would these teachers give other educators interested in adapting a national Project WET activity to Wisconsin or their region?
  - b. What steps would they recommend other educators follow in this process?
  - c. Was this a useful process for them to experience?
  - d. Will they use the adapted activities?
2. Determine type of questions (open-ended, yes/no).
3. Develop draft questions to address objectives.
4. Evaluate the questions for bias and/or redundancy (members of graduate committee review).

### **2. Contact Interviewees**

Select ten interviewees based on the extent of their 'Wisconsinized' activity adaptation for the graduate credit assignment. Each person was contacted by phone to see if they were interested in being interviewed. The project and purpose for the interview was explained. If they agreed to the interview, an interview date was set for a one-hour period. A confirmation letter including the interview date and time was sent with the interview questions approximately 2 weeks before the interview was scheduled (see Appendix G).

### **3. Conduct Interviews**

The individual was called, asked if this was still a good time to conduct the interview, and whether they would mind being recorded for back-up purposes in case information was

omitted in the computer recording. During the phone interview, the responses were recorded directly on the computer as well as on audio tape.

#### **4. Qualitative Response Analysis**

- a. Teacher responses were compiled and organized into categories.
- b. The categories were organized into a logical progression with recommended steps for adapting Project WET activities to local Wisconsin regions.

#### **5. Draft Completion**

A draft of the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* was completed in January 1997 to be evaluated by state educators and water resources specialists (Validity Panel members).

### **Objective Four Methods**

**Objective 4:** Determine selected Wisconsin educators' attitudes toward the effectiveness of the draft *Wisconsin Supplement*.

*R & D Cycle: Field-test/Evaluation*

- A. Data Needed:** Compiled responses from field-test Project WET workshop evaluation forms.
- B. Where the data are located:** The data are located with educators who have completed a Wisconsin Project WET workshop as part of this study (includes training and practical experience using the *Wisconsin Supplement*) and Validity Panel members who received the draft *Wisconsin Supplement* in the mail.
- C. How the data will be secured:** The data will be collected through formative evaluation forms with both qualitative and Likert scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) questions.

During the winter of 1996, both formal and nonformal educators reviewed the draft *Wisconsin Supplement* for clarity, format, accuracy, and ability for use. The reviewers included formal teachers, nonformal environmental educators, and Project WET-Wisconsin Advisory Committee members.

### **Workshop Development**

Three workshops were planned to field-test the *Wisconsin Supplement* and the six 'Wisconsinized' activities. Workshops were scheduled, advertised, and planned (two workshops were required in the research proposal, but one extra was scheduled in case of low enrollment or workshop cancellation of any of the three). Listed below are the workshop locations and dates:

- Jan. 24, 1997. Treehaven Environmental and Conference Center, Lincoln County, northern Wisconsin. This was a pre-conference workshop for the Wisconsin Association for Environmental Education (WAE) Winter Workshop.
- Feb. 7, 1997. Havenwoods Environmental Awareness Center, Milwaukee County, southeastern Wisconsin.
- Feb. 14, 1997. Owen-Withee Public Schools, Clark County, central Wisconsin.

Correspondence was sent to confirm applicants' registration for the workshop. The letter included a description of the workshop and requested their assistance with a post-workshop evaluation of the *Wisconsin Supplement*.

During the workshop, the *Wisconsin Supplement* would be introduced to workshop participants and used by them to adapt an activity of their interest. At the end of the workshop, participants would complete an evaluation form for the draft *Wisconsin Supplement* (see Appendix R for a workshop agenda).

### **Evaluation Forms/Questionnaire Development**

Evaluation forms were developed, reviewed by the Validity Panel, and revised. The questions were chosen based on the primary objectives for the product. Specific questions

were developed regarding overall value of the *Wisconsin Supplement*, overall format, relevance of information, quality of information, usefulness of sections, and effectiveness of 'Wisconsinized' activities. Other evaluation forms and related literature were reviewed for questionnaire format ideas and question structure. The initial reviews and final Validity Panel review of questions involved a careful screening for bias, clarity, and ability to draw the intended responses (see Appendix J for letter to Validity Panel members). These evaluation form questions were completed at the end of the field-testing workshops designed to introduce and utilize the *Wisconsin Supplement*. One hour was allotted for participants to complete the forms.

**D. How the data will be treated and interpreted:** See Revisions, Data Analysis below

## **Revisions**

**R & D Cycle:** Revisions based on field testing

### *Data types:*

1. Qualitative data from evaluation forms completed by educators attending one of two pilot workshops and by Validity Panel members
2. Quantitative data from evaluation forms completed by educators attending one of two pilot workshops and by Validity Panel members
3. Revisions made directly to the *Wisconsin Supplement* by Validity Panel members.

### *Data Analysis:*

All qualitative data will be incorporated into the revisions unless it was absolutely impossible due to time constraints. The quantitative data will be averaged for each Likert scale item. Mean scores will help determine revisions that need to be made to the draft *Wisconsin Supplement*.

## **Validation of Final *Wisconsin Supplement***

The final *Wisconsin Supplement* changes will be reviewed by a host of volunteer editors including graduate advisor, Dr. Dennis Yockers, graduate committee member and

Project WET-Wisconsin Coordinator, Libby McCann, and several other environmental educators.

### **Dissemination**

Two thousand copies of the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* will be printed in fall 1997. One thousand will be sent with a letter of introduction and suggestions for *Wisconsin Supplement* use to educators who have completed a Project WET-Wisconsin workshop. The other thousand copies will be disseminated to state educators as a companion to the national Project WET Curriculum and Activity Guide through educator training workshops.

### **Chapter Summary**

This chapter describes the methods used in the development of the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*. In spring 1996, a preliminary assessment was conducted to find out if the *Wisconsin Supplement* would be duplicating previous efforts in the state. After preliminary project approval, other state supplements to national environmental education programs were investigated. The educational research and development process was used to create and evaluate this new educational product. The following methods were employed in the process (refer to the timeline in Appendix Q):

1. A literature review of three statewide documents revealed Wisconsin's priority water education topics to focus the information included in the *Wisconsin Supplement* (Spring 1996).
2. The Validity Panel reviewed the priority water education topics and phone interview questions (June 1996).
3. Phone interviews of water resources specialists were used to collect recommended resources (e.g. publications, videos, models, organizations, etc.) on Wisconsin priority water education topics (June-September 1996).
4. Phone interview responses were compiled and gaps filled in through follow-up phone calls and literature review (Fall 1996).

5. Create draft *Wisconsin Supplement* (September-December 1996).
  - ◆ Phone interviews were conducted with teachers who have modified Project WET activities to Wisconsin or their local area. Their responses provided suggestions for other educators planning to adapt Project WET activities to their region.
6. Field-testing/Evaluation (January-February 1997).
  - ◆ Three workshops were scheduled to field-test and evaluate the draft *Wisconsin Supplement*.
  - ◆ An evaluation form was developed for educators to complete at the end of the workshop and for Validity Panel members.
7. Evaluation Form Data Analysis (Spring 1997).
  - ◆ Qualitative evaluation form responses were incorporated into revisions as much as possible depending on time and space factors.
  - ◆ Quantitative evaluation form responses were compiled and Likert scale item means were calculated to help determine what revisions needed to be made to the draft *Wisconsin Supplement*.
8. Revisions were made based on the field testing and evaluation responses (Summer-Fall 1997).

## Chapter Four

### Results

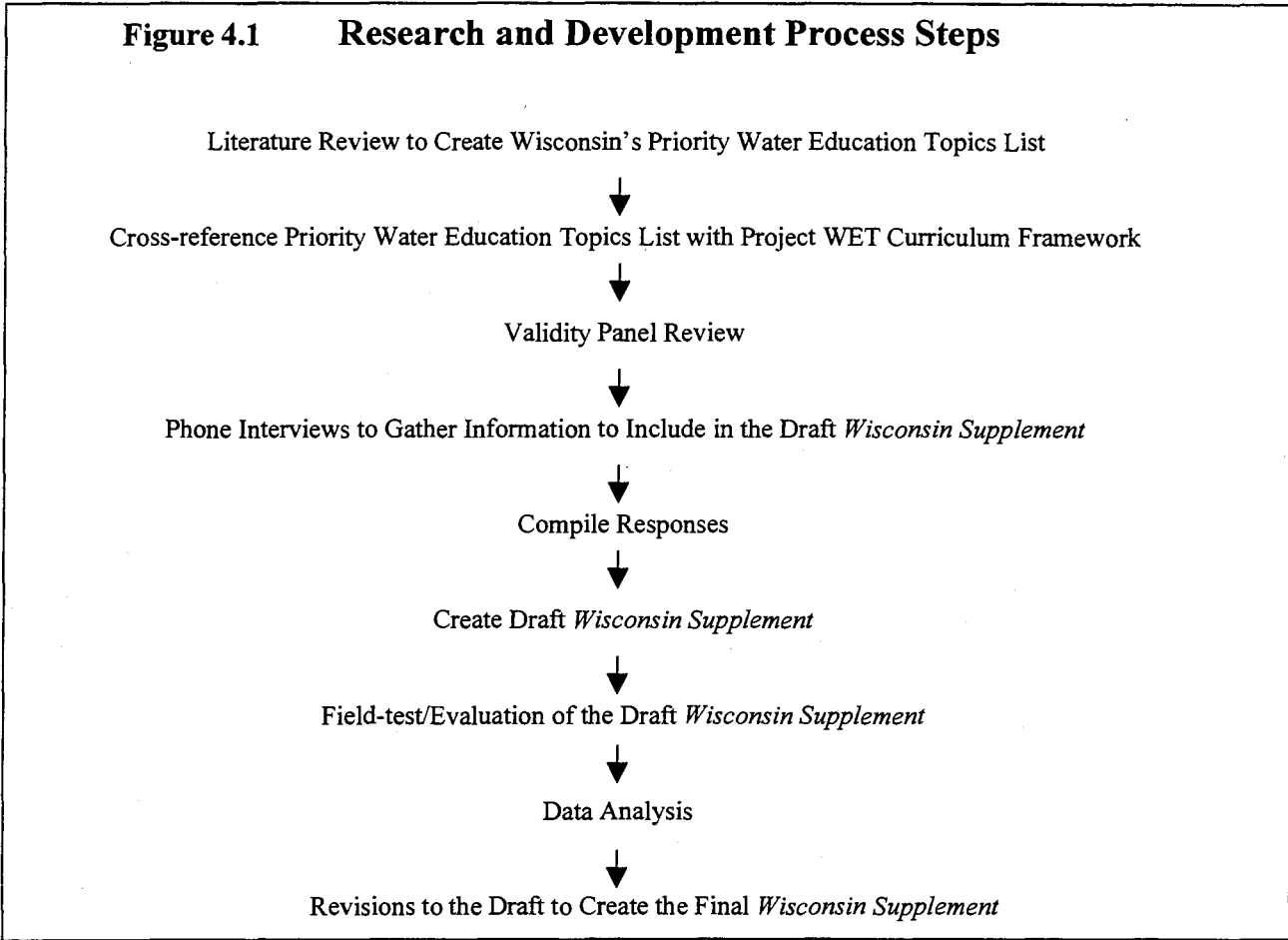
#### Overview

The purpose of this project was to develop the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*. The research and development cycle for educational products was employed as a framework for the methodology of this project. The Research and Development Cycle steps used in this project are listed below:

1. Study of research findings related to the product being developed (literature review of statewide documents to create Wisconsin's priority water education topics list)
2. Development of the product based on these findings (and other methods; i.e. phone interviews, cross-referencing results, searching and filling gaps)
3. Field-testing and evaluation (field-testing workshops and evaluation forms)
4. Revisions based on field-testing (qualitative and quantitative data analysis)

This chapter will summarize the results of the review of related literature, phone interviews used to develop the contents of the draft *Wisconsin Supplement*, field tests, and evaluations of the draft. The results will be presented for each project objective and corresponding research and development step. Figure 4.1 offers a review of the methods used in the research and development process for this project:

**Figure 4.1 Research and Development Process Steps**



### **Preliminary Assessment**

The preliminary assessment for this project included informal interviews with key Wisconsin water resources educators regarding their attitudes about this project. Those questioned include Elaine Andrews, UW-Extension; Susan Gilchrist, Department of Natural Resources; Libby McCann, UW-Extension; Al Stenstrup, Wisconsin Department of Natural Resources; Suzanne Wade, UW- Extension; and Dr. Dennis Yockers, Wisconsin Center for Environmental Education and University of Wisconsin-Stevens Point. These individuals felt that creating a Wisconsin Supplement to Project WET would be valuable to Wisconsin educators and would not duplicate other Wisconsin water-related directories. The Project WET-Wisconsin Advisory Committee accepted the project's proposal after it was presented to them.



## Objective One

**Objective 1:** Determine aquatic education topics of greatest concern to selected Wisconsin educators and water resource professionals determined by summary reports of the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), 1994 teacher survey "Educational Inventory of Water Related Subject Needs" conducted by UWEX, and selected Wisconsin educators and water resource professionals who are members of the Project WET Advisory Committee.

**R & D Cycle:** Study research findings and other information pertinent to the product being developed.

Two state government reports and one teacher survey were reviewed to compile a list of Wisconsin priority water education topics (UW-Extension 1990, Department of Natural Resources 1994, UW-Extension 1993). A list of water education topics was compiled as a result of the overlapping priorities of the organizations and individuals involved with the documents listed below. A framework was needed for listing the water education topics of greatest concern. The "Water Quality Education Topics and Major Subtopics" list created by Andrews et. al. (1995) provided a thorough framework for adding the priority water-related education topics and water quality issues of concern from the documents described below (Appendix C).

The aquatic education topics of greatest concern were compiled from the following three documents:

1. *Educational Inventory of Water Related Subject Needs 1993*
2. *State of the Waters: Report to Congress, Executive Summary 1994*
3. *Addressing Water Resources Education Needs in Wisconsin 1990*

The priority issues and education topics listed in each of the above documents were compiled within the existing list of "Water Quality Education Topics and Major Subtopics" used as a framework for this study (see Figure 4.2 for the compiled teachers', DNR, and UWEX topics list). Individual descriptions of the priority topics from each of these reports can be found in Appendix I.

**Figure 4.2**

**Priority Water Education Topics and Major Subtopics Chosen by DNR, UWEX, and Selected Wisconsin Teachers**

**Key**

DNR DNR *State of the Waters: Report to Congress, Executive Summary 1994*  
UWEX UW-Extension *Addressing Water Resources Education Needs in Wisconsin*  
Ed. *Educational Inventory of Water Related Subject Needs. Teachers' survey*  
results and means for each topic and grade level category where:

0=no need K-2 (Kindergarten-2<sup>nd</sup> grade teachers)  
1=some need 3-5 (3<sup>rd</sup>-5<sup>th</sup> grade teachers)  
2=great need 6-8 (6<sup>th</sup>-8<sup>th</sup> grade teachers)  
9-10 (9<sup>th</sup>-10<sup>th</sup> grade teachers)  
11-12 (11<sup>th</sup>-12<sup>th</sup> grade teachers)

x = 1 of the 3 documents emphasized the importance of this topic for water education  
xx = 2 of the 3 documents emphasized the importance of this topic for water education  
xxx = 3 of the 3 documents emphasized the importance of this topic for water education

**Science of water**

  x   Properties (Ed. K-2, 1.17))  
   Geology/hydrology dynamics  
      x   Groundwater (UWEX)

**Water related ecosystems**

  x   Types of ecosystems (UWEX)  
      x   lakes (Ed. K-2/1.13, 3-5/1.13)  
      x   wetlands (Ed. K-2/1.09), 3-5/1.21, 6-8/1.16)  
      xx   rivers (UWEX, Ed. K-2/1.13, 3-5/1.12, 6-8/1.29)  
      x   watersheds (Ed. 3-5/1.57, 6-8/1.44, 9-10/1.10)  
      x   ponds (Ed. 3-5/1.03)  
      x   oceans (Ed. K-2/1.19, , 9-10/1.09, 11-12/1.17)  
      x   streams (Ed. K-2/1.13, 3-5/1.12, 6-8/1.29)  
      x   riparian (Ed. K-2/1.33, 3-5/1.77, 6-8/1.26, 9-10/1.36, 11-12/1.5

**Drinking water supply: quantity and quality**

   Delivery  
      x   treatment of drinking water (Ed. K-2/1.27, 3-5/1.3, 6-8/1.54,  
11-12/1.290)  
      x   Lifestyle impacts/conservation (Ed. K-2/1.5, 3-5/1.31, 6-8/1.25, 9-10/1.22  
\*       x   Source of drinking water (Ed. K-2/1.08, 3-5/1.04, 6-8/1.44)

## Figure 4.2 (continued)

### Water use

- Use of water by many groups ( Ed. 3-5/1.33, 6-8/1.5) ; agriculture, commercial, domestic, industrial, municipal, power production, recreation
- Conservation by user groups (Ed. K-2/1.13, 3-5/1.33, 6-8/1.08, 9-10/1.22)
- Issues/conflicts between user groups (Ed. 3-5/1.12, 6-8/1.17, 9-10/1.22, 11-12/1.10)

### Sources of water pollution/contamination

- Point Source
  - agricultural sources (DNR, Ed. K-2/1.4, 3-5/1.11, 6-8/1.5)
  - public and/or private wastewater (DNR, Ed. K-2/1.25, 3-5/1.3, 6-8/1.55)
  - industrial and business hazardous wastes (DNR, Ed. K-2/1.17, 3-5/1.09, 6-8/1.4)
  - energy production wastes (Ed. K-2/1.4, 3-5/1.11, 6-8/1.29)
- Nonpoint source (DNR)
  - atmospheric deposition (DNR, Ed. 3-5/1.24, 6-8/1.64, 9-10/1.17)
  - agricultural (DNR)
  - mining (Ed. 3-5/1.11, 6-8/1.29)
  - urban (DNR, Ed. 3-5/1.13, 6-8/1.43)

### Water quality: risk assessment & reduction

- \* Water Quality Concerns (Ed. K-2/1.2, 3-5/1.21, 6-8/1.43, 9-10/1.05)
- Curriculum addresses the concept of how risk decisions are made (Ed. 3-5/1.67, 9-10/1.48, 11-12/1.63)
  
- Impact of water quality on health (DNR, UWEX, Ed. K-2/1.05, 3-5/1.2, 6-8/1.5, 9-10/~1.2, 11-12/1.19)
- Impact of water quality on human food sources (UWEX, Ed. K-2/1.19, 3-5/1.08, 6-8/1.2, 9-10/1.17)
- Impact of water quality on plant and animal communities (DNR, UWEX, Ed. K-2/1.06, 3-5/1.04, 9-10/1.17)
  
- Understanding and reducing risks for specific contaminants
  - bacteria (Ed. 3-5/1.5, 6-8/1.31, 9-10/1.08)
  - nitrates (DNR, Ed. 3-5/1.15, 6-8/1.28, 9-10/1.33, 11-12/1.33)
  - pesticides (DNR, Ed. K-2/1.3, 3-5/1.14, 6-8/1.18, 9-10/1.21)
  - sediments (DNR, Ed. 3-5/1.14, 6-8/1.31/9-10/1.13, 11-12/~1.10)
  - salinity (Ed. 3-5/1.15, 6-8/1.36, 9-10/~1.15, 11-12/1.08)
  - other chemicals (DNR, ED. 3-5/1.35, 6-8/1.36, 9-10/1.36, 11-12/1.07)
- Water quality indicators (\*streambank surveys, abiotic and biotic) (Ed. 3-5/~1.2, 6-8/~1.15, 9-10/~1.3, 11-12/~1.13)

**Figure 4.2 (continued)**

**Management & protection strategies for specific uses**

- Agricultural Management practices (UWEX, Ed. 3-5/1.19, 6-8/1.2, 9-10/1.36)
- Chemical spills and emergencies (Ed. 3-5/1.04, 6-8/1.21, 11-12/1.25)
- Chemical/fuel storage (DNR, Ed. 3-5/1.15, 6-8/1.07, 11-12/~1.24)
- Development issues/pressures (UWEX, Ed. 3-5/1.05, 6-8/~1.18, 9-10/1.25, 11-12/~1.18)
- Natural disasters (Ed. 3-5/1.21, 6-8/1.11)
- Recreational use (Ed. K-2/1.10, 9-10/1.24, 11-12/1.13)
- Solid waste management decisions (UWEX, Ed. 3-5/1.13, 9-10/1.37)
- Wastewater treatment (Ed. 3-5/1.08, 6-8/1.29)
- Wildlife habitat/land stewardship management (DNR, UWEX, Ed. K-2/1.10, 3-5/1.2, 6-8/1.43, 9-10/1.4)
- Zoning strategies
  - wellhead/groundwater recharge areas (DNR)

**Government & citizenship issues**

- Policy issues (Ed. 3-5/1.04, 6-8/1.19, 9-10/~1.25)
- Role of local government in developing protection strategies (Ed. 6-8/1.2, 9-10/1.15, 11-12/1.4)
- Citizen involvement and participation (\*Taking Action) (Ed. 3-5/1.2, 6-8/1.15, 9-10/1.25, 11-12/1.25)
- Legislation, regulation, incentives/disincentives (Ed. 3-5/1.09, 6-8/1.07, 9-10/1.11, 11-12/1.33)

**Water-related careers**

- Technical: \_\_\_\_\_ (Ed. 3-5/1.23, 6-8/1.13, 9-10/1.07, 11-12/1.5)
- Professional: \_\_\_\_\_ (Ed. 3-5/1.22, 6-8/1.10, 9-10/~1.35, 11-12/~1.4)

\* added to original list

*Water Quality Education Topics and Subtopics* was developed by Elaine Andrews and Karen Poulin, University of Wisconsin Cooperative Extension, Environmental Resources Center, 1992.

**Cross-reference Priority Wisconsin Water Education Topics List with Project WET Curriculum Framework**

The topics list (Figure 4.2) was cross-referenced with the Project WET Curriculum Framework developed through Michael Brody's (1995) research (see Appendix B) to see if

the topics fit within the Project WET curriculum. Because the Project WET curriculum framework is very broad, it was not difficult to find that each chosen topic fit within one of the conceptual framework categories.

### **Validity Panel Review of Wisconsin Water Education Topics List**

The Wisconsin water education topics list was then sent to the Validity Panel with a form to review the list for accuracy and thoroughness. The Validity Panel recommended additional topics and other minor changes to add to the list (see Appendix J). The compiled Validity Panel evaluation forms are included below in Figure 4.3.

**Figure 4.3**

#### **Compiled Validity Panel Responses from Review of Priority Wisconsin Water Education Topics List**

1. In your opinion does this list adequately cover priority water education topics for Wisconsin? Yes 1 No 8
2. What is missing?
  - Habitat and ecology (Wisconsin water provides vital habitat for plants and animals)
  - Water law (Wisconsin has a rich history of water law and its importance for students to understand their rights and the rights of others. It is important for students to know that water resources are held in trust (Public Trust Doctrine) by the state for the public.
  - Pollution Prevention/Anti-Degradation of Ecosystems
  - Water observation and aesthetics
  - Sources and solutions should always be linked to prevent finger pointing
  - Water's intrinsic value
  - Spiritual values associated with water
  - Role of water in transportation
  - Historical role of water
  - Watersheds in Wisconsin
  - How water influences/ties together terrestrial systems
  - Include the residential homeowner who over fertilizes
  - May need to make certain topics or issues more specific (i.e. urban vs. agricultural nonpoint source pollution)
  - Exotics
  - Land Use (forestry, construction, etc.)
  - Metals

**Figure 4.3 (continued)**

- Include curricula materials available for each topic  
(Be sure to reference the yearbook of agriculture on water - it still is an excellent resource)
3. What should not be included?
- Oceans

All of their recommendations were incorporated into the final priority list (Figure 4.4). This final priority list is what was used to determine who should be interviewed as specialists for these topics in order to provide recommended educational resources regarding these topics (refer to Objective Two).

**Figure 4.4**

**Final Priority Topics List  
Water Quality Education Topics and Major Subtopics Chosen by DNR,  
UWEX, and Selected Wisconsin Teachers**

**Water has unique physical and chemical characteristics**

- Properties
- Geology/hydrology dynamics
- Groundwater

**Water connects all earth systems**

- Types of water related ecosystems
  - wetlands
  - rivers/streams/riparian
  - watersheds
  - ponds/lakes
  - great lakes

**Water is essential for all life to exist**

Drinking water supply: quantity and quality

- Delivery
  - treatment of drinking water
  - infrastructure
- Lifestyle impacts/conservation

**Figure 4.4 (continued)**

- Source of drinking water
- Private water supplies
- Drinking water diseases

**Water quality: risk assessment & reduction**

- Water quality concerns
- Impact of water quality on human health, food and plant and animal communities
- Waste water treatment issues
- Understanding and reducing risks for specific contaminants
  - bacteria
  - nitrates
  - pesticides
  - sediments
  - salinity
  - other chemicals
  - VOC's
  - metals (Hg, Pb)
  - Radon/Radium
- Water quality indicators

**Water Habitats and Ecosystems in balance**

- Biodiversity
- Ecosystem
- Pools, riffles, runs
- Littoral zone
- Shorelines & riparian zone
- Water landscape

**Water observation (Wisconsin specific)**

- Aesthetics
- Monitoring

**Water resources exist within social constructs**

**Water use**

- Use of water by many groups; agriculture, commercial, domestic, industrial, municipal, power production, recreation, aesthetic, religious, spiritual, residential
- Conservation by user groups
- Issues/conflicts between user groups
- Historical uses
- Transportation

**Figure 4.4 (continued)**

**Government and Citizenship Issues**

- Policy issues
- Role of local government in developing protection strategies
- Citizen involvement and participation
- Legislation, regulation, incentives/disincentives

**Water is a natural resource**

Sources of water pollution/contamination

- Land use (development-construction, roads, etc., forest management, agriculture practices, residential practices)
  - Point Source
    - agricultural sources
    - public and/or private wastewater
    - industrial and business hazardous wastes/permits process and regulations, energy production wastes)
    - residential homeowners
    - water reclamation (ex. dam removal)
  - Nonpoint source
    - atmospheric deposition
    - mining
    - agricultural
      - nutrient management
      - erosion control
      - crop production
      - farmstead pollution prevention
    - urban
    - land use changes (ex. construction, roads, forest management, etc.)
- Pollution prevention
- Tragedy of the Commons
- Water belongs to all in Wisconsin (resource held in common)
- Residential homeowners
- Intrinsic value of water in Wisconsin

**Water resources are managed**

Management & protection strategies for specific uses

- Agricultural Management practices
- Biodiversity
- Chemical spills and emergencies, chemical /fuel storage
- Chemical/fuel storage
- Construction erosion control
- Development and diversion issues/pressures
- Exotic species control & prevention



**Figure 4.4 (continued)**

- Fisheries management
- Natural disasters
- Recreational use
- Residential management
- Solid waste management decisions
- Stewardship
- Sustainable resource management
- Transportation
- Urban runoff management
- Wastewater treatment
- Wildlife habitat/land stewardship management
- Zoning strategies
- wellhead/groundwater recharge areas

**Water-related careers**

- Technical
- Professional

## Objective Two

**Objective 2:** Identify Wisconsin water resources information available to educators.

**R & D Cycle:** Study research findings and other information pertinent to the product being developed.

The information needed for this objective was primarily obtained through phone interviews of water resources specialists; a review of related literature helped to fill any gaps. The results are presented in the steps listed below:

### Phone Interviews

#### 1. Question Development

For review, the following steps were taken in the development of the phone interview questions:

A. Determine objectives

1. What Wisconsin water resources education materials or publications relevant to these priority topics are recommended for state educators to use in developing water education programs for their students?
2. What state and regional organizations are recommended for educators to contact for information about these topics?
3. What state and regional organizations are recommended for educators to contact for information about field trips and classroom presenters related to these topics?
4. Who else should I contact for further information related to these topics?

- B. Determine types of questions (open-ended, semi-structured interview)
- C. Develop draft questions
- D. Evaluate the questions for bias, redundancy

## **2. Validity Panel Review**

The Validity Panel reviewed the draft questions for bias, clarity, and ability for the questions to elicit the intended responses. The panel was also asked to offer recommendations for whom to interview for each chosen topic of greatest concern. Revisions were made to the questions based on the compiled evaluation responses and comments from Validity Panel members. Some of the major edits made from their comments included increasing the number of interviewees, refining the interview process through procedural recommendations, clarifying question wording, and communicating exactly what was wanted from the interviewee (refer to Appendix K for detailed comments). The recommended changes were made and the final four questions are listed in Figure 4.5.

**Figure 4.5**

**Phone Interview Questions**

1. Which of Wisconsin's <sup>1</sup>resource materials related to groundwater would you recommend for educators (both <sup>2</sup>formal and non-formal) to use in developing and presenting water education programs with their students ?

- |    |    |
|----|----|
| 1. | 4. |
| 2. | 5. |
| 3. | 6. |

2. What statewide and regional<sup>3</sup> organizations would you recommend for educators to contact for information on this topic (or related to this topic) when developing their water education programs?

*Statewide*

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

*Regional*

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

3. What positions with organizations, institutions, or agencies would you recommend educators contact for field trip<sup>4</sup> ideas and locations related to this topic?

4. Are there any other individuals or organizations you would recommend that I contact related to this topic for further information regarding these questions?

---

<sup>1</sup> *Resource Materials* - Activity/Curriculum Guides, publications, fact sheets, speakers, audio visual materials, models/displays/trunks, videos, computer software, posters, children's books, field trip location contacts, etc. Both materials that will help teachers adapt WET materials to Wisconsin (at teacher level) and those which will enhance their presentations with their students (students' level K-12).

<sup>2</sup> *formal* - K-12 teachers

*nonformal* - e.g. nature center educators, resource agency educators, museum educators, etc.

<sup>3</sup> *regional* - watershed area

<sup>4</sup> *field trip* - for students and related to this topic (i.e. museums, industries, state parks, public lands representative of specific ecosystems, nature centers)

### 3. Select Interviewees

Validity Panel members listed the recommended interviewees for each topic. Where there were interviewees needed for specific topics, graduate committee members, Dr. Dennis Yockers and Libby McCann, were asked to recommend people.

### 4. Contact Interviewees

In most cases, the contacted water resource specialist agreed to the interview and a date and time were scheduled. In some cases, the recommended individual would refer me to someone they felt was more appropriate for the interview. Letter and phone interview questions were sent to the interviewees approximately two weeks prior to the scheduled interview.

### 5. Conduct Interviews

Twenty-eight people were formally interviewed to suggest resources and organizations included in the *Wisconsin Supplement*. The interviews lasted approximately 1-1 ½ hours. Refer to "Acknowledgments" on p.5 of Appendix S, *Wisconsin Supplement*, for the list of interviewees and affiliated organizations.

### 6. Phone Interview Responses

The interview responses from water resource specialists provided qualitative data that was organized by the water topics chosen through Objective One and compiled into the Resources section of the draft version of the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*.

## Objective Three

**Objective 3:** Create a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* as a supplement to the Project WET Curriculum and Activity Guide.

**R & D Cycle:** Product Development based on those research findings

## **Analysis of Phone Interview Responses**

The *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* was developed through the phone interview responses followed up by literature review. These responses were compiled by the chosen water education topics from Objective One (e.g. groundwater, water quality monitoring, pollution prevention, etc.).

Gaps were identified where there was an inadequate amount of information listed for a given topic from Objective One. Those gaps were filled through secondary interviews, informal phone calls to other topic specialists, and literature review of Wisconsin water resources directories and publications lists. This process was completed when each topic section had a comparable amount of resources included.

In late fall of 1996, a letter was sent to each organization included in the draft *Wisconsin Supplement* to request their permission to be included in the final *Wisconsin Supplement*. The description of their organization was included in the letter for their review (see Appendix L for a copy of the letter sent to organizations). In addition, many organizations were contacted to provide a description and list of services available to educators.

## ***Wisconsin Supplement* Development by Section**

### **Resources**

Resources were chosen based on how well they addressed the priority list of water education topics. Nearly all of the responses were included. In some cases, where locally-specific information was recommended, a decision was made by the researcher and two graduate committee members to only include resources at the state level (with a few exceptions of materials that could easily be used in other regions of the state).

A description of the resource, how to order it, and costs (if that information was known) were included for each item.

### **Organizations**

There are three sub-sections within the *Organizations* section to accommodate the variety of organizations recommended by interviewees. Nearly all of their recommended

organizations were included. In some cases however, the organization was extremely specific to a small area or watershed. In general, organizations were included to the county, watershed, or large city level while organizations specific to smaller regions and watersheds were not included. In addition, other water-related statewide government organizations, statewide non-government organizations, Great Lakes organizations, federal agencies, some national and international organizations, and computer networking sites were added to Part One. Part Two is separated into the three major watersheds of Wisconsin: Lake Michigan, Lake Superior, and the Mississippi River. Water-related organizations and field trip and presentation contacts were included for each watershed. The final *Organizations* section, Part Three, lists the county and regional offices for a variety of state agencies.

Descriptions of the services provided by each organization were included with contact information including address, phone and fax numbers and e-mail addresses and home page sites if available.

### **Wisconsin Resources Recommended for each Project WET Activity**

In this section, each Project WET activity is listed in order within its Project WET Curriculum Framework topic, with page number noted. Wisconsin resources (i.e. publications, videos, models, organizations) included in the *Resources* section are listed for each activity as suggestions (by the researcher) to help educators 'Wisconsinize' the Project WET activities. Each suggested item is found in the Index and can be found in the *Resources* and *Organizations* sections where a description and contact information is provided.

### **Suggestions for Adapting National Project WET to Wisconsin & 'Wisconsinized' Activities**

In this final section of the *Supplement*, teachers' suggestions for adapting national Project WET activities to Wisconsin and local regions and six 'Wisconsinized' activities were included.

### **A. Suggestions for Adapting National Project WET to Wisconsin**

Ten Wisconsin teachers were chosen to be interviewed to provide suggestions for other educators interested in adapting Project WET to Wisconsin (refer to "Acknowledgments" on p.5 of Appendix S, *Wisconsin Supplement*, for the list of interviewed teachers). Nine of these teachers had experience 'Wisconsinizing' a Project WET activity after attending a Project WET Leadership Institute in the summer of 1996. To fulfill their graduate credit assignment, they chose to adapt a Project WET activity to Wisconsin or their region. A tenth educator was interviewed who had previously created a Wisconsin version of a Project WET activity to use with her students. This teacher was also a Project WET facilitator and Project WET Advisory Committee member). These ten teachers were interviewed because of the extent of their activity adaptations and familiarity with Project WET.

### **Development of Teacher Phone Interview Questions**

To develop the questions the objectives first needed to be determined, they include:

- a. What suggestions would these teachers give other educators interested in adapting a national Project WET activity to Wisconsin or their region?
- b. What steps would they recommend other educators follow in this process?
- c. Was this a useful process for them to experience?
- d. Will they use the adapted activities?

The questions were then developed to address those objectives. Two graduate committee members reviewed the questions for bias, clarity, ability to draw the intended responses, and redundancy. The final questions are listed below in Figure 4.6.

**Figure 4.6**

**Phone Interview Questions for Teachers who Have ‘Wisconsinized’  
Project WET Activities**

1. Why did you choose this particular activity to Wisconsin?
2. What steps did you take to localize the activity?
3. Based on your experiences of localizing this activity, what procedures would you suggest to other educators planning to adapt an activity to their area?
4. What advice would you offer educators to assist them in avoiding potential obstacles throughout the activity modification process?
5. What additional information would you add to your activity if you were to revise it?
6. What other resources (not previously mentioned) would you suggest educators use when ‘Wisconsinizing’ activities?

*Yes/No Questions*

1. Was it useful for you to ‘Wisconsinize’ this activity?
2. Do you plan to use this activity with your students?
3. Do you think it would be useful for other educators to ‘Wisconsinize’ Project WET activities?
4. May I use your activity adaptation in the *Wisconsin Supplement* and during the field-testing workshops?
5. May I have a copy of your activity adaptation on disk?

**Analysis of Teacher Interview Responses**

Each phone interview lasted approximately one hour. The main outcome of the interview responses included a set of steps to adapt a Project WET activity to local regions, advice to avoid potential obstacles, and suggested resources (materials and organizations) for ‘Wisconsinizing’ activities (refer to pages 163-4 of the *Wisconsin Supplement*, Appendix S, for the complete list of suggestions). The responses were compiled, organized into categories, and the categories listed in steps to assist educators in adapting Project WET activities to Wisconsin and local regions.

**B. Activities**

The six ‘Wisconsinized’ activities used in the draft *Wisconsin Supplement* were chosen based on how well they addressed the finalized priority list of water education topics and how thoroughly they were adapted. The Leadership Institute students extensively



researched their activity for state-specific adaptations regarding Wisconsin aquatic ecosystems information, issues, and species. Each activity was assessed for its school level appropriateness based on the standards used in the existing Project WET Curriculum and Activity Guide. At least two activities were included for each school level:

- Elementary: *Color Me a Watershed, Common Water, Water Address, Sum of the Parts*  
Middle: *Color Me a Watershed, Common Water, Dilemma Derby, Sum of the Parts, Water Address*  
High: *Color Me a Watershed, Dilemma Derby, The Pucker Effect, Water Address*

The 'Wisconsinized' activities format follows that of national Project WET but the background content, methods, resources, and extension sections were modified. These activities can be found on pages 165-209 of Appendix S, the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*.

## Objective Four

**Objective 4:** Determine selected Wisconsin educators' attitudes toward the effectiveness of the draft *Wisconsin Supplement*.

**R & D Cycle:** Field-test/Evaluation

## Field -Test Workshops

Two, six-hour teacher training workshops were offered to K-12 educators who were either invited to attend based on their request to be placed on the Project WET mailing list or chose to register for the workshop as a result of advertisements. A third workshop, at Havenwoods Environmental Awareness Center (Milwaukee, WI), was canceled due to low enrollment. Listed below are the dates, locations, and educator profiles of the field-test workshops:

- **Jan. 24, 1997.** Treehaven Environmental and Conference Center (Tomahawk, Vilas County): nonformal & formal educators (K-12) from around the state (as part of the WAEE Winter Workshop)
- **Feb. 14, 1997.** Owen-Withee Public Schools (Owen, Clark County): rural K-12 teachers from one school district

In the morning, the *Wisconsin Supplement* was introduced to workshop participants, where the layout and content was explained. During the workshop, participants taught each of the six 'Wisconsinized' activities and offered on-the-spot comments on activity effectiveness and clarity. In the afternoon, a half-hour period was designated for teachers to begin adapting Project WET activities to their region by using the *Wisconsin Supplement*. At the close of the workshop, one hour was allotted to review the *Wisconsin Supplement* and complete the evaluation forms.

### **Evaluation Forms**

Evaluation forms were developed, reviewed by the Validity Panel, and revised. The Validity Panel reviewed the questions for bias, clarity, and ability to draw the intended responses. Their comments mainly addressed the clarity of the questions to ensure the type of responses that were being sought. Most of the edits to the draft evaluation form were word changes.

These evaluation form questions were completed at the end of the field-testing workshops designed to introduce and utilize the *Wisconsin Supplement*. A copy of the evaluation form can be found in Appendix M.

In addition, Validity Panel members were asked to evaluate the draft *Wisconsin Supplement* mailed to them with an introductory letter that described the contents and format of the document. Their evaluations were assessed and utilized in developing the final product.

## **Field-Test & Evaluation Responses**

### **Workshop Participant Responses**

Thirty-eight educators attended the two workshops. Thirty educators completed the evaluation forms (a snowstorm during the Treehaven workshop caused several people to leave the workshop early without completing the evaluation form).

## **Validity Panel Responses**

Validity Panel members evaluated the draft *Wisconsin Supplement* mailed to them with an introductory letter that described the contents and format of the document (see Appendix N for the letter to Validity Panel members). Seven members completed evaluation forms and nine sets of edits were made directly to the draft *Wisconsin Supplement*.

## **Data Analysis**

The qualitative and quantitative evaluation responses were compiled and systematically analyzed. This analysis segregated responses according to the following categories for each section of the *Wisconsin Supplement*: overall quality, usability and format effectiveness, value, amount of information available, relevance of information, quality of information, usefulness of sections, and quality of 'Wisconsinized' activities.

## **Qualitative Data**

The qualitative responses are organized by *Wisconsin Supplement* section (Appendix O). The evaluation form statements are not listed in entirety but instead a key word for the objective of that statement is listed. The responses were organized by whether they were positive (+) or negative (-) or whether they recommended adding (Add) or deleting (Delete) information. All qualitative data were incorporated into the revisions unless considered impossible due to time and publication size constraints (as determined by the researcher and graduate committee members). Qualitative responses were compiled and most comments were incorporated into revisions to the draft. Some of the main qualitative responses that drove the major changes to the draft *Wisconsin Supplement* were: alphabetize all the listings and *Resources* section topics, create an Index, make the 'Wisconsinized' activities more general for anyone in the state to use, and add more web sites (refer to Appendix O for the complete list of qualitative responses).

## **Quantitative Data**

The quantitative data were compiled into a Microsoft Excel database spreadsheet where sums, means, and standard deviations were calculated. The mean for each Likert scale

statement was compiled into a table (see Appendix P). If the mean score for that Likert scale evaluation form item was below 4.0=agree (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) changes were made to that section of the *Wisconsin Supplement*. Yet, all responses were looked at closely and considered for inclusion in revisions.

Overall, the evaluators provided positive feedback on the intended objectives and effectiveness of the draft *Wisconsin Supplement* (refer to Appendix P for the table of quantitative data). They felt the *Wisconsin Supplement* would be a valuable resource that they would use to adapt Project WET activities to Wisconsin or their region and that those activities would be more relevant to their students. The statements and mean responses are listed in Figure 4.7 below.

**Figure 4.7 Evaluation Statements Regarding the Overall Value of the Wisconsin Supplement**

	<u>*Mean (n=37 respondents)</u>
◆ The <i>Wisconsin WET Supplement</i> will be valuable to me.	4.22
◆ Using the <i>Wisconsin WET Supplement</i> to localize Project WET activities will make those activities more relevant to my students.	4.5
◆ I plan to use the <i>Wisconsin WET Supplement</i> to adapt WET activities to Wisconsin or my region.	4.18
◆ The <i>Wisconsin WET Supplement</i> will be valuable to me when I adapt Project WET activities to Wisconsin or my region.	4.23
◆ The <i>Wisconsin WET Supplement</i> will be useful to other Wisconsin teachers.	4.41

\*On a scale of 1-5, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

There were eight statements with a mean score of less than 4.0 and they all involved the six 'Wisconsinized' Project WET activities (refer to Appendix P for the complete set of data). These lower scores suggested that changes needed to be made to the activities. Refer to Figure 4.8 for the list of eight statements and associated mean scores.

**Figure 4.8 Eight Evaluation Form Statements with Means Less than 4.0\***

- It is valuable to me to have the 'Wisconsinized' Project WET activities ready for use:

	<u>*Mean (n=37)</u>
<i>Dilemma Derby</i>	3.95
<i>The Pucker Effect</i>	3.98
<i>Sum of the Parts</i>	3.98
<i>Water Address</i>	3.98

- I plan to use these 'Wisconsinized' Project WET activities with my students:

<i>Color Me a Watershed</i>	3.88
<i>Common Water</i>	3.98
<i>Dilemma Derby</i>	3.70
<i>The Pucker Effect</i>	3.67

\*On a scale of 1-5, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree; n=37 total respondents

### **Compiled Qualitative and Quantitative Responses**

In many cases, changes were made to the draft according to the qualitative data for the same statement with a quantitative mean higher than 4.0. This cross-referencing of data was helpful in reaching a variety of evaluator preferences for either writing qualitative comments or numerical grading. The qualitative data provided more detail for the revisions than the quantitative data. Qualitative data ranged from recommending additions to the list of organizations to adding the cross-reference planning charts from the Project WET Curriculum and Activity Guide to the *Wisconsin Supplement*. The researcher and two members of the graduate committee reviewed the compiled responses. These suggestions were incorporated through revisions to the draft *Wisconsin Supplement*.

### **Revisions**

**R & D Cycle:** Revisions based on field-testing

According to the evaluators' recommendations and data analysis, final changes were incorporated during the summer and fall of 1997. Some additional organizations and

Wisconsin resources recommended for each Project WET activity was added to the final *Wisconsin Supplement*. Some of the revisions included:

- ◆ adding additional information (e.g. more web site addresses, other organizations, etc.)
- ◆ placing all topics and resources in alphabetical order
- ◆ providing clear explanations for each section and activity
- ◆ improving the overall activity format for clarity and consistency
- ◆ improving the quality of the graphics
- ◆ adding an index for easy reference
- ◆ adding the associated page numbers from the Project WET Guide to the listed Project WET activities in the *Wisconsin Supplement*.

Several comments offered by evaluators referred to the number and specificity of the ‘Wisconsinized’ activities. Several people felt that the activities were too specific to a certain region of Wisconsin and were therefore not applicable to their students. This would mean that they would have to make the extra step of adapting the activity to their area. As a result, each activity was made more general to Wisconsin so any teacher could use the activity with an additional highlighted section where the more specific adaptation could be used as an example for creating local versions of the activity. For the six ‘Wisconsinized’ activities, revisions included:

- ◆ additional background information was added to each
- ◆ the format and sub-sections were made consistent
- ◆ a new section was added to each activity called “Adapt this Activity to Your Region (or Watershed)!” to provide suggested materials to use and organizations to contact
- ◆ making the activity applicable to anyone in the state by adding more general Wisconsin adaptations and/or background information to activities specific to a certain region

There were several evaluator requests that were not added to the *Wisconsin Supplement* due to limitations of time, document space, and previous publication of that information. Some of those requests included adding:

- ◆ the cross-reference planning charts from the Project WET Curriculum and Activity Guide (not necessary to duplicate efforts)
- ◆ list of lakes affected by acid rain and ranking their acidity level (very specific information)
- ◆ trade books related to Project WET activities (more national than the goals of the *Wisconsin Supplement*)
- ◆ nature and environmental centers (not necessary to duplicate efforts)

### **Validation of Final Wisconsin Supplement**

Sections of the draft were laid out and reviewed by various volunteer editors affiliated with the Wisconsin Center for Environmental Education and with editorial experience. The final draft was reviewed by Project WET-Wisconsin Coordinator, Libby McCann, graduate committee advisor, Dr. Dennis Yockers, and UW-Extension Lake Management Program Assistant and Project WET facilitator, Dorothy Snyder.

### **Chapter Summary**

This chapter describes the results of the research and development process used to develop this new educational product. The review of literature related to the product being developed revealed over thirty water education topics of greatest concern to Wisconsin teachers and water specialists. Wisconsin water resource specialists were asked to be interviewed based on these topics. The interviewees recommended Wisconsin resources (publications, models, videos, organizations, etc.) for teachers to use in adapting national Project WET to Wisconsin. Twenty-eight interviews provided a host of resources to include in the *Wisconsin Supplement*. Gaps in certain topic areas were filled through informal interviews with other recommended specialists and review of other water resource directories. Phone interviews with teachers experienced in adapting Project WET activities

to Wisconsin and their region revealed suggestions to provide other teachers planning to do the same.

The draft *Wisconsin Supplement* was reviewed by thirty educators attending one of two workshops offered to introduce and field-test this new educational product, as well as eleven Validity Panel members. Qualitative and quantitative data were compiled and analyzed. Nearly all the qualitative responses were incorporated into revisions of the draft. Every quantitative Likert scale mean response for each statement was looked at closely, with a line drawn at 4.0 (on a scale of 1-5) to require a change to the draft. Many revisions were made to the draft to create the final *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*. Two thousand copies of the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* will be printed in fall 1997. Approximately one thousand copies will be sent to educators who have previously attended a Project WET-Wisconsin workshop with a letter describing the contents and recommendations for use of the *Wisconsin Supplement*. One thousand copies will be introduced and distributed to educators attending future Project WET-Wisconsin workshops.



## Chapter Five

# Summary, Recommendations, and Conclusions

### Summary

The purpose of this study was to develop a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* to the national Project WET Curriculum and Activity Guide. The goal for the development of this state supplement is to help state teachers make Project WET activities more relevant to Wisconsin students and in so doing, encourage them to become familiar with, and develop a sense of stewardship for, local water resources.

The educational research and development process was used to create this educational product. The first step of this process was the literature review that unveiled the priority water education topics to include in the supplement. Specific resources (e.g. publication, videos, models, organizations, etc.) for each topic were recommended by interviewed Wisconsin water resource specialists and compiled through review of related literature. Phone interviews with Wisconsin teachers provided suggestions for other teachers planning to adapt Project WET to their region of Wisconsin. Six 'Wisconsinized' activities written by state teachers were selected to be included as ready-to-use examples of Wisconsin-adapted activities. The draft *Wisconsin Supplement* was reviewed by thirty educators and eleven validity panel members. Revisions were made to the draft based on these evaluations and the final *Wisconsin Supplement* will be printed in December 1997.

The first section of this chapter contains a review of the results for each research objective, followed by recommendations and conclusions where necessary.

## Review of Results and Conclusions by Research Objective

**Objective 1:** Determine aquatic education topics of greatest concern to selected Wisconsin educators and water resource professionals determined by summary reports of the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), 1994 teacher survey "Educational Inventory of Water Related Subject Needs" conducted by UWEX, and selected Wisconsin educators and water resource professionals who are members of the Project WET Advisory Committee.

**R & D Cycle:** Study research findings and other information pertinent to the product being developed.

**Summary of Results:** A list of water education topics of greatest concern was compiled through literature review of two state agency documents and a statewide teacher survey. This list was cross-referenced with the Project WET curriculum framework. After validity panel review, a final list of Wisconsin priority water education topics was organized (see Figure 4.6). This final list of topics was used to generate a list of water resource specialists to interview for those specific topics (i.e. groundwater, lakes, fisheries management).

**Conclusions:** The literature review revealed the extensive need for broad-based water education for both adults and children. According to the teacher survey reviewed, there are many water topics which Wisconsin teachers feel they need more information about in order to teach that topic to their students. After reviewing an additional Wisconsin teacher survey (Dixon 1996), it can be concluded that teachers want relevant information about Wisconsin's water resources.

**Recommendations:** In Wisconsin, we are fortunate to have strong environmental education and water education programs. Because of this, a teacher survey had previously been completed and provided a source of the information needed for Objective One. Other states may need to dig deeper to find this type of information or conduct their own educator needs assessment regarding water education.

**Objective 2:** Identify Wisconsin water resources information available to educators.

**R & D Cycle:** Study research findings and other information pertinent to the product being developed.

**Summary of Results:** A set of phone interview questions regarding available Wisconsin-specific water resources information was developed and reviewed by validity panel members. Revisions were made and four final questions were used to interview Wisconsin water resource specialists. Twenty-eight water resource specialists were interviewed by telephone. They provided recommended resources and organizations relevant to most of the water education topics selected through Objective One.

**Conclusions:** In most cases, the interviewees provided a wealth of recommended resources to include for the topic of their specialty. There were gaps where recommended interviewees either felt they could not provide the needed information for this project or could not be contacted. Further phone calls to other Wisconsin water specialists were successful in gathering the needed resources to complete Objective Two.

**Recommendations:** Ideally, more than one specialist would have been interviewed for each topic. This way, cross-referencing between their responses would have offered possibly more resources to be included and to have two opinions of what resources would be helpful to educators. Consequently, this may have reduced the number of phone calls the researcher made to find additional resources for certain topics.

In addition, it may have been wise to also interview teachers with a special interest in water education. They may be more aware of appropriate Wisconsin water education resources to recommend for other educators' use.

**Objective 3:** Create a *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* as a supplement to the Project WET Curriculum and Activity Guide.

**R & D Cycle:** Product development based on those research findings

**Summary of Results by Wisconsin Supplement Section:** The *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* was developed through phone interview responses followed by literature review (refer to Appendix S for the final *Wisconsin Supplement*). The results will be summarized below by the *Wisconsin Supplement* section titles:

#### **Resources and Organizations sections**

Secondary interviews with additional Wisconsin water resource specialists, informal phone calls to water-related organizations, and literature review of Wisconsin water resource directories were used to fill in the gaps where phone interview responses were not complete for certain topics. Resources were chosen based on how well they addressed the final priority list of water education topics from Objective One (refer to pages 11-70 of the *Wisconsin Supplement* in Appendix S for the “Resources” section). Recommended organizations were included to the county, watershed, or large city level. The researcher included other water-related organizations including: statewide government agencies, statewide non-government organizations, Great Lakes organizations, federal agencies, selected national and international organizations, and computer networking and web sites. Organizations and field trip and presentation contacts were separated into the three major watersheds of Wisconsin: Lake Michigan, Lake Superior, and the Mississippi River (refer to pages 71-145 of the *Wisconsin Supplement* in Appendix S for the “Organizations” section).

#### **Wisconsin Resources Recommended for each Project WET Activity**

Each activity from the Project WET Curriculum and Activity Guide is listed in this section with recommended Wisconsin resources and organizations relevant to the objectives of that activity (refer to pages 146-162 of the *Wisconsin Supplement* in Appendix S).

## **Suggestions for Adapting National Project WET to Wisconsin**

Ten Wisconsin teachers were selected for phone interviews to provide suggestions for other educators interested in adapting national Project WET activities to Wisconsin. These teachers had experience adapting Project WET activities to their region and provided steps for adapting activities, advice to avoid potential obstacles, and suggested resources to use when adapting an activity (refer to pages 163-164 of the *Wisconsin Supplement* in Appendix S).

### **'Wisconsinized' Activities**

Six 'Wisconsinized' activities were included as ready-to-use examples for educators to use with their students and to refer to as a model for developing their own activity modifications. These activities were written by some of the teachers interviewed for suggestions (as described in the "Suggestions for Adapting National Project WET to Wisconsin" section above) and were selected based on how well they addressed the final list of priority water education topics and how extensively they were modified (refer to pages 165-209 of the *Wisconsin Supplement* in Appendix S).

**Conclusions:** According to two statewide surveys, Wisconsin teachers want local water resources information as well as information about a variety of water-related topics to help them educate their students (Dixon 1996, UW-Extension 1993). These publications directly address stated needs of Wisconsin teachers and water specialists. The *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* provides a wealth of information in one place for educators to use in developing their water education programs. The detailed lists of Wisconsin water-related educational resources and organizations are listed for the priority water education topics highlighted by Wisconsin teachers and state water specialists derived through Objective One. It also offers suggested Wisconsin resources for adapting each of the ninety-one Project WET activities to Wisconsin and six examples of teachers' activity adaptations to Wisconsin and local regions of the state.

Generally, teachers want to receive educational materials that are ready to use. The majority of the *Wisconsin Supplement* is a directory of Wisconsin water resources

educational materials and organizations. It provides lists of resources (e.g. publications, videos, books, models, etc.) and organizations for a wide variety of water topics and information for ordering the materials and contacting the organizations. Therefore, in order to adapt most of the Project WET activities, the educator needs to take extra steps to collect the needed information. There are six example Wisconsin-adapted activities provided for educators to use with their students.

**Recommendations:** It would be helpful to state educators if they were provided with more ‘Wisconsinized’ Project WET activities ready for their use. Other Project WET programs planning to create a state supplement may want to include a larger selection of adapted activities along with sources of water resources information specific to their state.

A follow-up study of educators who have received the *Wisconsin Supplement* should be conducted to assess how much they have actually used the information and activities in their teaching. This information would guide further development and revisions to the *Wisconsin Supplement* and the way it is disseminated. In addition, other states would benefit from the results when developing their own state supplements.

**Objective 4:** Determine selected educators’ attitudes toward the effectiveness of the draft *Wisconsin Supplement*.

**R & D Cycle:** Field-test/Evaluation

**Summary of Results:** Thirty-eight educators attended the two field-testing teacher training workshops offered to evaluate the effectiveness of the draft *Wisconsin Supplement*. An evaluation form was developed to gather qualitative and quantitative data to judge the draft’s format, clarity and amount of information, activity effectiveness, and ability to meet its intended objectives. Thirty educators and seven validity panel members completed evaluations and nine edits were made directly to the draft *Wisconsin Supplement*.

Qualitative responses were compiled and most comments were incorporated into revisions to the draft. Some of the main qualitative responses that drove the major changes to the draft *Wisconsin Supplement* were: alphabetize all the listings and *Resources* section topics, create an Index, make the 'Wisconsinized' activities more general for anyone in the state to use, and add more web sites.

For the quantitative data, means for each Likert scale item were calculated. The eight statements with means of less than 4.0 (where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree) were all related to the six 'Wisconsinized' activities.

**Conclusions:** The evaluators provided positive feedback on the intended objectives and effectiveness of the draft *Wisconsin Supplement*. They felt it would be a valuable resource that they would use to adapt Project WET activities to Wisconsin or their region. A majority of respondents also felt the 'Wisconsinized' activities would be more relevant to students.

According to previous research and the experience of this project, one day workshops seem to be the most effective method for distributing new educational products (Mayer and Fortner 1987). The draft *Wisconsin Supplement* was introduced and used during the workshop before the participants evaluated the document. Yet, nearly half of the workshop participants commented that they didn't have enough time to review and use the *Wisconsin Supplement* before they were asked to evaluate it. For this educational publication, it can be concluded that one-day workshops may not provide adequate time to introduce and evaluate this resource.

**Recommendations:** As a result of the above conclusion, it is recommended that more time be allotted toward the use of the educational product being evaluated during a field-testing workshop. In addition, a follow-up evaluation six months after educators have received the *Wisconsin Supplement* would be useful. This way, educators have an opportunity to use the *Wisconsin Supplement* in the classroom and could develop a 'Wisconsinized' version of a Project WET activity. As a result, they would be more familiar with the publication and could more adequately evaluate its effectiveness.

The draft *Wisconsin Supplement* still had some resource gaps and addresses missing when it was evaluated. Ideally, educators would evaluate the *Wisconsin Supplement* again when it was more developed, although, sections of the final draft were extensively edited by nine environmental education specialists prior to printing.

## **Revisions**

**R & D Cycle:** Revisions based on field-testing

**Summary of Results:** According to the evaluators' recommendations and data analysis, a wide range of revisions were made. The qualitative comments were most revealing as to what changes should be made. Major changes were made to the 'Wisconsinized' activities as they had the lowest mean scores of the Likert items and many qualitative comments from evaluators. The activities were revised to make them more accessible and easy-to-use for educators statewide. For example, more background information about Wisconsin and suggestions for adapting the activity to local regions was added. Other changes included adding an index, improving the format for clarity and consistency, and more. Nine volunteer editors reviewed sections of the final *Wisconsin Supplement* for clarity, consistency, easy-to-use format, and readability.

**Conclusions:** The revisions were made based on the goal for developing this publication; to provide Wisconsin educators with state-specific water resources information to assist them in adapting national Project WET activities to Wisconsin water resources and issues. Most of the evaluators' comments were included in the revisions. According to the timeline of this project and the intended size of the publication, several recommendations were not incorporated into the final *Wisconsin Supplement*.

**Recommendations:** The qualitative comments were organized and reviewed by the researcher. They were not systematically analyzed with the graduate committee members, but instead were discussed at different times during the revision stage. The researcher made decisions on her own regarding some of the evaluators' recommended changes. Tallying



each of the qualitative comments would have been helpful in order to create a priority list of edits to make. In addition, it may have been useful to analyze the qualitative data more thoroughly either through cluster analysis, grounded theory, or some other form of qualitative analysis. Ideally, another cycle or two of field-testing and revisions would be employed to create an even higher quality and useful educational resource.

## **Recommendations for Future Use and Development of the *Wisconsin Supplement***

### **Objectives of this Project**

This *Wisconsin Supplement* is a first step in the process of providing teachers with materials and training to help them teach Wisconsin students about their local water resources and the importance of water through the Project WET program. Additional Project WET workshops would allow educators to focus on more specific water topics such as local groundwater issues, watershed investigations, and other local water-related issues while using the resources in the *Wisconsin Supplement*. Project WET facilitators could offer these as special topic workshops or as follow-up or advanced workshops. Many facilitators currently offer focused workshops, but these local workshops could also be offered in partnership with local organizations or county and state staff interested in involving students in local water resources projects (i.e. research, management, water quality monitoring). This approach would help students become more aware of and involved with, their local communities and environment while developing their sense of stewardship for Wisconsin's waters.

### **Additions to the *Wisconsin Supplement***

According to several evaluation comments, state educators would like more 'Wisconsinized' activities added to future editions of the *Wisconsin Supplement*, or the development of a separate 'Wisconsinized' activities publication. Educators attending workshops offered for credit could develop the activities. A Project WET newsletter or letter could request Project WET trained educators to submit copies of any activities they have adapted to Wisconsin or their region.

Informal discussions with water education specialists stressed the importance of providing the actual resources for teachers to use in developing their water education programs. Some specialists suggested that a packet of Wisconsin water-related resources (e.g. publications, videos, etc.) be created and distributed to every school for teacher and student use. This approach would cut out the added step of ordering publications or other resources needed to adapt activities to Wisconsin.

### **Further Evaluation**

In order to adequately evaluate the effectiveness of this new educational product, an evaluation should be conducted with workshop participants two-six months after they attended a workshop and received the *Wisconsin Supplement*. This evaluation approach would allow workshop participants to have the time to use the information and possibly create a Wisconsin adaptation to a Project WET activity. An inserted letter of introduction to the *Wisconsin Supplement* could request their assistance to help evaluate the *Wisconsin Supplement* in two-six months and ask that they to use the publication and/or certain activities before that time. The evaluation could involve a questionnaire sent to evaluators, phone interviews or focus groups with educators, or other methods.

Currently, there is no research that shows the importance of creating state-specific environmental education materials to student learning outcomes. It would be beneficial to know whether creating state supplements to national EE programs is worth the time and effort in terms of student benefits. A simple pre-test/post-test that assesses student understanding of both general water education concepts as well as state-specific water resources and issues would be useful to compare the 'Wisconsinized' activities with the national Project WET activities. Two groups of students with similar test scores could be exposed to the same Project WET activities, but one group experiences the Wisconsin versions of each activity. Many variables would need to be controlled to make this a successful design.

Presently, there is a one-page evaluation form that will be inserted into the *Wisconsin Supplement* when it is distributed. This form requests evaluators to provide feedback on the overall value of the *Wisconsin Supplement*, whether they believe it will help them implement

educational activities specific to Wisconsin or their region, how the *Wisconsin Supplement* can be improved, any information they would like to see added or deleted, and any changes to the addresses and phone numbers of the listed organizations.

### **Revisions**

Every three to five years, the *Wisconsin Supplement* should be updated to account for organization address and phone number changes. At this time, new 'Wisconsinized' activities could be added as they are developed. If a future evaluation is conducted, revisions should be made to the first edition according to evaluator comments.

The UW-Extension Water Resources Program in Madison has offered to put the *Wisconsin Supplement* on the Internet and link it to the Project WET-Wisconsin home page. This will save time, money, and paper when update changes need to be made to the document.

### **Other States**

Other states are recommended to create a state supplement to national environmental education materials according to their state's needs. This project could be used as a model for other states planning to create a similar publication. Other states involved with national Project WET have consulted with the researcher to discuss the process used to develop the *Wisconsin Supplement*.

Previous studies and the conclusions from this project show that teachers want environmental education materials specific to their region. Throughout the development of this project, there was a great deal of interest in this publication by both educators attending Project WET workshops and state water specialists.

### **Conclusion**

The importance of water education is critical to the health of our global environment. As water issues become more critical at local, regional, national, and global levels, education about these issues will help us create viable (realistic) solutions. The fact that each of us is

connected to each other directly or indirectly by water speaks to the critical need to understand our effects on local waters.

Project WET offers an excellent source of water education activities that address a wide range of water topics. Yet, teachers indicate they want environmental education materials specific to their state and region. Surveys indicate that Wisconsin teachers want information about local water resources and a variety of water topics to help them educate their students (Dixon 1996, UW-Extension 1993). Wisconsin's water resources are unique and offer a wealth of learning opportunities to help associate students with their local environment. The *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* provides a source of information to assist educators in adapting national Project WET activities to Wisconsin and therefore making them more relevant to their students.

This *Wisconsin Supplement* and Project WET-Wisconsin are one in many statewide water education efforts. The Wisconsin Department of Natural Resources and University of Wisconsin-Extension are reorganizing their agencies to address natural resources issues at the watershed level, realizing the critical role water plays in the health of all natural resources. With the continued efforts of the many organizations and committed water educators and specialists, the future health of the state's waters will become a model for sound natural resources management and conservation. Wisconsin's youth can potentially have a positive impact on our state's waters, causing a rippling, watershed effect that reaches the far ends of the planet making a difference in the future health of the blue planet's most valued resource, Water.

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## **APPENDIX A**

**Letter Sent to Project WET-Wisconsin Advisory Committee Members Requesting their  
Participation as the Validity Panel**



May 15, 1996

Greetings Advisory Committee Members!

Happy Spring, Wisconsin-style! We hope this letter finds you well, enjoying the warm weather. Because of a variety of upcoming events and deadlines, we chose not to have a Project WET Advisory Committee meeting this month. Rather, we decided a more effective means of communication at this point would be to send you an update letter, outlining some of our activities -- past, present, and future. We welcome your insights and suggestions, so feel free to contact us if you have any questions or concerns with any of the following topics.

- **Facilitator Training** In just a few short months we will have our second WET facilitator training. The Project WET Leadership Institute will be offered as a summer course, July 8-12, from 1- 4:30 p.m. daily. We expect to fill all 30 spaces for the course including many of the EE Summer Master's Teachers. Letters of inquiry and applications (see attached) were mailed to over 175 people who have shown an interest in becoming facilitators. If you know of others who may be interested, please pass along their names to us.
- **Workshop Update** There have been seven very successful workshops offered by facilitators since the February 9-10 training held at the Central Wisconsin Environmental Station. Presently, there are ten more teacher workshops planned for the summer. If you would like to see a Project WET workshop offered in your area, please contact one of your local facilitators (see attached list).
- **EETAP Grant Awarded** WET-Wisconsin was recently awarded a \$2,900.00 grant through the National Project WET Environmental Education and Training Partnership (EETAP) Project. These funds will be used to conduct the previously mentioned five-day WET Leadership Institute at UWSP, July 8-12, 1996. The Institute will train 30 educators from around the state as certified Project WET facilitators, qualified to implement local six-hour WET workshops. Once these 30 facilitators fulfill the expected requirement of implementing two Project WET workshops in the following 18 months, they will potentially reach 1,250 or more educators. Each of these educators in turn reach a conservative estimate of 20 children per classroom/group, meaning this grant can help reach 25,000 young Wisconsin citizens each year.

- **WEEB Grant Awarded** A second grant for \$11,599.00 was awarded from the Wisconsin Environmental Education Board (WEEB) and will support the production and dissemination of a guide on Wisconsin water resource materials and a series of Wisconsin specific WET activities. These funds will also be used to train a network of volunteer outreach personnel as Project WET facilitators. Both of the aforementioned grants will help disseminate Project WET in the state, strengthening the program and educating both youth and adults about water issues.
- **Ilene's Research** As is often the case with graduate projects, Ilene's research has evolved over time and we wanted to make you aware of some of those changes. Ilene and her graduate committee agreed that it would be more useful to produce a *Wisconsin Water Resources Guide for Educators* to supplement the national Project WET Curriculum and Activity Guide (NPWET Guide). Educators could use this source of Wisconsin water resources information and 'Wisconsinize' any of the 91 activities found in the NPWET Guide. The ultimate goal of this project is to provide Wisconsin educators with state-specific information to assist them in adapting the national Project WET activities to Wisconsin water resources and issues. The *Wisconsin Water Resources Guide for Educators* would be comprised of four sections:
  1. **Resources** - "People, Places, Things" - by watershed, region, or water resource type (i.e. wetlands, lakes, groundwater). This section would include brief descriptions of water resources information materials and their sources, possible field trip location contacts, and water resource agency office phone numbers & addresses (including cross-reference #s to the activities).
  2. **Activities** - Each of the 91 activities would be included alphabetically with the above resources recommended for each (including cross-reference #s to the resources).
  3. **How to localize national curricula** - This section would include synopses of how other educators have localized general curricula to fit their needs, with suggestions and other advice.
  4. **Appendices and Examples of Activities** - Examples of at least six Wisconsinized activities will be included in this section as well as other Appendix items yet to be defined.

Ilene is hoping each of you will agree to be a part of the "validity panel" which reviews the questionnaire, interview questions, discussion group questions, and final *Guide* evaluation form. These forms would be sent to you throughout the next year beginning in June. In a few weeks you will receive the draft questionnaire which will be sent to water resource professionals around the state. The focus of the questionnaire is to identify water resource materials relevant to Wisconsin educators. Ilene would greatly appreciate your comments on the question clarity and ability to draw out the intended responses. She will also be sending this questionnaire to you after the revisions are made.

- **Project WET National Coordinator's Conference** The National Project WET Coordinator's Conference will be held from June 4-7, 1996 at the Lake Murray Resort near Davis, Oklahoma. Advisory Committee members, facilitators, and other Project WET advisors are encouraged to attend. We know this is rather late notice, but perhaps you were looking for an excuse to visit Oklahoma, vacation by a mountainside lake in the OK state, or just spend three days with us. Consider the possibilities! Please contact us if you are interested and would like more information.
- **Future Advisory Committee Meeting** In keeping with our goal to limit advisory committee meetings to two per year, we would like to schedule a meeting for early Fall. Please let us know if there are dates convenient for you to meet. More information will follow in the next few months.

We hope you have a spring filled with time outdoors, enjoying the true wealth of Wisconsin.

Sincerely,

Libby McCann  
Project WET Coordinator  
UWEX/UWSP

Ilene Grossman  
Project WET Assistant Coordinator

cc: Randy Champeau, Director, Wisconsin Center for Environmental Education  
Lowell Klessig, Director, UWEX Environmental Resources Unit  
Dennis Yockers, Wisconsin Center for Environmental Education

enclosures

**APPENDIX B**

Project Wet Curriculum Framework

## APPENDIX B

### Project WET Curriculum Framework

#### Conceptual Framework

**Water has unique physical and chemical characteristics.**

The water molecule has a specific structure.

The structure of the water molecule gives water certain properties.

The properties of water lead to unique chemical and physical behaviors.

**Water is essential for all life to exist.**

Chemical processes of life occur in water solution.

Life processes are based on water quality.

Life processes are based in water quantity.

Water is a limiting factor.

**Water connects all earth systems.**

Water is an integral part of Earth's structure.

Water plays a unique role in Earth's processes.

The water cycle is central to all earth systems.

**Water is a natural resource.**

Water resources are based on supply.

Water resources are subject to multiple uses by all living things.

Multiple use of water leads to water resource issues.

Many natural resources are water dependent.

**Water resources are managed.**

Water resources are managed by individuals and communities of people.

Water resource management is based on goals.

Water resource management sets objectives based on issues.

Water management strategies are often implemented.

Water management effectiveness is determined according to outcomes.

**Water resources exist within social constructs.**

Water resources use has changed over time.

Water resources have value based on economic systems.

Water resources are governed through political systems.

**Water resources exist within cultural contexts.**

Different cultures have fundamentally different beliefs about water.

Cultural beliefs about water resources change over time.

Cultural beliefs about water vary within a society.

Various cultures influence our understanding of water resources.

From Michael Brody, .1995. "Development of a Curriculum Framework for Water Education for Educators, Scientists, and Resource Managers." *Journal of Environmental Education*. 26(4): 18-29.

## **APPENDIX C**

### **Water Quality Education Topics and Major Subtopics**

## APPENDIX C

### Water quality education topics and major subtopics

As you select or develop activities and curriculum materials, consider these topics. This list will also help you to understand the curriculum summary chart and details provided by the electronic database, which lists subtopics.

#### Science of water

- Properties
- Importance to living things
- Hydrologic cycle
- Geology/hydrology dynamics
  - surface water
  - groundwater
  - regional supply

#### Water related ecosystems

- Types of ecosystems
  - lakes
  - wetlands
  - estuaries
  - rivers
  - watersheds
  - ephemeral systems (intermittent)
  - ponds
  - oceans
  - streams
  - riparian
- Major regional resource (insert name)

- 
- Ecological concepts

#### Drinking water supply: quantity & quality

- Delivery
  - community/public
  - private
  - treatment of drinking water
    - public drinking water
    - home treatment
- Water quality control
  - well concerns
  - testing
    - public
    - private
- Lifestyle impacts/conservation

#### Water use

- Use of water by many groups
  - agricultural
  - commercial
  - domestic
  - industrial
  - municipal
  - power production
  - recreation
- Conservation by user groups
- Issues/conflicts between user groups

#### Sources of water pollution/contamination

- Point source
  - agricultural sources
  - public and/or private wastewater
  - industrial and business hazardous wastes
  - energy production wastes
- Nonpoint source
  - atmospheric deposition
  - agricultural
  - forestry
  - mining
  - urban

#### Water quality: risk assessment & reduction

- Curriculum addresses the concept of how risk decisions are made
- Impact of water quality on health
- Impact of water quality on human food sources
- Impact of water quality on plant and animal communities

- Understanding and reducing risks for specific contaminants
  - bacteria
  - nitrates
  - pesticides
  - sediments
  - salinity
  - other chemicals
- Water quality indicators

#### Management & protection strategies for specific uses

- Agricultural management practices
- Chemical spills and emergencies
- Chemical/fuel storage
- Development issues/pressures
- Natural disasters
- Recreational use
- Solid waste management decisions
- Wastewater treatment
- Wildlife habitat/land stewardship management
- Zoning strategies
  - shorelands/floodplains
  - wetlands
  - wellhead/groundwater recharge areas

#### Government & citizenship issues

- Policy issues
  - water quality
  - water quantity
- Role of local government in developing protection strategies
- Citizen involvement and participation
- Legislation, regulation, incentives/disincentives

#### Water-related careers

- Technical: \_\_\_\_\_
- Professional: \_\_\_\_\_

*Water quality education topics and major subtopics* was developed by Elaine Andrews and Karen Poulin, University of Wisconsin Cooperative Extension, Environmental Resources Center, 1992.



## **APPENDIX D**

**Letter Sent to Validity Panel Members Requesting to Review List of Wisconsin's Priority Water  
Education Topics and Major Subtopics**



COLLEGE OF NATURAL RESOURCES  
UNIVERSITY OF WISCONSIN-STEVENS POINT, STEVENS POINT, WI 54481 • 715/346-2116



June 5, 1996

Dear Advisory Committee Members,

The moment has arrived for me to get on my hands and knees and beg for your assistance. As an advisory committee member, I am hoping you will agree to be a part of the "validity panel", to review the research tools I will employ in my graduate project for WET. I know you are extremely busy, but any and all feedback you can provide would be greatly appreciated.

On the reverse of this page is a brief description of the research study. The ultimate goal of this project is to produce a *Wisconsin Water Resources Information Guide for Educators (Guide)* to supplement the national Project WET Curriculum and Activity Guide (NPWET Guide). Educators could use this source of Wisconsin water resources information to 'Wisconsinize' activities found in the NPWET Guide. This project will provide Wisconsin educators with state-specific information to make Project WET more relevant for Wisconsin students.

The research tools used for this project must be reviewed by a "validity panel" in order to be considered valid research instruments. These tools include the phone interview questions, survey form, discussion group questions, and final *Guide* evaluation form. Your participation, expertise, and guidance as a validity panel member is crucial to the success of this project.

Enclosed you will find the phone interview questions for your review and comments. These questions have been developed through extensive discussions with the graduate committee members (Libby McCann, Dennis Yockers, Paula DeHart, and Randy Champeau) and literature review. The focus of the phone interviews is to identify quality water resource materials (i.e. publications, fact sheets, videos, organizations, field trip locations, speakers, etc.) relevant to Wisconsin educators that provide information on priority water education topics for the state (see attached topics list). Please analyze the questions for clarity and ability to draw out the intended responses. Provide comments on the reverse side of the phone interview sheet and return in the enclosed envelope. Additionally, I would appreciate your comments about the attached list of topics to include in the reference section of the *Guide*. Please consider the following questions while reviewing the attached list, respond on the page provided, and return in the enclosed envelope:

1. *In your opinion, does this list adequately cover priority water education topics for Wisconsin?*
2. *What is missing?*
3. *What should not be included?*

I hope you will take the time to respond to this request. It will truly make a difference in the quality of the *Guide*. Please send your comments to me by **Wednesday, June 26**. I am anxious to begin the development of this important and useful resource for Wisconsin educators. If you have any questions about this request, the project, or would like a copy of the research proposal, please call me at work (715) 346-3366, or at home (715) 345-7153 after June 14th. Thank you for your time and help.

With best spring regards,

Ilene Grossman  
Project WET Assistant Coordinator

## Research Project Overview

This research proposes the following: to identify water resource education topics of concern to selected Wisconsin educators and water resource professionals; to identify Wisconsin water resources information available to educators based on these concerns; and to create a *Wisconsin Water Resources Information Guide for Educators* as a supplement to the Project WET Curriculum and Activity Guide. The project objectives are:

1. Determine aquatic education topics of concern to selected Wisconsin educators and water resource professionals by reviewing summary reports of the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), 1994 teacher survey "Educational Inventory of Water Related Subject Needs" conducted by UWEX, and reviewed by selected Wisconsin educators and water resource professionals who are members of the Project WET Advisory Committee.
2. Identify Wisconsin water resources information available to educators.
3. Create a *Wisconsin Water Resources Information Guide for Educators (Guide)* as a supplement to the Project WET Curriculum and Activity Guide.
4. Determine selected educators' attitudes towards the effectiveness of the *Guide* through at least three post-workshop discussion sessions.
5. Develop an evaluation form to include in the *Guide*.

The ultimate goal of this project is to produce a *Wisconsin Water Resources Information Guide for Educators (Guide)* to supplement the national Project WET Curriculum and Activity Guide (NPWET Guide). Educators could use this source of Wisconsin water resources information to 'Wisconsinize' activities found in the NPWET Guide.

### **The Guide will be comprised of four sections:**

1. **Resources** - "People, Places, Things" - by watershed, region, or water resource type (i.e wetlands, lakes, groundwater). This section will provide a list of materials and their sources, specific water resources and issues information, agency personnel (titles, phone numbers, and addresses), and field trip location contacts. A cross-reference number with Section Two would be assigned to each resource item.
2. **Activities** - Each of the 91 activities will be included alphabetically with additional Wisconsin resources (same resources as in Section One) recommended for each (including some resources already recommended for each activity in the Project WET Curriculum and Activity Guide). A cross-reference number with Section One would be assigned to each resource item.
3. **How to localize national curricula** - This section will include suggestions for incorporating the *Guide's* information into Project WET activities, including synopses of how other people have localized general curricula to fit their needs.
4. **Appendices and Examples of Activities** - Examples of at least six Wisconsinized WET activities will be included in this section to assist teachers in their water education teaching endeavors. The current NPWET activity format will remain the same but the background content, methods, resources, and extension sections will be modified. Other Appendix items yet to be defined will also be included.

# Draft of Phone Interview Questions (for review by WET Validity Panel members)

There will be approximately ten people interviewed by phone. These individuals will be chosen based on referrals from Wisconsin water education specialists as being key contacts for one or more of the priority water education topics (see attached list). The interviewees will be asked about specific topics based on their area of expertise. They will first be contacted by phone to briefly explain the research project and confirm an interview date and time. A response letter will be sent including a description of the project and the interview questions to help them prepare for the actual interview.

## Validity Panel Members:

*Please analyze the questions for clarity and ability to draw out the intended responses. Please provide comments on the reverse side of this sheet and return in the self-addressed stamped envelope.*

1. Please suggest at least three Wisconsin<sup>1</sup> resource materials related to the topic (i.e. agricultural nonpoint source pollution) that you would recommend for educators (both<sup>2</sup> formal and non-formal) to use in developing and implementing water education programs with their students ?

- 1.
- 2.
- 3.

2. Are there materials you would like to have available for this topic, but according to your knowledge are not presently available?

3. What are the top three statewide and local organizations you would recommend for educators to contact for information on this topic?

*Statewide*

1. 3.
- 2.

*Regional*

1. 3.
- 2.

4. What three individuals or organizations would you recommend educators contact for field trip ideas and locations related to this topic?

5. Are there any other individuals or organizations you would recommend that I contact related to this topic area for further information regarding these questions?

---

<sup>1</sup> Resource Materials - Activity/Curriculum Guides, publications, fact sheets, speakers, audio visual materials, models/displays/trunks, videos, computer software, posters, field trip location contacts, etc.

<sup>2</sup> formal - K-12 teachers

nonformal - e.g. nature center educators, resource agency educators, museum educators, etc.

## Review Questions for Chosen Topics

1. *In your opinion, does this list adequately cover priority water education topics for Wisconsin?* Yes \_\_\_\_\_ No \_\_\_\_\_

2. *What is missing?*

3. *What should not be included?*

**\*Please use the enclosed self-addressed stamped envelope to mail your responses to:**

**Ilene Grossman  
Project WET  
College of Natural Resources  
University of Wisconsin-Stevens Point  
Stevens Point, WI 54481**

## Water Quality Education Topics and Major Subtopics Chosen by DNR, UWEX, and Selected Wisconsin Teachers/Cross-Referenced with the Project WET Curriculum Framework

These priority topics were identified as a result of reviewing the following documents according to the "Water Quality Education Topics and Major Subtopics" framework compiled by Andrews, et al.(1995), then categorized according to the Project WET Curriculum Conceptual Framework:

- DNR - "State of the Waters: Report to Congress, Executive Summary 1994"
- UWEX - "Addressing Water Resources Education Needs in Wisconsin", 1990
- Teachers - "Educational Inventory of Water Related Subject Needs" - a Wisconsin Teacher Survey of 181 K-12 Teachers, 1993

The **bolded** statements are the themes from the Project WET Curriculum Framework. I would appreciate your comments about this list of topics to include in the reference section of the *Guide*. Please consider the following questions while reviewing this list, respond in the space provided on the following page, and return in the enclosed envelope.

1. *In your opinion, does this list adequately cover priority water education topics for Wisconsin?*      Yes \_\_\_\_\_      No \_\_\_\_\_
2. *What is missing?*
3. *What should not be included?*

**Water has unique physical and chemical characteristics**

- \_\_\_ Properties
- \_\_\_ Geology/hydrology dynamics
- \_\_\_ Groundwater

**Water Connects all Earth Systems**

- \_\_\_ Types of water related ecosystems
  - \_\_\_ wetlands
  - \_\_\_ rivers
  - \_\_\_ ponds
  - \_\_\_ lakes
- \_\_\_ streams
- \_\_\_ watersheds
- \_\_\_ riparian

**Water is essential for all life to exist**

Drinking water supply: quantity and quality

- \_\_\_ Delivery
  - \_\_\_ treatment of drinking water
- \_\_\_ Lifestyle impacts/conservation
- \_\_\_ Source of drinking water

Water quality: risk assessment & reduction

- \_\_\_ Water Quality Concerns
- \_\_\_ Curriculum addresses the concept of how risk decisions are made
- \_\_\_ Impact of water quality on human health, food and plant and animal communities

- Understanding and reducing risks for specific contaminants
  - bacteria
  - nitrates
  - pesticides
  - sediments
  - salinity
  - other chemicals
- Water quality indicators (streambank surveys, abiotic and biotic)

**Water resources exist within social constructs**

Water use

- Use of water by many groups; agriculture, commercial, domestic, industrial, municipal, power production, recreation
- Conservation by user groups
- Issues/conflicts between user groups

Government & citizenship issues

- Policy issues, Legislation, regulation, incentives/disincentives
- Role of local government in developing protection strategies
- Citizen involvement and participation (Taking Action)

**Water is a natural resource**

Sources of water pollution/contamination

Point Source

- agricultural sources
- public and/or private wastewater
- industrial and business hazardous wastes, energy production wastes

Nonpoint source

- atmospheric deposition
- agricultural
- mining
- urban

**Water resources are managed**

Management & protection strategies for specific uses

- Agricultural Management practices
- Wastewater treatment
- Development issues/pressures
- Solid waste management decisions
- Chemical spills and emergencies, chemical/fuel storage
- Wildlife habitat/land stewardship management
- Zoning strategies
- wellhead/groundwater recharge areas
- Recreational use
- Natural disasters

Water-related careers

- Technical: \_\_\_\_\_
- Professional: \_\_\_\_\_

*Water Quality Education Topics and Subtopics* was developed by Elaine Andrews and Karen Poulin, University of Wisconsin Cooperative Extension, Environmental Resources Center, 1992.

**APPENDIX E**

Confirmation Letter and Phone Interview Questions Sent to Water Resources Specialists  
to be Interviewed





COLLEGE OF NATURAL RESOURCES  
UNIVERSITY OF WISCONSIN-STEVENS POINT, STEVENS POINT, WI 54481 • 715/346-2116



July 12, 1996

Dear \_\_\_\_\_,

Thank you for agreeing to be interviewed for this research project. Your input is invaluable to help insure the quality of this water education research project. On the reverse of this page is a brief description of the research study. The ultimate goal of this project is to produce a *Wisconsin Water Resources Information Guide for Educators (Guide)* to supplement the national Project WET Curriculum and Activity Guide (NPWET Guide). Educators could use this source of Wisconsin water resources information to 'Wisconsinize' activities found in the NPWET Guide. This project will provide Wisconsin educators with state-specific information to make Project WET more relevant to Wisconsin students.

Attached you will find the questions I will ask you on July 18th from 9:00 -10:00 am about groundwater education resources. All of the "priority Wisconsin water issue" topics are listed on the attached pages including the explanation of how they were chosen. The focus of these phone interviews is to identify quality water resources materials (i.e. publications, fact sheets, videos, slide show, organizations, field trip locations, speakers, etc.) relevant to Wisconsin educators that provide information on priority water education topics for the state (see attached topics list). Please review the phone interview questions and if you have any questions about their meaning or intent, please contact me at (715) 346-3366. In addition, please feel free to comment on the resources for any of the other listed priority water education topics (which I will not be interviewing you about) and either send me a copy of your comments with the topics or share them with me during our interview. Also, your recommendations for people to interview on specific topics would be very helpful as well.

I would like to record these interviews in order to insure that I receive all of your input. I would like your permission to record the interview, but if you are uncomfortable with this please let me know as soon as possible.

Again, thank you for agreeing to be interviewed. Your help is greatly appreciated!

Sincerely,

Ilene Grossman  
Project WET Assistant Coordinator

**APPENDIX E**  
**Phone Interview Questions**

1. Which of Wisconsin's <sup>1</sup>resource materials related to groundwater would you recommend for educators (both <sup>2</sup>formal and non-formal) to use in developing and presenting water education programs with their students ?

- 1.
- 2.
- 3.
- 4.
- 5.

2. What statewide and regional organizations would you recommend for educators to contact for information on this topic?

*Statewide*

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

*Regional*

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

3. What positions with organizations, institutions or agencies would you recommend educators contact for <sup>3</sup>field trip ideas and locations related to this topic (if possible, please provide their address and phone number)?

4. Are there any other individuals or organizations you would recommend that I contact related to this topic area for further information regarding these questions (if possible, please provide their address and phone number)?

---

<sup>1</sup> *Resource Materials* - Activity/Curriculum Guides, publications, fact sheets, speakers, audio visual materials, models/displays/trunks, videos, computer software, posters, field trip location contacts, etc.

<sup>2</sup> *formal* - K-12 teachers

*nonformal* - e.g. nature center educators, resource agency educators, museum educators, etc.

<sup>3</sup> *field trip ideas* - field trips specifically for students and related to the topic (museums, industries, state parks, public lands representative of specific ecosystems, nature centers, etc.).

## **APPENDIX F**

### **Wisconsinize a Project WET Activity Assignment**

## “Wisconsinize” a Project WET Activity

“If you always have dry feet, you miss half the fun of life.”

— Thoreau

*Directions: This assignment is intended to introduce you to the process of Wisconsinizing” the national WET guide. After choosing a water issue of particular interest, your task is to modify an existing WET activity to best fit Wisconsin or your region of the state. Please complete the following steps:*

1. Choose one of the listed “priority Wisconsin water issue” topics on the following page and explain the basic issues involved with that topic.
2. Each of these water issues has at least one Project WET Curriculum and Activity Guide activity related to that topic listed. Modify one activity of your choice to Wisconsin water resources, species, and/or issues. By modify we mean:
  - Keep the same format
  - Keep the same grade level. If there is a K-2 Option, you can adapt the activity to that level.
  - Adapt the Activity Procedures, Background, Wrap-up and Action, Assessment, Extensions, and Resources to Wisconsin specific information. (For example, in the activity *Water Address*, you could change the species and habitats to represent those found in Wisconsin.)
3. For this assignment we urge you to use materials from other sources within, and beyond, the university such as:
  - University of Wisconsin-Extension (UWEX)
  - Wisconsin Center for Environmental Education (WCEE)
  - UWSP-Water Resources Department staff
  - Department of Natural Resources (DNR)
  - County Land Conservation Departments
4. To prevent duplication of your efforts, please tell Ilene as soon as possible which activity you would like to Wisconsinize. Activity selection will be on a first-come, first-served basis.
5. This assignment (#3) will be due no later than **Friday, July 26th, at 5pm.** If you are unable to hand deliver you assignment to CNR Room 231A, please mail it to: Libby McCann/Project WET, UWEX-CNR, UWSP, Stevens Point, WI 54481. Include a self-addressed stamped envelope with postage if you want your assignment returned to you.

## APPENDIX F

Choose one of the following “Priority Wisconsin Water Issue” topics and a related activity to modify to Wisconsin water resources and issues:

### Groundwater Issues

1. The Pucker Effect (MS, HS)
2. A Grave Mistake (MS, HS)

### Water Related Ecosystems

3. Water Address - specific WI species and habitats (UE, MS)

### Watershed Issues

4. Color Me a Watershed - WI watersheds and issues (HS)

### Water Quality Issues

5. Water Court - mock court to settle water quality and quantity disputes (HS)

### Water Quality Indicators/Stream Sampling

6. Macroinvertebrate Mayhem (UE, MS)

### Water Quality and its effect on Human Health ~ Water-borne diseases

7. Super Sleuths - WI water borne diseases (MS, HS)

### Water Related Natural Disasters

8. Dust Bowls and Failed Levees - floods, droughts, water related events (HS)
9. Nature Rules! - WI water disasters (MS, HS)

### Water Use - Various Uses, Issues/Conflicts

(i.e., between user groups; government and citizenship issues)

10. Choices and Preferences, Water Index - rank the different uses of water (MS, HS))
11. Common Water - water is a shared resource - local simulation (MS)
12. Dilemma Derby - examine differing values in resolving water resource management dilemmas (MS, HS)
13. Hot Water - WI water issues to debate (HS)
14. Water Works - different WI water users (UE, MS)
15. Whose Problem Is it? - investigate local water issues (MS, HS)

### Water Rights

16. Pass the Jug - simulate water rights policies with a “jug” of water (MS)

### Nonpoint Source Pollution, Management and Protection Strategies

(i.e., Best Management Practices (BMPs))

17. Sum of the Parts - assign roles specific to WI issues and non-point source pollution sources (UE, MS)

### Water Resources Careers

18. WET-Work Shuffle - careers in water resources (UE, MS, HS)

## APPENDIX F

### **Making Project WET More Relevant to Wisconsin Students: Your Modified Activity in the Project WET-Wisconsin *Water Resources Information Guide***

The *Wisconsin Water Resources Information Guide for Educators (Guide)* will be used as a supplement to the Project WET Curriculum and Activity Guide. Currently in the developmental stages, this *Guide* will provide informational references to help teachers adapt the National Project WET curricula to Wisconsin specific water resources and issues. *The Guide* will be disseminated to workshop participants beginning in Spring, 1997.

Please let Ilene Grossman know if you are interested in having your modified WET activity printed in the *Guide* (with your name listed as the "modifier"). If your activity is selected to be printed, Ilene would like to briefly interview you (by phone) about the process you went through to "Wisconsinize" the activity and what suggestions you might offer other teachers planning to do their own activity modifications. Contact Ilene, either in person or by phone (715/346-3366), if you have any questions and/or want more details about this process.

**!!!THANKS!!!**

## **APPENDIX G**

Confirmation Letter and Phone interview Questions Sent to Teachers to be Interviewed



COLLEGE OF NATURAL RESOURCES  
UNIVERSITY OF WISCONSIN-STEVENS POINT, STEVENS POINT, WI 54481 • 715/346-2116



September 18, 1996

Dear ,

Thank you for agreeing to be interviewed for this research project! Your input and insights are invaluable to help insure the quality of this water education resource guide.

Attached you will find the questions I will ask you on *Thursday, September 26th from 8:00 pm - 8:30 pm* about your experience 'Wisconsinizing' a Project WET activity. The purpose of this interview is to help develop Section Three of the *Guide* by providing your insight, experiences, and suggestions to other educators interested in adapting Project WET activities to their region. Please give me a call at work (715) 346-3366 or at home (715) 345-7153 if you have any questions regarding this request.

With your permission, I would like to record the interview in order to insure that all of your input has been received (I'll ask for your permission at the beginning of the interview). Again, thank you for agreeing to be interviewed. Your help is greatly appreciated!

I hope the school year is starting off very well for you, Karen! Good Luck!

Take Care,

Ilene Grossman  
Project WET Assistant Coordinator

enclosure



## **Phone Interview Questions for Teachers who have Wisconsinized Project WET Activities**

1. Why did you choose this particular activity to Wisconsinize?
2. What steps did you take to localize the activity?
3. Based on your experience of localizing this activity, what procedures would you suggest to other educators planning to adapt an activity to their area?
4. What advice would you offer educators to assist them in avoiding potential obstacles throughout the activity modification process?
5. What additional information would you add to your activity if you were to revise it?
6. What other resources (not previously mentioned) would you suggest educators use when Wisconsinizing activities?

### **Yes/No Questions**

1. Was it useful for you to Wisconsinize this activity?
2. Do you plan to use this activity with your students?
3. Do you think it would be useful for other educators to Wisconsinize Project WET activities?
4. Can I use the activity in a WET workshop as well as in the *Guide*?
5. Could you give me a copy of the activity on disk in order to include it in the *Guide*?

## APPENDIX H

Letter and Draft *Wisconsin Supplement* Evaluation Form Sent to  
Validity Panel Members to Review



COLLEGE OF NATURAL RESOURCES  
UNIVERSITY OF WISCONSIN-STEVENS POINT, STEVENS POINT, WI 54481 • 715/346-2116



December 24, 1996

Dear Project WET Advisory Committee Member,

I am requesting your assistance once again in the development of my graduate research project to develop a *Wisconsin Supplement* to Project WET. I would like you to assume your role again as a "validity panel" member in order to review an evaluation form. This form will be used by educators to evaluate the newly developed Draft *Wisconsin Supplement (Supplement)*.

In the next two months, there will be three teacher education workshops designed to use and evaluate this educational tool. Teachers will complete this evaluation both at the end of the workshop, then one month after they've had a chance to use the *Supplement* in their classroom (the second evaluation will be slightly different). After the revisions have been made, the *Supplement* will be introduced to our new facilitators at the spring training, and finally copies will be distributed by those facilitators to educators through workshops. At the beginning of February, you too will receive a draft copy to evaluate. Please let me know if you would rather not review the draft.

As a reminder, the goal of this *Supplement* is to assist Wisconsin educators in adapting Project WET activities to Wisconsin's unique water resources and related issues in order to make the curriculum more relevant to their students. I have included an overview of the project.

Enclosed you will find the evaluation form for your review and comments. These questions have been developed through discussions with graduate committee members and literature review. The focus of the evaluation is to identify ways to improve the quality of the *Wisconsin Supplement*. Please analyze the questions for clarity and ability to draw out the intended responses. Provide comments on the evaluation form and **return in the enclosed envelope**. Please consider the following questions while reviewing the evaluation:

1. *Are the questions clear?*
2. *Will the questions solicit the kind of information needed to assist in revising the Supplement?*
2. *What is missing?*
3. *What should not be included?*

I know you are extremely busy, but any and all feedback you can provide would be greatly appreciated. I hope you will take the time to respond to this request. It will truly make a difference in the quality of the *Supplement*. Please send your comments to me by **Friday, January 15th**. If you have any questions about this request or the project please call me at work (715) 346-3366, or at home (715) 345-7153. Thank you for your time and help. Happy New Year!

With warm holiday wishes,

Ilene Grossman

Project WET Assistant Coordinator

# Project WET-Wisconsin *Draft Supplement*

## ~Evaluation Form~

We would like your feedback on the draft Project WET-Wisconsin supplement used during this Project WET workshop. Please answer the following questions and mail the form in the enclosed prepaid envelope to Project WET-Wisconsin, UWEX-CNR, Stevens Point, WI 54481. If you have any questions, please call 715/346-3366. Thanks for your help!

Name (optional) \_\_\_\_\_

Organization/School \_\_\_\_\_

Position \_\_\_\_\_

Number of years teaching experience \_\_\_\_\_

School/Center                       Urban                       Rural                       Suburban

### Overall Supplement

Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The Wisconsin Supplement will be useful to me.	1	2	3	4	5
2. The format is easy to use.	1	2	3	4	5

Comments \_\_\_\_\_

3. The supplement will assist me in making the WET activities more relevant to my students.                      1                      2                      3                      4                      5

4. I plan to use the *Supplement* to adapt WET activities to Wisconsin or my region.                      1                      2                      3                      4                      5

5. The Supplement will be useful to other Wisconsin teachers.                      1                      2                      3                      4                      5

6. What additional information would you like to see included in the Supplement? \_\_\_\_\_

\_\_\_\_\_

Comments \_\_\_\_\_

**Section One** (Wisconsin water resources information, materials, and organizations to contact for information, speakers, and field trips)

Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. There is an adequate amount of resources and organizations recommended.	1	2	3	4	5

Comments \_\_\_\_\_

2. The format is easy to use.	1	2	3	4	5
-------------------------------	---	---	---	---	---

Comments \_\_\_\_\_

3. What additional information would you like to see included? \_\_\_\_\_

**Section Two** (Each Project WET activity is listed with recommended Wisconsin resources for each ~ cross-referenced with Section One items)

Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. There is an adequate amount of recommended resources for each activity.	1	2	3	4	5

Comments \_\_\_\_\_

2. The format is easy to use.	1	2	3	4	5
-------------------------------	---	---	---	---	---

Comments \_\_\_\_\_

**Section Three** (Suggestions from Wisconsin teachers for how to adapt national Project WET activities to local area)

Questions	Strongly		Neutral	Strongly	
	Agree	Agree		Disagree	Disagree
1. The recommendations in this section will be helpful to me when I adapt WET activities to Wisconsin or my region.	1	2	3	4	5
2. There is enough information provided for me to feel better prepared to localize a WET activity.	1	2	3	4	5
3. The format is easy to use.	1	2	3	4	5
4. What additional information would you like to see included?					

**Section Four** (Examples of activities adapted to Wisconsin)

Questions	Strongly		Neutral	Strongly	
	Agree	Agree		Disagree	Disagree
1. The activity supplements were useful.					
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5
2. The format was easy to follow.					
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5
3. There is enough background information in the supplement specific to Wisconsin.					
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5

Questions	Strongly			Strongly	
	Agree	Agree	Neutral	Disagree	Disagree

4. These supplements will help make the Project WET activities more relevant to my students.

Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5

5. I plan to use these supplements and WET activities with my students.

Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5

6. These supplements will be useful to other Wisconsin teachers.

Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5
Common Water	1	2	3	4	5
Color Me a Watershed	1	2	3	4	5

7. What additional information would you like to see included?

---



---



---

Dilemma Derby \_\_\_\_\_

\_\_\_\_\_

The Pucker Effect \_\_\_\_\_

\_\_\_\_\_

Sum of the Parts \_\_\_\_\_

\_\_\_\_\_

Water Address \_\_\_\_\_  
\_\_\_\_\_

8. What specific comments do you have regarding each of the activity supplements?

Dilemma Derby \_\_\_\_\_  
\_\_\_\_\_

The Pucker Effect \_\_\_\_\_  
\_\_\_\_\_

Sum of the Parts \_\_\_\_\_  
\_\_\_\_\_

Water Address \_\_\_\_\_  
\_\_\_\_\_

*Thanks for your time and help!*



**APPENDIX I**

**Objective One Literature Review Documents**

## APPENDIX I

### Objective One Literature Review Documents

#### *Educational Inventory of Water Related Subject Needs*

A 1994 teacher survey conducted by the UW-Extension Environmental Resources Center asked K-12 teachers what their education needs were concerning water quality. The survey was sent in May 1993 to 900 Wisconsin teachers who are designated environmental education liaisons in schools throughout the state. The responses were weighed and means derived. The water quality subjects with a mean greater than one (no need=0, some need=1, great need=2) and a response number greater than five were included in the topics list (these are the same results published in the "Water Education Inventory Summary"). Responses were presented in the summary of compiled data from the 181 responses from teachers of the following grade categories:

K-2 = 31 respondents  
3-5 = 45 respondents  
6-8 = 49 respondents  
9-10 = 29 respondents  
11-12 = 27 respondents

There was an extensive list of topics for which teachers felt they needed more information. The results separated teachers who have taught the subject and those who have not. For the purposes of this study, both sets of responses were used to create the list of water education topics of greatest concern. Figure 4.4 lists the topics of concern derived from the three documents. The teachers' listed priority needs are denoted by "Ed." and include their grade level and the mean of their extent of need for that water education topic.

#### *DNR "State of the Waters: Report to Congress, Executive Summary 1994"*

This report is a DNR bi-annual report to Congress as required by the Clean Water Act, Section 505 (b). The document highlights the areas of special concern for

DNR's water management, protection, and education efforts. A priority list was condensed from the following sections of the document: "Special Concerns," "Surface Water Assessment," "Water Quality Management," and "Water Pollution Control." Each of these sections had sub-sections where specific topics were discussed in more detail including: Storm Water Management, Pollution Prevention, Nonpoint Source Control, Groundwater, and more. These highlighted topics were added to the list of "Water Quality Education Topics and Major Subtopics" being used as a framework for this study. Refer to Figure 4.4 for DNR's priority water quality topics.

***"Addressing Water Resources Education Needs in Wisconsin"***

This is the final report of the UW-Extension Cooperative Extension (UWEX-CE) Water Issues Team completed in 1990. The purpose of this team was to assess the UWEX-CE's programming needs in water resources and to make recommendations to improve UWEX-CE's ability to address "emerging" water issues. This team came up with the important water and water-related topics and issue for Extension Educational Programming (see Figure 4.2). Figure 4.4 also includes these topics combined with the DNR and teacher survey topics.

**UW-Extension Cooperative Extension Water Issues Team  
Priority Water Education Topics**

Groundwater Education  
Surface Water (Quantity and Quality) Education  
    Inland Lakes and the Great Lakes  
    Rivers and Streams  
    Wetlands  
    Fish and Wildlife  
    Shorelands  
Water-Related Land Management Education  
    Agriculture  
    Urban and Rural Development  
    Solid Waste Management  
Water-Related Education Pertinent to Human Well-Being  
Ecosystem Education

## **APPENDIX J**

**Water Quality Education Topics and Major Subtopics Chosen by DNR, UWEX, and  
Selected Wisconsin Teachers/Cross-Referenced with the Project WET Curriculum  
Framework**

**Water Quality Education Topics and Major Subtopics Chosen by DNR,  
UWEX, and Selected Wisconsin Teachers/Cross-Referenced with the Project  
WET Curriculum Framework  
~Responses from Advisory Committee~**

These priority topics were identified as a result of reviewing the following documents according to the "Water Quality Education Topics and Major Subtopics" framework compiled by Andrews, et al.(1995), then categorized according to the Project WET Curriculum Conceptual Framework:

- DNR - "State of the Waters: Report to Congress, Executive Summary 1994"
- UWEX - "Addressing Water Resources Education Needs in Wisconsin", 1990
- Teachers - "Educational Inventory of Water Related Subject Needs" - a Wisconsin Teacher Survey of 181 K-12 Teachers, 1993

The **bolded** statements are the themes from the Project WET Curriculum Framework. I would appreciate your comments about this list of topics to include in the reference section of the *Guide*. Please consider the following questions while reviewing this list, respond in the space provided on the following page, and return in the enclosed envelope.

1. *In your opinion, does this list adequately cover priority water education topics for Wisconsin?* Yes  No
2. *What is missing?*
3. *What should not be included?*

**\*All advisory committee responses are in *italics*, potential interviewees are in bold**

**Water has unique physical and chemical characteristics**

- Properties
- Geology/hydrology dynamics (*geologic/hydrologic*) - Beth Holl, DNR - Water Res. Info. Specialist
- Groundwater ~ Chris Mechenich, UWEX

**Water Connects all Earth Systems**

- Types of water related ecosystems
  - wetlands Sterling Strathe
  - watersheds Robin Shepard, UWEX, Karl Hakanson, UWEX, Watershed Ed., Narrows Creek/Little Baraboo River Prior. Wtrshd. Project 608/355-3258, Nancy Paul, UWEX Wtrshd. Ed., Beaver Dam Wtrshed. Proj., 414/386-3556 or 414/386-
  - riparian (*not an ecosystem per se*)

3660

Additions

- \_\_\_ *great lakes\*\*\** Jim lubner, UW Sea Grant/ Gregory Hill - Grt. Lakes Unit Supervisor
- \_\_\_ *groundwater\*\* (science of groundwater ecology)* Chris Mechenich, UWEX
- \_\_\_ *rivers/streams (combine) - add riparian* ~ Sara Johnson-River Alliance, DNR, Duane Schuettpelez - chief, surface waters and monitoring section
- \_\_\_ *ponds/lakes/Study of limnology*~ Libby McCann/Jo Temte, Bob Wakeman/Bob

Korth

- \_\_\_ *plants* \_\_\_\_\_ *humans*
- \_\_\_ *exotics (plant, animal)*

**Water is essential for all life to exist (Human)**

Drinking water supply: quantity and quality - Robert Baumeister, DNR, Public Water Supply Section - *ask him who to contact*

- \_\_\_ Delivery
- \_\_\_ treatment of drinking water
- \_\_\_ *infrastructure*
- \_\_\_ Lifestyle impacts/conservation
- \_\_\_ Source of drinking water
- \_\_\_ *Private water supplies* - William Rock - Chief, Private Water Supply Section
- \_\_\_ *drinking water diseases ( ex. crypto)*

*Waste Water Treatment Issues* - Jeff Steven - Madison Metro. Sewerage District, WI Water Federation, WI Water Ed. Group 608/222-1201, ext. 237; Vacancy (Bryson) Bureau of Wastewater Mgmt. Public Info. Officer -608/264-6262

Water quality: risk assessment & reduction - Paul Strom, Water Quality Unit Supervisor, DNR 608/266-9273, Lisa Kosmond DNR, Waster Quality Plan Coordinator; Ron Struss, UWEX, W. WI Area Water Quality Ed. 715/836-5513

- \_\_\_ Water Quality Concerns
- \_\_\_ Curriculum addresses the concept of how risk decisions are made (*low priority*)
- \_\_\_ Impact of water quality on human health, food and plant and animal communities
- \_\_\_ *Waste Water Treatment Issues (or here)*
- \_\_\_ Understanding and reducing risks for specific contaminants James Amrhein, DNR< Env. Toxicologist, Bureau of water resources management 608/266-5325
- \_\_\_ bacteria \_\_\_\_\_ sediments \_\_\_\_\_ *VOC's*
- \_\_\_ nitrates \_\_\_\_\_ salinity (*low priority*) \_\_\_\_\_ *metals (Hg, Pb)*
- \_\_\_ pesticides \_\_\_\_\_ other chemicals \_\_\_\_\_ *Radon/Radium*

\_\_\_ Water quality indicators (streambank surveys, abiotic and biotic) - Suzanne Wade UWEX, Area Water Quality Specialist; Pam Packer, WAV, DNR/UWEX 608/264-8948,

*Water Habitats and ecosystems balance* Sanford Engel, DNR, Aq. Community Ecologist 715/358-9210,  
Paul Garrison, DNR - Aquatic Ecologist 608/221-6365

- |                                 |  |
|---------------------------------|--|
| ___ <i>Biodiversity</i>         | ___ <i>Littoral Zone</i>                               |
| ___ <i>Ecosystem</i>            | ___ <i>Shorelines &amp; Riparian Zone</i> Gary Gyland, |
|                                 | Coastal Zone Mgmt.                                     |
| ___ <i>Pools, Riffles, Runs</i> | ___ <i>Water landscape</i>                             |

*Water Observation - WI specific*

- \_\_\_ *Aesthetics* Bob Korth ("aesthetics survey" results)
- \_\_\_ *Monitoring* Duane Schuettpelez, DNR, Chief Surface Waters Monitoring Section

**Water resources exist within social constructs**

Water use

- \_\_\_ Use of water by many groups; agriculture, commercial, domestic, industrial, municipal, power production, recreation, *aesthetic, religious, spiritual residential* - Menomonie, Ojibwa (Bob Korth recommend); Brian Gauthier, UWEX, CNRED, Lac Du Flambeau Tribe
- \_\_\_ Conservation by user groups
- \_\_\_ Issues/conflicts between user groups
- \_\_\_ *Public Trust Doctrine* - Mike Dresen, UWEX 346-2278
- \_\_\_ *Water law & rights of users (eg. navigation, riparian, etc.)* - Mike Dresen, UWEX
- \_\_\_ *Historical Uses* - Paul Wozniak, Fox River Ed. Project
- \_\_\_ *Transportation* - Jeff Janvrin, MI, DNR,

Government & citizenship issues Charles Ledin, DNR, Water Resources Planning and Policy  
Section 608/266-1956; Danielle Valvassori, DNR, Policy and Planning Unit  
Supervisor 608/266-9276

- \_\_\_ Policy issues, legislation, regulation, incentives/disincentives
- \_\_\_ Role of local government in developing protection strategies
- \_\_\_ Citizen involvement and participation (Taking Action)

**Water is a natural resource**

Sources of water pollution/contamination & Solutions

\_\_\_ *Land Use (development - construction, roads, etc., forest mgmt, ag. practices, residential practices)* - Mike Dresen, UWEX

\_\_\_ Point Source

- \_\_\_ agricultural
- \_\_\_ public and/or private wastewater (*does this include septic?*)
- \_\_\_ industrial and business hazardous wastes (*cut haz. wastes and include permits*), energy production wastes
- \_\_\_ *include residential homeowners* - Elaine Andrews
- \_\_\_ *water reclamation (ex. dam removal)*

\_\_\_ Nonpoint source (*need to break this topic down more*) - Carol Holden, DNR< Nonpoint Source Program, I&E Coordinator, Bureau of Water Resources, Keith Faye. LCD, Fred

Madison, Coop. Ext., James Kaap, Soil Conserve. Service, Susan Butler, USDA,; Robin Shepard UWEX, Thomas Lamm NPS Program UWEX 608/251-8072

- \_\_\_ atmospheric deposition
- \_\_\_ mining - Zoltan Grossman, Mining Impact Coalition, DNR -Bill Tans, DNR 608/266-3524; Metallic Mining and Reclamation 608/266-2050
- \_\_\_ agricultural - Steve Oberle, UWEX, Ag. Mgmt & water qual. educ., stevens point/whiting/plover wellhead prot. proj. 715/345-59790; Gary Jackson, prof. Farmstead Assessment Systems Proj. Dir. (NPS) 608/265-2773/Christine Javid, Newsletter editor for farmstead assessment project 608/262-1369
- \_\_\_ nutrient mgmt. Roger Swanson, Soil and Water Spec., UW-River Falls 715/425-3851
- \_\_\_ erosion control - Don last, UWEX 715/346-2386
- \_\_\_ crop production
- \_\_\_ farmstead pollution prevention
- \_\_\_ urban - Terry Donovan <DNR, Urban nonpoint Source Engineer 608/267-2340; Carolyn Johnson SE WI urban water quality ed. 414/475-2881; Dorothy Juengst, UWEX NE WI urban water qual. ed. 414/465-2240
- \_\_\_ *land use changes (ex. construction, roads, etc., forest mgmt.)*
- \_\_\_ *Pollution Prevention - Thomas Eggert, DNR, Dir. of Office of Poll. Prevention, Phillip Annis UWEX, Waste reduction and management specialist, Milwaukee 414/227-3371*
- \_\_\_ *Tragedy of the Commons/Water belongs to all in WI (resource held in common) UWEX*
- \_\_\_ *Include residential homeowners - Chris Weiland UWEX-ERC, Landowner Assessment Project, 608-262-3576*
- \_\_\_ *Intrinsic Value of Water*

**Water resources are managed (these should always be linked)**

Management & protection strategies for specific uses (*Solutions-protection, restoration, enhancement*) Peter Nowak, prof. UWEX-ERC, Soil and Water Mgmt. Specialist 608/262-8756

- \_\_\_ Agricultural Management practices
- \_\_\_ Wastewater treatment
- \_\_\_ Development *and diversion* issues/pressures
- \_\_\_ Solid waste management decisions (*low priority*)
- \_\_\_ Chemical spills and emergencies, chemical/fuel storage (*low priority*)
- \_\_\_ Wildlife habitat/land stewardship management
- \_\_\_ Zoning strategies Samuel Huffman, prof. River Falls, UWEX-ERC, 715/425-3851
- \_\_\_ wellhead/groundwater recharge areas (*low priority*)
- \_\_\_ *Exotic Species Control & Prevention\* ("Exotics - plant/animal")*
- \_\_\_ *Residential Management-- see above*
- \_\_\_ *Urban Runoff Management -- see urban above*
- \_\_\_ *Construction erosion Control*
- \_\_\_ *Sustainable Resource Management*
- \_\_\_ *Fisheries Management*
- \_\_\_ *Transportation*



Water-related careers - Vicki Anderson, UWEX, 4-H outreach Program Coord. 608/262-2491, Wayne  
Brabender, UWEX-4-H Learning Resources Coord. 608/262-1067

— Technical: \_\_\_\_\_  
— Professional: \_\_\_\_\_

Other more general topic interviewees

Theresa Stabo - DNR Aq. Ed. Specialist, FM - Fisheries?  
Al Stenstrup - I&E, DNR  
Elaine Andrews - UWEX-ERC

*Water Quality Education Topics and Subtopics* was developed by Elaine Andrews and Karen Poulin, University of Wisconsin  
Cooperative Extension, Environmental Resources Center, 1992.

## Review Questions for Chosen Topics

1. In your opinion, does this list adequately cover priority water education topics for  
Wisconsin? Yes x No xxxxxxxx

2. What is missing?

1. Habitat & Ecology - WI water provides vital habitat for plants and animals
2. Water Law - WI has a rich history of water law and its importance for students to understand their rights and the rights of others. It is important for students to know that water resources are held in trust (public Trust Doctrine) by the state for the public.
3. Pollution Prevention/Anti-Degradation of Ecosystems
4. Water Observation and Aesthetics
5. Sources and Solutions should always be linked to prevent finger pointing
6. Waters intrinsic value
7. Spiritual values associated with water
8. Role of water in transportation
9. Historical role of water, watersheds in WI
10. How water influences/ties together terrestrial systems
11. Be sure to reference the yearbook of agriculture on water - it still is an excellent resource
12. Include the residential homeowner who overfertilizes
13. May need to make certain topics or issues more specific - urban vs, ag. nonpoint source poll.
14. Exotics
15. Land Use ~ forestry/construction, etc.
16. Metals
17. Include curricula materials available for each topic

3. What should not be included?

## **APPENDIX K**

**Responses to Draft of Phone Interview Questions  
(for Review by WET Validity Panel Members)**

## APPENDIX K

### Responses to Draft of Phone Interview Questions (for Review by WET Validity Panel Members)

There will be approximately ten people interviewed by phone. These individuals will be chosen based on referrals from Wisconsin water education specialists as being key contacts for one or more of the priority water education topics (see attached list). The interviewees will be asked about specific topics based on their area of expertise. They will first be contacted by phone to briefly explain the research project and confirm an interview date and time. A response letter will be sent including a description of the project and the interview questions to help them prepare for the actual interview.

#### Comments

- *Is 10 enough?\**
- *How will you choose these folks? May end up with a narrow perspective of materials and resources or biased perspective*
- *Interviewer prompts to explain who I am and why I am interviewing them*
- *May consider the formal and nonformal materials separately*
- *Questions are rather open-ended for such a small group of respondents*
- *Need to narrow down list for this ?*
- *Some interviewees are experts in many of these topics*
- *maybe add a few, brief demographic quest. describing the interviewees (their point of view), ask them how they would like to be described*
- *Include how the respondents' time is appreciated and that the info. will be used to...*

1. Please suggest at least three Wisconsin <sup>1</sup>resource materials related to the topic (i.e. agricultural nonpoint source pollution) that you would recommend for educators (both <sup>2</sup>formal and non-formal) to use in developing and implementing water education programs with their students ?

- 1.
- 2.
- 3.

#### Comments

- *presenting not implementing*

---

<sup>1</sup> Resource Materials - Activity/Curriculum Guides, publications, fact sheets, speakers, audio visual materials, models/displays/trunks, videos, computer software, posters, field trip location contacts, etc.

<sup>2</sup> *formal* - K-12 teachers

*nonformal* - e.g. nature center educators, resource agency educators, museum educators, etc.

- *be familiar with the resources ahead of interviewing*
- *Make sure questions are appropriate for the audience, reword ? to be more audience and resource appropriate, ex. Which of WI's nonpoint source fact sheets would you recommend?, remove language like "Suggest at least 3 WI,..."*
- *What are the top 4-5...*
- *What materials/resources do you find are most useful for you in your work? (may be useful info. - good starting question*
- *Is (10 x 30) 30 materials enough to learn about?)*
- *Need to narrow down list for each interview and list resources by target audience, i.e. teachers, elem, ms, hs)*
- *Some interviewees are experts in many of these topics*
- *Suggestions will vary depending on teacher grade level (ex., excellent children's books on rivers/ponds - need to specify the kind of resource materials I'm after - at teacher level to adapt WET at heir level, or to enhance their presentations with kids, or both.*

2. Are there materials you would like to have available for this topic, but according to your knowledge are not presently available?

#### Comments

- *available for" developing and presenting water education programs but are not presently available*
- *"Are there educational materials that you would use or recommend for teaching about this topic, but according to you are not available?"*
- *What will you do with this info.?*
- *Be careful not to make judgments of gaps based on such a small group of interviewees*
- *Consider topic areas and audience gaps*
- *same topic as in #1?*
- *specific target audiences? (ex. Grt. Lakes - high school)*
- 

3. What are the top three statewide and local organizations you would recommend for educators to contact for information on this topic?

#### Statewide

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

#### Regional

- |    |    |
|----|----|
| 1. | 3. |
| 2. |    |

#### Comments

- *for information " when developing and presenting..."*
- *The statewide list will likely always include DNR, UWEX. Maybe ask for those other than these.*

- *local/regional - be consistent and define those terms\*\**
- *"local/regional" in question and response areas*
- *How diverse geographically are your phone calls?(Ques. 3,4,5)*
- *Will you cover all regions? (Ques. 3,4,5)*
- *What is a region? A watershed? (Ques. 3,4,5)*
- *What is the purpose of these? Specific indiv or org.? (Ques. 3,4,5)*
- *The more specific the topics the more useful the resource (Ques. 3,4,5)*

4. What three individuals or organizations would you recommend educators contact for field trip ideas and locations related to this topic?

**Comments**

- *be more specific about what kind of field trips (by field trip I mean ...for teachers?, students, name and # of org., etc.)*

5. Are there any other individuals or organizations you would recommend that I contact related to this topic area for further information regarding these questions?

**Comments**

- *...for this topic or any related info.*

**APPENDIX L**

Letter Sent to Organizations Included in the *Wisconsin Supplement*



COLLEGE OF NATURAL RESOURCES  
UNIVERSITY OF WISCONSIN-STEVENS POINT, STEVENS POINT, WI 54481 • 715/346-2116



March 3, 1997

Dear Water-related Organization,

We would like to include your organization in the *Wisconsin Supplement to National Project WET\*: A Water Resources Guide for Educators (Supplement)*. Enclosed you will find an excerpt from the *Wisconsin Supplement* with your organization's description (if it's blank, we need your organization's description). We are most concerned with the correct representation of your organization and what you it can offer Wisconsin educators (i.e. information, publications, videos, models, speakers, field trip leaders). Please check the address, phone/fax/email, and description of your program (individual contact names have been left out because of staff turnover). Add any other appropriate and concise information you feel should be included.

\*Project WET (Water Education for Teachers) is a national water education curriculum of activities designed to be used by classroom teachers and educators. Because Project WET is a national curriculum, the Wisconsin program decided to develop this state supplement to help teachers localize the activities and make them more relevant to their students. This *Supplement* has been developed with the input of over 70 water educators, classroom teachers, and water resource specialists from throughout Wisconsin. A draft of the *Supplement* is currently being reviewed by educators and water resource specialists. The final publication will be completed in April 1997.

Thank you for taking the time and interest to review the enclosed materials regarding your organization. Please make any changes directly on the copy that you have received and return this copy by **Friday, March 14th**. Your assistance will help make this a more thorough and accurate tool for teachers. If you have any questions or concerns, do not hesitate to call me at 715/346-3366.

Thanks for your help!

Ilene Grossman  
Project WET Assistant Coordinator

**Please return comments by mail or fax to:**

Ilene Grossman  
Project WET, UW-Extension  
College of Natural Resources  
UW-Stevens Point  
Sevens Point, WI 54481  
Fax 715/346-4038

cc: Libby McCann, Adopt-A-Lake/Project WET Coordinator  
Dennis Yockers, Wisconsin Center for Environmental Education  
enclosure

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# National and International Organizations

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Numerous educational and informational materials about water resources are also available from sources located outside of Wisconsin. Here are several organizations to contact, the National Project WET Guide has an excellent source of references at the end of each activity.

## **Adopt-A-Stream Foundation**

P.O. Box 5558  
Everett, WA 98206  
206-388-3487

## **America's Clean Water Foundation**

750 First Street, N.E., Suite 911  
Washington, D.C. 20002 Phone: (202) 898-0902  
FAX: (202) 898-0929

## **American Rivers**

1025 Vermont Ave., NW  
Suite 720  
Washington, D.C. 20005  
202/347-9240  
FAX: 202/347-9240  
email: [amrivers@amrivers.org](mailto:amrivers@amrivers.org)  
<http://www.amrivers.org/amrivers/>

## **American Water Resources Association**

5410 Grosvenor Lane, Suite 220  
Bethesda, Maryland 20814-2192

## **Clean Water Action Project**

317 Pennsylvania Avenue, South East  
Washington, DC 20003  
202-457-1286

*\* Description Needed*

## **ERIC Clearinghouse for Science, Mathematics and Environmental Education**

1200 Chambers Road, Third Floor  
Columbus, Ohio 43212

## **Eisenhower National Clearinghouse for Science**

## **Jason Project**

UW-Milwaukee  
414/227-3365

- International satellite communications program focused on different water ecosystems and water quality monitoring



**APPENDIX M**

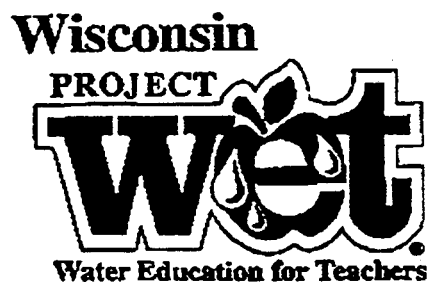
**Wisconsin Supplement Evaluation Form**

***Project WET-Wisconsin Supplement to National Project  
WET: A Water Resources Guide for Educators (Draft)  
~Evaluation Form~***

We would like your feedback on the draft *Project WET-Wisconsin Supplement: A Water Resources Guide for Educators (Wisconsin WET Supplement)* used during this Project WET workshop.

**Directions:** Please respond to the questions on the following pages as thoroughly as possible. Some of these questions will ask you to make judgments of the *Wisconsin WET Supplement*; please state your opinions based on your experiences during this workshop.

Thank you in advance for your time and effort on behalf of this project! As educators, your input will greatly improve the effectiveness of this teaching tool.



**Project WET-Wisconsin Supplement to National Project WET:  
A Water Resources Guide for Educators (Draft)  
~Evaluation Form~**

Name \_\_\_\_\_

Organization/School \_\_\_\_\_

Position \_\_\_\_\_ Grade Level(s) of instruction \_\_\_\_\_

Number of years teaching experience \_\_\_\_\_

School/Center                       Urban                       Rural                       Suburban

Why did you choose to attend this workshop? \_\_\_\_\_

What specific goals do you have as a result of this workshop? \_\_\_\_\_

**Overall Supplement** This portion of the evaluation refers to your impressions of the *Wisconsin WET Supplement* as a whole. In this section, please indicate how strongly you agree or disagree with the following statements and add comments in the spaces provided (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The <i>Wisconsin WET Supplement</i> will be valuable to me.	1	2	3	4	5
2. The format of the <i>Wisconsin WET Supplement</i> is easy to follow (i.e. layout, readability, referencing).	1	2	3	4	5

Comments \_\_\_\_\_

3. Using the <i>Wisconsin WET Supplement</i> to localize Project WET activities will make those activities more relevant to my students.	1	2	3	4	5
--	---	---	---	---	---

[See Next Page]

Questions (continued)	Strongly				Strongly
	Disagree	Disagree	Neutral	Agree	Agree
4. I plan to use the <i>Wisconsin WET Supplement</i> to adapt WET activities to Wisconsin or my region.	1	2	3	4	5
5. The <i>Wisconsin WET Supplement</i> will be valuable to me when I adapt Project WET activities to Wisconsin or my region.	1	2	3	4	5
6. The <i>Wisconsin WET Supplement</i> will be useful to other Wisconsin teachers.	1	2	3	4	5
7. What information would you like to see included or deleted in the <i>Wisconsin WET Supplement</i> ?					

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Comments \_\_\_\_\_

---

**I. Resources** The "Resources" portion of the *Wisconsin WET Supplement* contains Wisconsin water resources information, materials, and organizations to contact for information, speakers, and field trips. In the following section, please indicate how strongly you agree or disagree with the following statements and add comments in the spaces provided (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

Questions	Strongly				Strongly
	Disagree	Disagree	Neutral	Agree	Agree
1 The resources included are going to be valuable to me when I adapt Project WET activities to Wisconsin or my region.	1	2	3	4	5

Comments \_\_\_\_\_

---

2. There is an adequate amount of resources and organizations recommended.	1	2	3	4	5
--	---	---	---	---	---

Comments \_\_\_\_\_

---

Questions (continued)	Strongly	Disagree	Neutral	Agree	Strongly
	Disagree				Agree
3. I plan to use one or more of the resources in this section.	1	2	3	4	5

Comments \_\_\_\_\_  
 \_\_\_\_\_

3. The format is easy to follow (i.e. layout, readability, referencing)	1	2	3	4	5
---	---	---	---	---	---

Comments \_\_\_\_\_  
 \_\_\_\_\_

4. What information would you like to see included or deleted? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**II. Organizations** (The "Organizations" portion of the *Wisconsin WET Supplement* contains Wisconsin water resources information, materials, and organizations to contact for information, speakers, and field trips. In the following section, please indicate how strongly you agree or disagree with the following statements and add comments in the spaces provided (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

Questions	Strongly	Disagree	Neutral	Agree	Strongly
	Disagree				Agree
1. There is an adequate amount of organizations recommended.	1	2	3	4	5

Comments \_\_\_\_\_  
 \_\_\_\_\_

2. The organizations included are going to be valuable to me when I adapt Project WET activities to Wisconsin or my region.	1	2	3	4	5
---	---	---	---	---	---

Comments \_\_\_\_\_  
 \_\_\_\_\_

3. The format is easy to follow (i.e. layout, readability, referencing)	1	2	3	4	5
---	---	---	---	---	---

Comments \_\_\_\_\_  
 \_\_\_\_\_

4. What information would you like to see included or deleted in this section? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**III. WET Activities with Wisconsin Resources** (Each Project WET activity is listed with recommended Wisconsin resources for each ~ cross-referenced with Section One items)  
 In the following section, please indicate how strongly you agree or disagree with the following statements (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) and add comments in the space provided.

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. There is an adequate amount of recommended resources for each activity.	1	2	3	4	5
Comments _____					
_____					
_____					

2. The format is easy to follow (i.e. layout, readability, referencing)	1	2	3	4	5
Comments _____					
_____					
_____					

3. What information would you like to see included or deleted in this section? \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**IV. Tips for Localizing Project WET Activities** (Suggestions from Wisconsin teachers for how to adapt national Project WET activities to your local area)

In the following section, please indicate how strongly you agree or disagree with the following statements (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree) and add comments in the space provided.

Questions	Strongly			Strongly	
	Disagree	Disagree	Neutral	Agree	Agree
1. The recommendations in this section will be helpful to me when I adapt WET activities to Wisconsin or my region.	1	2	3	4	5
2. There is an adequate amount of information provided for me to feel better prepared to localize a WET activity.	1	2	3	4	5
3. The format is easy to follow (i.e. layout, readability, referencing)	1	2	3	4	5
4. What information would you like to see included or deleted in this section?					

**V. Wisconsinized Project WET Activities** The "Wisconsinized Project WET Activities" portion of the *Wisconsin WET Supplement* contains examples of six activities adapted to Wisconsin and/or regions of Wisconsin. In the following section, please indicate how strongly you agree or disagree with the following statements and add comments in the spaces provided (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree).

Questions	Strongly			Strongly	
	Disagree	Disagree	Neutral	Agree	Agree
1. It is valuable to me to have the Wisconsinized Project WET activities ready for use:					
Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

Comments \_\_\_\_\_

Questions (continued)	Strongly				Strongly
	Disagree	Disagree	Neutral	Agree	Agree
<b>2. The format of the six Wisconsinized Project WET activities is easy to follow (i.e. layout, readability):</b>					
Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

Comments \_\_\_\_\_

<b>3. There is enough background information in the Wisconsinized Project WET activities:</b>					
Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

Comments \_\_\_\_\_

<b>4. Using the following Wisconsinized Project WET activity supplements will help make those activities more relevant to my students:</b>					
Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

Comments \_\_\_\_\_

<b>5. I plan to use these Wisconsinized Project WET activities with my students:</b>					
Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

Comments \_\_\_\_\_

[See Next Page]

6



Questions (continued)	Strongly				Strongly
	Disagree	Disagree	Neutral	Agree	Agree

6. These Wisconsinized Project WET activities will be useful to other Wisconsin teachers:

Color Me a Watershed	1	2	3	4	5
Common Water	1	2	3	4	5
Dilemma Derby	1	2	3	4	5
The Pucker Effect	1	2	3	4	5
Sum of the Parts	1	2	3	4	5
Water Address	1	2	3	4	5

7. What specific comments do you have regarding each of the Wisconsinized Project WET Activities?

Color Me a Watershed: \_\_\_\_\_

\_\_\_\_\_

Common Water: \_\_\_\_\_

\_\_\_\_\_

Dilemma Derby: \_\_\_\_\_

\_\_\_\_\_

The Pucker Effect: \_\_\_\_\_

\_\_\_\_\_

Sum of the Parts: \_\_\_\_\_

\_\_\_\_\_

Water Address: \_\_\_\_\_

\_\_\_\_\_

8. What information would you like added or deleted to this section of the Wisconsin WET Supplement?

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*Thanks for your time and help!*

*Your input is invaluable in making this Wisconsin WET Supplement as useful to educators as possible!*

**APPENDIX N**

Letter Sent to Validity Panel Members Requesting their Review of the  
Draft Wisconsin Supplement



February 17, 1997

Dear Project WET Advisory Committee Member,

I promise that this is the last time I'll be coming to you on my hands and knees for your assistance with this project. Actually, this may be the most crucial time for your input in the development of a state supplement to Project WET .

Enclosed is the draft *Wisconsin Supplement to Project WET: A Water Resources Guide for Educators (Supplement)* and an evaluation form. Please complete the evaluation based on the quality of the draft *Supplement*. You will find some gaps in the information provided such as addresses and organization descriptions (those will be completed for the final *Supplement*). Please complete the evaluation form and write any comments directly on the draft *Supplement* and return them both in the enclosed stamped envelope.

I hope you will take the time to review the *Supplement*. It will truly make a difference in the quality of this new educational tool. Please send your comments to me by **Friday, March 14th**. If you have any questions about this request or the project please call me at work (715) 346-3366, or at home (715) 345-7153. Thank you for your assistance.

With warm winter wishes,

Ilene Grossman  
Project WET Assistant Coordinator

cc: Libby McCann  
Dennis Yockers

enclosures

**APPENDIX O**

Draft *Wisconsin Supplement Qualitative* Evaluation Form Responses

## APPENDIX O

### Draft *Wisconsin Supplement Qualitative Evaluation Form Responses*

The comments are separated by whether they are positive (+) or negative (-) or whether the responses should be added (Add) or deleted (Delete) in reference to the statement. The evaluation form statements are not listed in full but are represented by the key word or phrase of focus.

#### Entire Draft *Wisconsin Supplement*

##### General

- 
- Needed more time to evaluate
  - We needed a lot more time to look through the supplement and evaluate it. Also, by the end of the day we are so “brain-dead” from all the good information that it is very hard to concentrate on these questions.
  - I don’t feel familiar with it enough yet to evaluate it
  - Need more time to experiment with the Supplement! Need time to look over this supplement!
  - Haven’t used it enough to know yet
  - I really am not knowledgeable about these resources. I wouldn’t know what’s missing!
  - You may know you have lots of “cleanup” of typos, etc. yet to do
  - Please see my comments/suggestions/questions scattered throughout the Guide.

##### +

- Good idea
- User-friendly
- Fantastic job of compiling and organizing the information
- You thought of everything to include, i.e. field trips and libraries
- Very user-friendly!
- Congratulations! This is a great piece of work and with a little cleanup will be a valuable resource!
- This looks absolutely terrific! (See page for comments) p.17, p.23, p.46, p.48, pg. 166
- Very impressed with the Internet connections

##### Add or Delete Information

- None at this time
- Too soon to tell
- I cannot say at this time. I haven’t had the opportunity yet to go through the supplement.
- I would use it as a resource - it will take much longer (2 years) to see what is useful and what is not - it’s too new for me
- ? (this was in every section with this question)

### **Add**

- More examples/maps for use in the classroom ( I realize the places to go/find them are listed...)
- More web site addresses
- Cross-reference the planning charts from the WET manual to the WI supplement (i.e. methods, tie, etc.)
- The cross-reference and planning charts placed into the Wisconsin WET Supplement
- Listing of lakes affected by acid rain and ranking them by acidity level
- Internet sites of projects schools could become involved with
- Relevant email addresses/home sites as you find them
- Trade books to relate to WET activities
- Nature or environmental centers
- Just continue on and add when new resources arise
- I made some comments on specific factual information - please let me know if you need details/clarification

### **Delete**

- There is some duplication in different parts. Several names/addresses are listed in several areas. More Wisconsin adaptations of activities would be helpful - especially Great Lakes.

### **Format**

+

- The way it is broken down in sections is helpful
- Great idea!
- Gives water education materials in one spot. The Wisconsin adaptations are important.

—

- Index for each blue section
- Index is confusing / what order is it
- What's Inside page - alphabetize topics
- Changing fonts for the headline (maybe add color) would increase ease of use
- Add individual indexes
- Index to locate information as well as table of contents
- Some of the diagrams are difficult to read - the typing is too small and runs together.

## **Resources**

### **Valuable**

- I always try to order any suggested materials especially if free or low cost
- Value will depend on these people's willingness to help with my needs
- Won't know until I try the Supplement
- User-friendly - allows for specific or general news of activities
- Very excellent Resources list. Very thorough and complete.

- Certainly valuable for adaptations, but I'll also use as a general resource for answers to inquiries from teachers.

### **Adequate Amount of Resources and Organizations Recommended**

- Nicely done, like the blue dividers
- Computerized/CD ROM very useful
- There are a lot of resources listed
- Great categories, very thorough
- This is a real wealth of information - lots of good suggestions.

### **Format**

- I can't tell yet
- I am not yet familiar with it. I need more time to look at it.

+

- many good topics

—

- Some difficulties - nothing serious.. (style only)
- Readability is a little difficult on some pages as mentioned previously
- Maybe make the headings stand out more from subheadings (ex. Management and protection strategies)
- There is so much information - some pages harder to read than others
- Having the topical sections is a good idea, but the listings under the larger categories seem somewhat chaotic as to arrangement. Perhaps they should all be alphabetical or arranged in some other consistent way. Also make punctuation consistent throughout listings.

### **Plan to Use**

- Probably will, it's hard to say without ample time look through it
- (Plan to use) to organize field trips using the contacts listed
- Optimistically, yes
- Already aware of many - will use to organize the myriad of publications, etc.
- Field trip ideas and contacts for resource people
- The ones involving testing for water quality

### **Add or Delete Information**

- Don't know yet
- It's great as it is

### **Add**

- People/organizations willing to speak to schools/classes on environmental issues - low cost??
- Does US Forest Service have info? Have you seen wetland box? They have great GIS equip. As does GLIFWC. How about Native Americans tie to water? Any resources
- Trade books - great interest catchers with young students

- Years on videos
- DPI, Agriculture. Education - Dean Gagnon

## **Organizations**

### **Adequate Amount of Organizations**

+

- Valuable
- Good supply of organizations. Will help to find materials
- Excellent reference tool for various organizations
- Again, a wealth of valuable information

—

- Add index
- Especially the web sites - more?
- Some contacts need an overview of their role within the water resources

### **Valuable**

- I hope to contact people to come to any classroom and speak to my students

### **Format**

+

- This area OK
- I like the agency and activity columns. It's very helpful in identifying specific organizations.

—

- There is some inevitable duplication, but generally well done. See comments in guide.
- Most resource guides start with national-state-regions-local. I like watershed approach.
- I got somewhat confused when the section p. 112-119 was gone through. P. 63 the "To order documents" section needs some how to be highlighted. It's a different kind of info.

### **Add or Delete Information**

- Don't know yet
- It is so complete. Great.

### **Add**

- Please include Lac Lawrann Conservancy in the *Organizations* section and other centers (schools) which localize materials so we can share not duplicate researched materials
- What about UW Trout Lake Limnology Center? 356-9494, Tom Frost
- List of lake associations



## WET Activities with Wisconsin Resources

### General

+

- Like the index
- Rather easy to “transport” from WET guide on our own
- Nice variety

—

- Don’t know - not enough time to look at it
- Its probably just me, but I didn’t understand the teaching strategies part. Other parts very easy to follow

### Adequate Amount of Recommended Resources for Each Activity

- Will know better as I read through the Guide
- With some early exceptions, most activities had at least some suggestions. I think this will be very helpful to teachers looking to add a local element.
- For some yes. Time is needed to discover resources for some activities.

### Format

+

- This is easier to follow
- I like the way its been formatted for Wisconsin
- Page # - refer to WET Guide. Nice job on brief overview of each.

—

- How will they find what is listed. Need an easy way to reference.

### Add or Delete Information

- Trade books - recommendations
- Where in the front of the book you can locate addresses.

## Teacher Suggestions

### General

- Great idea
- I like this section - good ideas that work

### Valuable

- Most should be common sense

### Add or Delete Information

- Don’t now yet
- Possible suggestions about inclusion and infusion
- Not much new here. Could be removed.

## Activities

### General

- I didn't review these in detail - mainly just noted that they were there.

+

- (It is valuable) - very much so!
- They were useful
- Would like to see more adapted
- "Generic" enough to use (in a positive way)
- All would be fun and effective at getting across the point

—

- Spelling p. 154 - modifications
- Put activities on the computer!
- More activities for younger grades
- Include extension on all activities
- You may want to indicate what grade level that adaptation is useful with

### Valuable

+

- I like the idea of localizing activities and I think they become more personal if one develops them on their own (gave 2s)
- Most are more "local" than statewide, which would be easier for me to use
- All were good - would like more

—

- They still need to be adapted for my specific area
- Example of it was modified good, but not applicable to where I teach
- They are useful as examples but some of the regional ones won't be used other places in the state
- All were good - would like more

### Format

—

- Lots of text - needs to be broken down more!
- Some illustrations are unclear - they may not copy well. Not all follow same layout.

### Relevance

+

- High School level, especially
- Grade level adaptations may be

- 
- This ranking assumes that the activities will be further “localized” to meet specific group needs - the activities are good but not local enough for SE Wisconsin.

#### **Plan to Use**

- The other (activities) don't exactly fit into the class I envision (all but *Dilemma Derby* and *Sum of the Parts*) - I am the science and math departments
- Time will tell
- I will use the activities that apply.

#### **Enough Background Information**

- With help of Project WET book
- Teacher needs to get more if they don't know it. They can use resource list.

#### **Add or Delete Information**

- This is okay

#### **Add**

- Colored maps and diagrams
- Get as many quality activities out as possible, but make sure they are quality activities

#### ***Color Me A Watershed***

+

- Great
- Seeing the effects of urbanization on our environment
- Need to do this with Owen-Withee
- Great. Could use the map instead of aerial photo.
- Good one with the area
- Good local example
- I really liked this one especially if you can get old air photos, etc.
- Excellent easy to show how population growth has affected our environment
- Good idea - are we going to be able to get maps
- This is an excellent activity that is easy to modify to an area
- Like the extensions
- Nice math extensions
- Good extension activity

- 
- Would be better with easy to read maps
  - Need simpler maps for my level
  - Need maps
  - Like this activity but you need maps
  - Could you use stereoscope to give a 3D look at maps.

- Add grade level
- The Medford example provides a good guide for doing this in one's own watershed. Individual teachers will need to spend a fair amount of time doing so, however.

### *Common Water*

+

- Could be great!
- Seeing the effects of contamination over time was neat
- I really like this, I may use this
- Fun/liked it
- Fun. Very hands on
- Good concepts
- Good way to show how e all need to work together in taking care of our water
- Good representation of water use within a community
- Good for any aged student
- Good activity, a little messy, would need a tiled area or go outside
- Good idea come from it
- Kids will like the mess and activity - great for outdoors

—

- Wouldn't do this one until I read it over
- Use outside
- Would be a good demo but too messy for a classroom
- I would like to see this one done on a statewide basis. It's nice to have it for a county but requires a lot of work to do it for one's own area.
- Grade level

### *Dilemma Derby*

+

- Can easily be adapted to grade and area
- Nice upper grade
- Good for making value judgment
- Good for upper level
- Use this with lake groups and Loonwatch questions
- Very appropriate in this area with the Crandon Mining issue This activity is usable in a relatively wide area - northeastern Wisconsin, and some of the dilemmas are easily transferred.

—

- More pertinent dilemmas
- Difficulty recognizing the dilemmas, I question hoe the students in this area could (understand these dilemmas)
- Plan to use the activity, not the specific examples used
- I would change the dilemmas for lower elem. students

- Valuable lessons could come out of it (decision-making, values, significant concerns)
- Didn't care for this one
- Hard to understand
- Move to upper classes
- For older students
- Needs to be localized to be effective
- No background
- Needs grade level

### *The Pucker Effect*

+

- Kids would enjoy seeing the paper change/not change from contaminants
- Fantastic and I am looking forward to using this lesson
- Good way to show visible and invisible toxicants
- Good for all ages
- OK for elem. Ed. Student
- Can be used in certain areas of the state
- Designed more to high school
- OK - if groundwater model is too far away or too many students to work with
- Demonstration

—

- Change name
- Change the title, kids will go crazy
- Not sure
- The groundwater contamination map is impossible to read in black and white
- Unclear pictures
- This is a good follow-up to the WET activity, but it could use a bit more explanation on how to use the included materials
- Needs grade level

### *Sum of the Parts*

+

- I love this!
- Great activity to introduce types of water contaminants
- Can't wait to do this with the Popple River!
- Good lesson
- Like Great Lakes activity
- Wonderful
- Neat
- Good ideas will use it
- Could be integrated into math very easily
- Nice activity showing how everything affects a water source

- Very effectively crosses disciplines. Effect community cooperation project
- Nice activity, great potential
- Great activity my fav
- Great activity
- Works better for a lake rather than river. It is more impressive in a heavily populated area.

- 
- Would take a long time because of preliminary information
  - This is a good activity for Lake Michigan area teachers, but needs some modification (see my comments in Guide).
  - Needs grade level

### *Water Address*

+

- Great activity
- Loved this one, can adapt to many things
- Fun!
- Best one/fun - possible do in lower elementary
- Great. My children could learn the animals of WI rather than dinosaurs
- Good activity
- Can be integrated into my classes
- Excellent cooperative learning group activity
- Good for students to learn about wildlife
- A lot of work on those cards
- I intend to use this to identify WI mammals (adapt)
- Liked 2 levels of question cards (for elem. And secondary schools)
- Neat game - good change of pace activity
- Good activity
- For biodiversity and habitats in general
- Very adaptable to student level
- This activity has, in my opinion, the most general appeal along with showing how it can be further 'regionalized' (Mississippi River).

- 
- Fun activity that could be used in a variety of ways. I would change the clues to make them easier for my lower elementary students.
  - Fun but needs to be adapted to be a little easier
  - Might not be too useful with younger children unless the clues are better (1st)
  - Needs grade level

**APPENDIX P**

Draft *Wisconsin Supplement* Quantitative Evaluation Form Responses

APPENDIX P

*Wisconsin Supplement*  
**Quantitative Evaluation Form Responses**

Statements with a mean below 4.0 are shaded

Likert Scale Statement & <i>Wisconsin Supplement</i> Section	Mean (scale of 1-5) N=37 1 = strongly disagree    4 = agree 2 = disagree                5 = strongly agree 3 = neutral
<b>Overall Supplement</b>	
The <i>Wisconsin WET Supplement</i> will be valuable to me.	4.22
The format of the <i>Wisconsin WET Supplement</i> is easy to follow (i.e. layout, readability, referencing).	4.18
Using the <i>Wisconsin WET Supplement</i> to localize Project WET activities will make those activities more relevant to my students.	4.5
I plan to use the <i>Wisconsin WET Supplement</i> to adapt activities to Wisconsin or my region	4.18
The Wisconsin WET Supplement will valuable to me when I adapt Project WET activities to Wisconsin or my region.	4.23
The <i>Wisconsin WET Supplement</i> will be useful to other Wisconsin teachers.	4.41
<b>Resources</b>	
The resources included are going to be valuable to me when I adapt Project WET activities to Wisconsin or my region.	4.26
There is an adequate amount of resources and organizations recommended.	4.47
I plan to use one or more of the resources in this section.	4.03
The format is easy to follow (i.e. layout, readability, referencing)	4.09
<b>Organizations</b>	
There is an adequate amount of organizations recommended.	4.39
The organizations included are going to be valuable to me when I adapt Project WET activities to Wisconsin or my region.	4.09
The format is easy to follow (i.e. layout, readability, referencing)	4.16
<b>WET Activities with Wisconsin Resources</b>	
There is an adequate amount of recommended resources for each activity.	4.12
The format is easy to follow.	4.12



APPENDIX P

*Wisconsin Supplement*  
**Quantitative Evaluation Form Responses**

Statements with a mean below 4.0 are shaded

Likert Scale Statement & <i>Wisconsin Supplement</i> Section	Mean (scale of 1-5) N=37 1 = strongly disagree    4 = agree 2 = disagree                5 = strongly agree 3 = neutral
<b>Tips for Localizing Project WET Activities</b>	
The recommendations in this section will be helpful to me when I adapt WET activities to Wisconsin or my region.	4.10
There is an adequate amount of information provided for me to feel better prepared to localize a WET activity.	4.0
The format is easy to follow.	4.06
<b>Wisconsinized Project WET Activities</b>	
It is valuable to me to have the Wisconsinized Project WET activities ready for use:	
<i>Color Me a Watershed</i>	4.25
<i>Common Water</i>	4.23
<i>Dilemma Derby</i>	3.95
<i>The Pucker Effect</i>	3.98
<i>Sum of the Parts</i>	3.98
<i>Water Address</i>	3.98
The format of the six Wisconsinized Project WET activities is easy to follow (i.e. layout, readability):	
<i>Color Me a Watershed</i>	4.10
<i>Common Water</i>	4.10
<i>Dilemma Derby</i>	4.13
<i>The Pucker Effect</i>	4.14
<i>Sum of the Parts</i>	4.21
<i>Water Address</i>	4.24
There is enough background information in the Wisconsinized Project WET activities:	
<i>Color Me a Watershed</i>	4.31
<i>Common Water</i>	4.28
<i>Dilemma Derby</i>	4.23
<i>The Pucker Effect</i>	4.29
<i>Sum of the Parts</i>	4.38
<i>Water Address</i>	4.41

APPENDIX P

*Wisconsin Supplement*  
**Quantitative Evaluation Form Responses**

Statements with a mean below 4.0 are shaded

Likert Scale Statement & <i>Wisconsin Supplement</i> Section	Mean (scale of 1-5) N=37 1 = strongly disagree    4 = agree 2 = disagree                5 = strongly agree 3 = neutral
Using the following Wisconsinized Project WET activity supplements will help make those activities more relevant to my students:	
<i>Color Me a Watershed</i>	4.42
<i>Common Water</i>	4.5
<i>Dilemma Derby</i>	4.24
<i>The Pucker Effect</i>	4.29
<i>Sum of the Parts</i>	4.39
<i>Water Address</i>	4.48
I plan to use these Wisconsinized Project WET activities with my students:	
<i>Color Me a Watershed</i>	3.88
<i>Common Water</i>	3.98
<i>Dilemma Derby</i>	3.70
<i>The Pucker Effect</i>	3.67
<i>Sum of the Parts</i>	4.10
<i>Water Address</i>	4.04
These Wisconsinized Project WET activities will be useful to other Wisconsin teachers:	
<i>Color Me a Watershed</i>	4.29
<i>Common Water</i>	4.32
<i>Dilemma Derby</i>	4.25
<i>The Pucker Effect</i>	4.32
<i>Sum of the Parts</i>	4.43
<i>Water Address</i>	4.39

**APPENDIX Q**

**Project Timeline**

## APPENDIX Q

### Project Timeline

- A. *Will this Wisconsin Supplement be duplicating previous efforts in Wisconsin (Spring 1996)?*
1. Review current compilations of water resources information (April 1996)
    - *Wisconsin Water Resources* (DNR)
    - Investigate whether there are any other water-related publication directories
  2. Contact key Wisconsin water resource educators and evaluate their attitudes about this project (April 1996)
    - a. Elaine Andrews
    - b. Libby McCann
    - c. Suzanne Wade
    - d. Al Stenstrup
    - e. Dr. Dennis Yockers
- B. *Are there individuals or organizations who have created state specific adaptations to national curricula for (Spring 1996):*  
Review state supplements of:
  - Project WET
  - Project WILD
  - Project Learning TreeContact organizations and individuals to provide input for the creation, format, and structure, and contents of the *Wisconsin Supplement*.
- C. *What are Wisconsin's priority water education topics that should be of focus in the Wisconsin Supplement?*  
Review statewide water education documents
  - DNR
  - UWEX
  - Statewide Teacher Survey
- D. *What should and should not be included in the Wisconsin Water Resources Guide for Educators? (Spring/Summer 1996)*
1. Develop a set of questions to ask selected water resource agency personnel and educators in phone interviews (May 1)
    - a. The questions would address: *What are the water resource materials and organizations available in the state or your region that could be of use to teachers?*
  2. Evaluate questions
  3. Revise questions (June 1996)

4. Identify interviewees based on experience as Wisconsin water resource agency personnel or water educators and region.
    - Advisory Committee will help identify participants
  5. Contact interviewees and set up interview date and time (summer)
  6. Compile information (fall 1996) - the results will guide what materials to include in the Guide
- E. *Select Wisconsin Supplement format and complete draft (fall 1996)*
- Summer Masters Students enrolled in the Project WET course (NR 403/603) will create 'Wisconsinized' activities as part of their course assignment.
- F. *Evaluate draft Wisconsin Supplement (winter 1997)*
1. Develop a set of evaluation questions
  2. Send questions to a validity panel
    - a. Graduate Committee
    - b. Advisory Committee
  3. Finalize evaluation questions
  4. Administer evaluation form/questionnaire at conclusion of field-test workshop
    - Introduce the *Wisconsin Supplement* during the workshop and conduct activities to familiarize participants with how to use the *Wisconsin Supplement*
- G. *Revise Wisconsin Supplement (Spring-Summer 1997)*
1. Compile responses from evaluations
  2. Present these responses to Graduate Committee and evaluate the recommended changes
  3. Implement the accepted changes
- H. *Print Wisconsin Supplement (fall 1997)*
- I. *Disseminate the Wisconsin Supplement*
1. Send to Wisconsin Project WET facilitators to give to workshop participants in addition to the Project WET Curriculum and Activity Guide
  2. Send to past workshop participants

**APPENDIX R**

**Project WET-Wisconsin Field-Testing Workshop Agenda**

**Wisconsin Association for Environmental Education (WAE)**  
**Winter Workshop**  
**Project WET Workshop Tentative Agenda**  
**Friday, January 24, 1997, 9:00 a.m. - 5:00 p.m.**  
**Treehaven - Tomahawk, WI**

- |                  |   |                      |
|------------------|---|----------------------|
| 9:00-9:45am      | Introductions/WET Ice-breaker - watershed map ID/Raining Cats and Dogs<br>(Ilene/Libby/Dennis)<br>- <i>Who, What, Where, and Why you're interested in H<sub>2</sub>O ed.</i><br>- <i>Overview of Workshop, new materials, evaluation - agenda</i> |                      |
| 9:45-10:15am     | "Incredible Journey"  | (Dennis)             |
| 10:15-10:45am    | Wading Through the WET Guide & Wisconsin Supplement<br><i>explain the process of developing and evaluating the supplement, their role</i>   | (Ilene)              |
| 10:45-11:00am    | Quenching Your Thirst: BREAK and TAKE (water resources education materials - "freebies" available!!)  |                      |
| 11:00-11:30      | The Wisconsin River - Use Issues & Solutions  | (Bob Martini)        |
| 11:30 - 11:45 am | Water Resources Issues Discussion   |                      |
| 11:45 -12:00pm   | Group WET Activity Explanation  | (Ilene/Libby/Dennis) |
| 12:00 - 1:00 pm  | LUNCH & Group WET Activity Preparation  |                      |
| 1:00 - 2:30 pm   | Peer Teaching - WET Activities<br><i>(Pull activity out of a hat ~3 groups, 20 minutes/ group) Possible Wisconsinized Activity Topics: "Dilemma Derby", "Water Address", "The Pucker Effect", "Color Me a Watershed", "Common Water"</i>          |                      |
| 2:30 - 3:45 pm   | Putting the Hs and Os Together: WET Curriculum Plans and Wisconsinized Activity Preparation   | (Ilene/Dennis)       |
| 3:45 - 4:45 pm   | Evaluations<br>- <i>Workshop</i><br>- <i>Supplement</i>   |                      |
| 4:45 - 5:00 pm   | WET Wrap-Up & Snacks  |                      |
| 5:00 pm          | Continue Your WET Journey!  |                      |

**APPENDIX S**

*Wisconsin Supplement to National Project WET: A Water Resources  
Guide for Educators*



# Wisconsin Supplement to National Project WET



**Principal Author**  
Ilene Grossman

**Principal Editors**  
Libby McCann  
Dr. Dennis Yockers



Wisconsin



## A Water Resources Guide For Educators

ISBN 0-932310-36-2

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Library of Congress  
December 1997

**Developed by:**

**Project WET-Wisconsin**  
Wisconsin Lakes Partnership  
UW-Extension  
College of Natural Resources  
UW-Stevens Point  
Stevens Point, WI 54481  
(715) 346-3366



**The  
Wisconsin  
Lakes  
Partnership**



Funded through a grant from  
the Wisconsin Environmental Education Board (WEEB)

# To The Educator

Dear Educator,

We are pleased to present the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*. This *Supplement* is the result of a joint project among the University of Wisconsin-Stevens Point, University of Wisconsin-Extension Lake Management Program, the Wisconsin Environmental Education Board (WEEB), and the Wisconsin Lakes Partnership, a collaborative effort among the Wisconsin Department of Natural Resources, University of Wisconsin-Extension, and citizens, primarily represented by the Wisconsin Association of Lakes.

As water issues at the local, national, and global levels become more critical, citizens will be asked to make some tough choices about water usage. To participate effectively in the decision-making process, we require accurate, current, and understandable information on the complex issues involved. Education is the link to effective public participation. Project WET and this *Supplement* can provide that educational link to you as educators.

This *Supplement* was created to assist Wisconsin educators in making the national Project WET activities more relevant to students. This source of water resources information can help you 'Wisconsinize' Project WET activities. In addition, the *Supplement* can assist you in identifying state and regional educational materials, organizations, field trip ideas, and guest speaker contacts to compliment your water education efforts.

We hope the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators* provides resources to increase your and your students', awareness, appreciation, knowledge, critical thinking skills, and motivation for stewardship of Wisconsin's waters.

Best wishes as you journey through the wet world of water education in Wisconsin!

Sincerely,

Libby McCann, Coordinator  
Adopt-A-Lake/Project WET  
UW-Extension,  
College of Natural Resources  
UW-Stevens Point

Ilene Grossman, Assistant Coordinator  
Project WET  
UW-Extension  
College of Natural Resources  
UW-Stevens Point

# Introduction

Welcome to the wonderful world of WET in Wisconsin. Established in Wisconsin in July, 1995, Project WET (Water Education for Teachers) is an international multidisciplinary water education program designed to supplement a school's existing K-12 curriculum. This *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators (Supplement)* is intended to accompany the national *Project WET Curriculum and Activity Guide*. The *Supplement* has been developed to enhance the ability of Wisconsin educators to infuse state-specific water resources information into their curricula. The intent is to help Wisconsin teachers create water education programs that are relevant to their students who live in this water-rich state. This supplemental guide will be useful for all types of Wisconsin water education activities both in and out of the classroom.

## Content

This *Supplement* has involved the input of over 150 teachers and water resources specialists from around the state. The content is based on the needs of Wisconsin teachers assessed through the "Wisconsin Teacher Survey of Water-Related Subject Needs" conducted in 1994 by UW-Extension, Environmental Resources Center (nearly 200 teachers completed the survey).

## Resources

The topics in the "Resources" section were chosen based on Wisconsin teachers' greatest needs determined by the survey (described above) as well as the water education and water quality topics of greatest priority as designated by Wisconsin Department of Natural Resources and the University of Wisconsin-Extension reports. The resources and organizations listed under each topic in the "Resources" section were suggested, through phone interviews, by educators and water resources specialists from around the state.

## Organizations

The "Organizations" section was compiled from the phone interview suggestions as well as extensive searches of state and regional water-related organizations.

## *Recommended Wisconsin Resources for National Project WET Activities*

The "Recommended Wisconsin Resources for National Project WET Activities" come from the "Resources" section items which match the topics addressed in each Project WET activity.

## *Wisconsin Project WET Activity Adaptations*

The "Wisconsin Project WET Activity Adaptations" were written by Wisconsin teachers enrolled in the Project WET Leadership Institute held in summer 1996. These activities were reviewed, pilot-tested, and edited by teachers and environmental education specialists. The "Suggestions for Localizing Project WET Activities" were compiled from phone interviews with Wisconsin teachers.

## *Order Forms*

There are publication order forms included from the Wisconsin Department of Natural Resources, UW-Extension Cooperative Extension Publications, and Wisconsin Geological and Natural History Survey located at the end of this *Supplement*.

## Reviewers

Drafts of the *Supplement* were reviewed by the Project WET Advisory Committee members and thirty-six Wisconsin educators who attended the two Project WET workshops designed to introduce and pilot-test the *Supplement* and 'Wisconsin-ized' Project WET activities. Evaluations were compiled from those workshop participants and Advisory Committee members to revise the draft *Supplement*.

## Funding

This project was funded by the Wisconsin Environmental Education Board (WEEB), University of Wisconsin-Stevens Point, and the Wisconsin Lakes Partnership, a collaborative effort among the Department of Natural Resources, University of Wisconsin-Extension, and citizens, primarily represented by the Wisconsin Association of Lakes.

# Acknowledgments

There were many people who gave their time and expertise to the development of this *Wisconsin Supplement*. We would like to acknowledge and thank them for their efforts and support.

**The following individuals were interviewed to suggest the resources and organizations included in this Supplement. These individuals were instrumental in contributing to the content of the "Resources" and "Organizations" sections of this document:**

Mike Dresen, UW-Extension Land Management Specialist  
Brian Gauthier, UW-Extension, Lac du Flambeau Tribe  
Mindy Habecker, Dane County Extension  
Jeff Janvrin, DNR-LaCrosse, Mississippi-Lower St. Croix Team  
Sara Johnson, The River Alliance of Wisconsin  
Dotty Juengst, UW-Extension, Water Educator, Green Bay  
Lowell Klessig, UW-Extension Lake Management Program, UW-Stevens Point  
Robert Korth, UW-Extension, Lake Management Program  
Carolyn Johnson, UW-Extension, Water Educator, Milwaukee  
Jim Lubner, UW-Sea Grant Program, Advisory Services  
Libby McCann, UW-Extension, Adopt-A-Lake/Project WET  
Chris Mechenich, UW-Extension, Central Wisconsin Groundwater Center  
Steve Oberle, Stevens Point-Whiting-Plover Wellhead Protection Project  
Mike Pagel, UW-Stevens Point Career Services  
Lynn Person, DNR-Bureau of Cooperative Environmental Assistance, Pollution Prevention Program  
Jim Peterson, UW-Extension, Environmental Resources Center  
Bill Rock, DNR-Bureau of Watershed Management, Private Water Systems  
Theresa Stabo, DNR-Bureau of Fisheries Management and Habitat Protection, Aquatic Education  
Al Stenstrup, DNR-Bureau of Communication and Education  
Jeff Steven, Madison Metropolitan Sewerage District  
Sterling Strathe, Outdoor Skills Center  
Ron Struss, UW-Extension Western Area Water Quality Educator, Eau Claire  
Bill Swenson, UW-Superior, Biology Department, UW-Extension  
Kathy Krahn Tulman, CESAs 10 and 11, SciMaTech Resource Center  
Suzanne Wade, UW-Extension, Water Educator, Southern Area  
Janice Watras, North Lakeland Elementary School  
Paul Wozniak, Fox/Wolf Rivers Environmental History Project  
Dennis Yockers, Wisconsin Center for Environmental Education, UW-Stevens Point

**The following teachers enrolled in the Summer 1996 Project WET Leadership Institute submitted Wisconsin adaptations to Project WET activities that are included in this *Supplement* and/or were interviewed for suggestions to offer educators planning to localize Project WET activities:**

Randy Colton, Rothschild Elementary School  
Shelly Cook, School District of Onalaska (Elementary)  
Mark Elworthy, Eau Claire Area Schools (Middle)  
Laurin Garlieb, UW-Stevens Point water chemistry student  
Kathy Guenther, Orchard Lane School (Elementary), New Berlin  
Jody Henseler, Owen-Withee Public Schools (Elementary)  
Carolyn Peterson, Luck Public Schools (Middle)  
Sharon Rychter, Green Bay Area Public Schools (Supportive Research Teacher)  
Jim Servais, Green Bay West High School

Jeanine Meyer Staab, Medford Elementary School  
Janice Watras, North Lakeland Elementary School, Manitowish Waters  
Karen Yost, Our Lady of Sorrows School, Milwaukee

**The Project WET Advisory Committee members have been invaluable in the development of this Supplement through their review of evaluations, interview questions, and the draft Supplement:**

Elaine Andrews, UW-Extension, Environmental Resources Center  
Jeff Bode, DNR, Bureau of Watershed Management, Lakes and Wetlands Section  
Randy Champeau, Wisconsin Center for Environmental Education, UW-Stevens Point  
Mary Danoski, Wisconsin Association of Lakes  
Greg Hutchins, UW-Extension, 4-H/Youth Development Program  
Sara Johnson, The River Alliance of Wisconsin  
Lowell Klessig, UW-Extension Lake Management Program, UW-Stevens Point  
Kathy Krahn Tulman, CESAs 10 & 11, SciMaTech Resource Center  
Martha Kronholm, Wisconsin Rapids Area School District  
Jim Lubner, UW-Sea Grant, Advisory Services  
Chris Mechenich, UW-Extension, Central Wisconsin Groundwater Center  
Clayton Russell, Sigurd Olson Environmental Institute, Northland College  
Sharon Rychter, Green Bay Area Public Schools  
Robin Shepard, UW-Extension, Environmental Resources Center  
Al Stenstrup, DNR-Bureau of Communication and Education  
Janice Watras, North Lakeland Elementary School  
Dennis Yockers, Wisconsin Center for Environmental Education, UW-Stevens Point

**The following educators reviewed and evaluated the draft Supplement:**

John Adams, Rib Lake Middle School  
Emily Bach, Owen-Withee Elementary School  
Lance Batchelor, Owen-Withee Elementary School  
John Bigley, James Williams Junior High School  
Diane Daulton, Price County Land Conservation Department  
Betsy Decorah, Owen-Withee High School  
Bruce Decorah, Owen-Withee High School  
Michael Endreas, Owen-Withee Middle School  
Lynn Feldman, UW-Extension, Oneida County 4-H  
Al Guthman, Owen-Withee High School  
James Hager, Owen-Withee High School  
Ron Hanson, James Williams Junior High School  
Julie Hein, UW-Stevens Point  
Dave Henrichs, James Williams Junior High School  
Mary Hollebock, Riveredge Nature Center  
Michael Johnson, Owen-Withee Elementary School  
Michelle Johnson, Owen-Withee Elementary School  
Sherry Klosiewski, DNR-Rhineland  
Tim Koepnick, Phoenix Middle School  
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**The following individuals provided volunteer editorial help and have greatly contributed to the quality of this document:**

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**Funding for this project was provided by:**

UW-Extension, Lake Management Program  
Wisconsin Environmental Education Board (WEEB)  
Wisconsin Lakes Partnership (A collaborative effort among the Department of Natural Resources, University of Wisconsin-Extension, and citizens represented by the Wisconsin Association of Lakes)

**The following individuals served as the Graduate Committee with invaluable guidance and support:**

Dr. Dennis Yockers, UW-Stevens Point, Wisconsin Center for Environmental Education  
Dr. Paula DeHart, UW-Stevens Point, Department of Education  
Dr. Randy Champeau, UW-Stevens Point, Wisconsin Center for Environmental Education  
Libby McCann, UW-Extension, Wisconsin Lakes Partnership, Adopt-A-Lake/Project WET

A tremendous thanks to Libby McCann for her boundless support, expertise, hard labor, and good humor on this project.

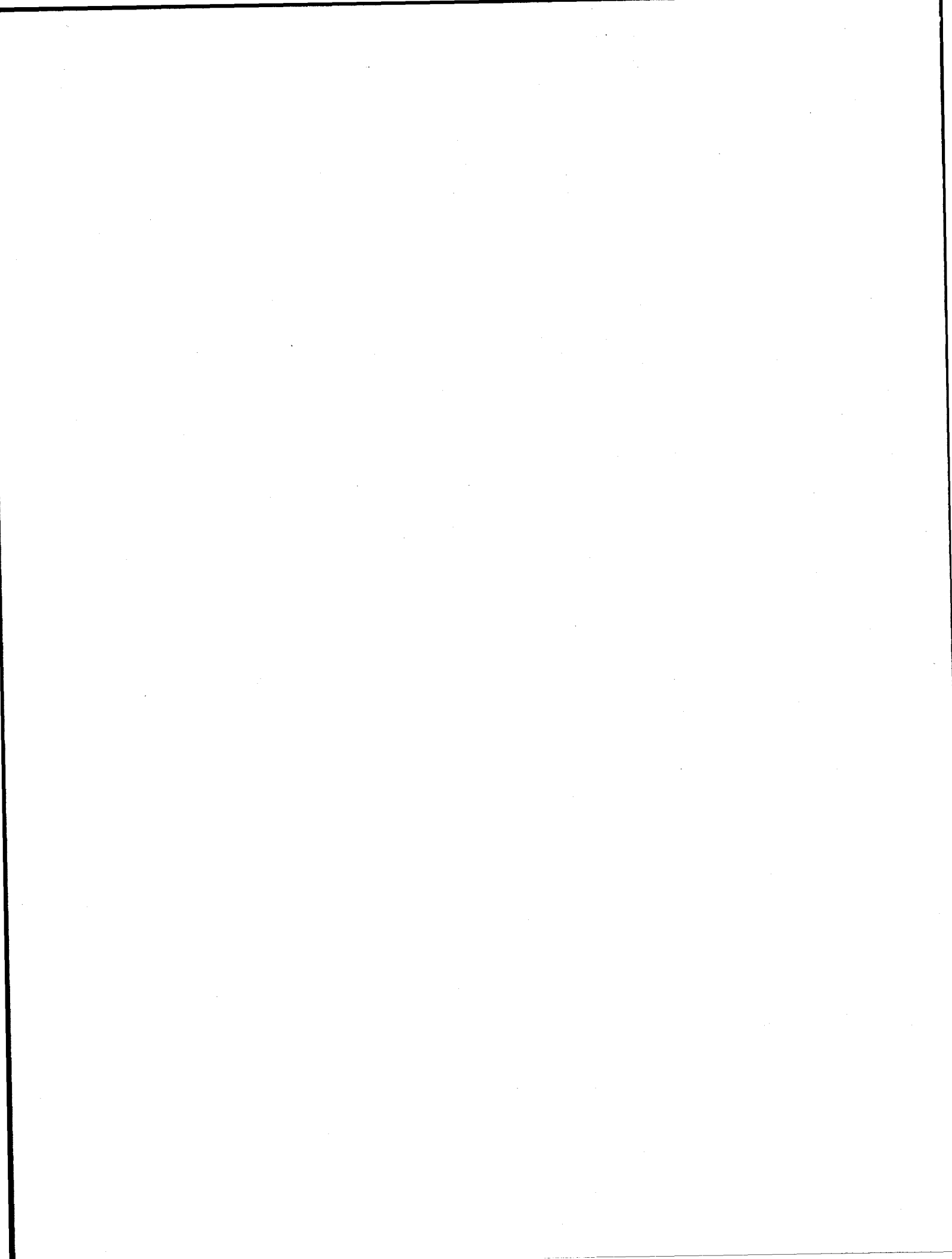
**Thanks to all of you for your contributions to the *Wisconsin Supplement to National Project WET: A Water Resources Guide for Educators*. By sharing your time, expertise, and passion for water education in Wisconsin, you have helped to ensure the future health of the state's waters for generations to come.**

# What's Inside

<b>I. Resources: Information &amp; Education Materials and Organizations</b>	
<b>Listed by Topic</b> .....	11
Careers in Water Resources.....	12
Drinking Water Supply.....	14
Drinking Water Contaminants.....	16
General.....	17
Great Lakes.....	20
Groundwater.....	22
Impact of Water Quality on Plant and Animal Communities.....	26
Lakes.....	28
Rivers and Streams.....	31
Mississippi River.....	34
Waste Water Treatment Issues.....	36
Water Quality: Risk Assessment and Reduction.....	38
Water Quality Monitoring.....	40
Water Resources Management and Protection Strategies.....	42
Acid Rain (Deposition).....	43
Agricultural Management Practices.....	44
Exotic Species.....	46
Fisheries Management.....	48
Nonpoint Source Pollution.....	49
Point Source Pollution.....	51
Pollution Prevention.....	51
Stormwater Management.....	53
Sustainable Resource Management.....	55
Urban Water Issues.....	55
Water Use.....	57
Cultural and Historical Uses.....	57
Government and Citizenship Issues.....	60
Industry and Business.....	62
Lifestyle and Water Conservation.....	63
Mining.....	64
Rural and Residential Homeowners.....	65
Watersheds.....	66
Wetlands.....	68
<b>II. Water-Related Organizations</b> .....	71
<b>Part 1 Statewide, National &amp; International Organizations</b> .....	71
Statewide Government Organizations.....	72
Statewide Water-Related Organizations.....	85
On Your Own.....	91
State Libraries.....	92
Federal Agencies in Wisconsin.....	93
National and International Organizations.....	97
Computer Networking.....	101
Great Lakes Organizations.....	104



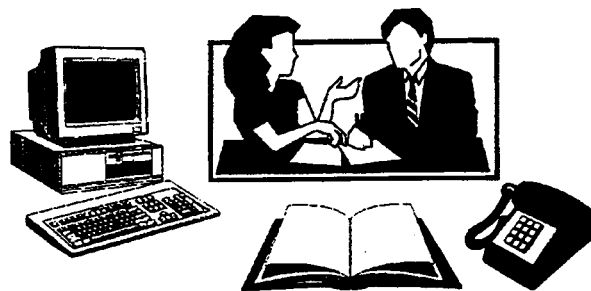
<b>Part 2 Organizations by Watershed</b> .....	106
Wisconsin Watersheds Map.....	106
Lake Michigan Watershed.....	107
Lake Superior Watershed.....	113
Mississippi River Watershed.....	117
<b>Part 3 County, Regional, and Watershed Offices</b> .....	130
County Offices .....	130
Land Conservation Department County Offices.....	130
Natural Resources and Conservation Service (NNRCS)	
County Field Offices.....	135
Priority Watershed Educators.....	136
Regional Planning Commissions.....	140
University of Wisconsin-Extension Cooperative Extension District and	
County Offices.....	141
Wisconsin Department of Natural Resources Regional and	
Geographic Management Unit (GMU) Offices .....	144
<b>III. Recommended Wisconsin Resources for Project WET Activities</b> .....	146
<b>IV. 'Wisconsinized' Project WET Activities</b>	
Suggestions for 'Localizing' Project WET Activities.....	163
<b>Activity Adaptations</b>	
Color Me a Watershed.....	165
Common Water.....	170
Dilemma Derby.....	179
The Pucker Effect.....	185
Sum of the Parts.....	190
Water Address.....	197
<b>V. Publication Order Forms</b>	
University of Wisconsin-Extension,	
Cooperatives Extension Publications.....	210
Wisconsin Department of Natural Resources.....	211
Wisconsin Geological and Natural History Survey.....	213
<b>VI. Index</b> .....	214



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# Resources

This section offers state-wide and regional resources to assist you in developing water education programs in Wisconsin. The ordering information is included for each resource below. To contact the listed organization, refer to the "Organizations" section of this *Wisconsin Supplement to National Project WET*.



At the end of this *Wisconsin Supplement* are **order forms** for publications available from the Wisconsin Department of Natural Resources (DNR), University of Wisconsin-Extension (UWEX), and the Wisconsin Geological and Natural History Survey. Many of the publications listed in this section are free of cost, while others require a fee. Where fee information was available it was noted with the resource. Otherwise, you will need to contact the sources to inquire about costs.

## National and International Materials

There are literally hundreds of water education curricula, activity guides, other educational materials, and organizations related to water! Some of those resources can be found in this section under "General Resources," while others are included within the specific topic listings. The "Organizations" section of this *Wisconsin Supplement* also has lists of national and international organizations, as well as computer networking sites related to water education. In addition, the "References" section of each activity in the *Project WET Curriculum and Activity Guide* suggests national resources related to each activity subject.

## Internet

If you have access to the Internet, you will find a wealth of information, pictures, maps, data, statistics, and other contacts related to water resources and organizations around the world. Some Internet sites have been included in this section, but there are probably thousands more out there in cyberspace!

## Abbreviations

CNRED	Community, Natural Resource and Economic Development (UW-Extension Cooperative Extension program area)
DNR	Wisconsin Department of Natural Resources
EE	Environmental Education
GMU	Wisconsin DNR Geographic Management Units or basin offices are the result of the DNR reorganization (1997) to serve the 22 major watersheds in the state.
UWEX	University of Wisconsin-Extension
UW	University of Wisconsin
WI	Wisconsin
4-H	UW-Extension Cooperative Extension County Youth Development Agent

# Careers in Water Resources

*As the quality and quantity of water continues to be of critical concern throughout the world, water resources will inevitably be a growing occupational field. There is a wide range of career opportunities available in water resources. Some water-related careers include: fisheries management specialist, water chemist, aquaculturist, hydrologist, educator, lake management specialist, wetlands biologist, marine biologist, and many more.*



## **American Water Resources Association Careers**

This brochure highlights job descriptions in the field of water resources. AWRA Student Chapter, College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-2372.

## **Career Services**

Wisconsin high schools should have this reference book in the guidance office or school library. U.S. Department of Labor, Center on Education and Work, School of Education, UW-Madison, 1078 Educational Science Unit 1, 1025 West Johnson St., Madison, WI 53706. 608/263-2725.

## **The Complete Guide to Environmental Careers**

1993. Environmental Careers Organization, Great Lakes Office, Publications, 50 Public Square, Suite 628, Cleveland, OH 44113-2203. 216/861-4545. \$17.45/each.

## **DNR Careers**

Contact the specific DNR Bureaus for career information (i.e. Bureau of Watershed Management, Bureau of Drinking Water and Groundwater). See *Organizations* section for addresses and phone numbers of DNR Bureaus.

## **Education for the Earth: A Guide to Top Environmental Studies Programs**

1993. Peterson Guide. Princeton, NJ.

## **Environmental Career Opportunities**

National newsletter of job listings printed twice a month. Environmental Career Opportunities, PO Box 560, Stanardsville, VA 22973. 301/320-2002; Fax: 804/985-2331. Four issues for \$29.

## **The Environmental Careers Organization**

Reference book recommended for school libraries. 286 Congress Street., 3rd Floor, Boston, MA 02210-1009.

## **Environmental Opportunities**

National newsletter of job listings of generally non-technical positions in environmental education, policy, and recreation.

Environmental Opportunities, PO Box 4379, Arcata, CA 95518. 707/826-1909; Fax: 707/826-2495.

Six months (six issues) for \$26 or \$5 each.

## **The Job Seeker**

Monthly national newsletter of job listings. The Job Seeker, County EW, Warrens, WI 54666. 608/378-4290.

Six issues for \$19.50. Twelve issues for \$36.

## **Making a Difference College Guide: Outstanding Colleges to Help You Make a Better World**

by Miriam Weinstein. 1994. Sageworks Press, San Anselmo, CA.

## **Marine Science Careers**

All public middle and high school libraries in Wisconsin should have a copy of this publication.

If you do not have access to a school copy, contact UW-Madison, Sea Grant College Program, 1800 University Avenue, Madison, WI 53705-4094. 608/263-3259.

## **Occupational Outlook Handbook, Occupations Handbook for Wisconsin, and Education Handbook for Wisconsin**

1994-95 Edition, Wisconsin Career Information System. U.S. Department of Labor, Center on Education and Work, School of Education, UW-Madison, 1078 Educational Science Unit 1, 1025 West Johnson St., Madison, WI 53706. 608/263-2725.

**Questions about Careers in Oceanography**  
Texas A&M Sea Grant College Program, PO Box  
1675, Galveston, TX, 77553-1675.  
409/762-9800.

### **UW-Career Services**

Weekly Wisconsin and national job  
announcements. You can order a natural  
resources matrixes and job listings. UWSP  
Career Services, 134 Old Main, Stevens Point,  
WI 54481. 715/346-3136. \$25/month.  
WEB page but no job listings:  
<http://www.uwsp.edu/stuserv/career/sites.htm>

### **Natural Resources Careers and Workshops for High School Students**

Week-long summer workshops specifically  
designed to help high school students examine  
career interests and opportunities in the fields of  
natural resources and environmental quality.  
Central Wisconsin Environmental Station,  
10186 County Rd. MM, Amherst Junction, WI  
54407. 715/824-2428.

### **Statewide Organizations**

#### **UW-Stevens Point Career Services**

Educators can call Mike Pagel for information  
on water resources. UWSP Career Services, 134  
Old Main, Stevens Point, WI 54481.  
715/346-3226.

### **Regional Organizations**

(See *Organizations* section for county, regional  
and GMU offices)

#### **DNR Regional or GMU Offices**

#### **Local Libraries**

**UWEX Cooperative Extension County Offices**  
4-H and CNRED Agents

### **Field Trips and Presentation Contacts**

(See *Organizations* section for county, regional  
and GMU offices)

#### **DNR Regional and GMU Offices**

**Land Conservation Department County Offices**  
**Natural Resources Conservation Service**  
**County Offices**

**University Water Resources Staff**  
Contact nearby universities and colleges

**UWEX Cooperative Extension County Offices**  
4-H, Community, Natural Resources and  
Economic Development (CNRED) Agents

**Water Treatment Plants**  
See your local phone book for contacts

### **Home Page Sites**

**American Water Works Association**  
Careers in drinking water field. 6666 W. Quincy  
Ave., Denver, CO 80235. 303/347-6170.  
<http://wwcareers.com/A/0025.html>

**Environmental Careers Organization**  
Offers internship placement services, national  
environmental careers conference, and an  
alumni network. <http://www.eco.org/ecp.html>

#### **Jobtrak**

Partners with over 600 college and university  
career centers. Information is included on  
resumes, job search tips, job listings, and more.  
<http://www.jobtrak.com>

#### **Science Careers**

Includes a reference list.  
<http://www.jmu.edu/career/science.html>

#### **UW-Careers**

Offers a collection of career and job search  
information.  
<http://www.uwsp.edu/stuserv/career/sites.htm>



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# Drinking Water Supply

*Do your students know where their drinking water comes from? Have you ever wondered how healthy your drinking water is, or if you need to worry about conserving water? Drinking water for suburban and urban areas in Wisconsin comes from either an underlying aquifer (groundwater) pumped to city or town wells or directly from Lake Michigan, Lake Superior, or Lake Winnebago. Rural residents rely on groundwater pumped from their own wells where often the water is not treated before it is consumed. Actions we take on the land can affect the surface and ground water quality that we rely on for our drinking water.*

## **Drinking Water Contamination: Understanding the Risks**

Fact sheet that describes the process of drinking water risk assessment, balancing the risks and benefits of contaminated water and other substances, and how to minimize the risk of private well water contamination. Contact UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Bulletin #G3339. 6 pp. Home Page: <http://www.uwex.edu/ces/pubs.html>

**FARM\*A\*SYST** Farmstead assessment system **HOME\*A\*SYST** Homestead or subdivision assessment system. Worksheets and materials which help home and farm owners troubleshoot potential problems with wells. **FARM\*A\*SYST**, UWEX-Environmental Resources Center, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

## **Groundwater Fact Sheets**

33 different topics are covered in this series of fact sheets about groundwater quality and its effect on public health. Department of Health and Family Services, Bureau of Public Health, 1414 E. Washington Ave., Rm. 96, Madison, WI 53703-3044. 608/267-6844.

## **Home Water Safety: Evaluating the Condition of Your Private Water Supply**

Contains a strategy to determine if private water supplies are safe. UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Bulletin #G3558-2. Home Page: <http://www.uwex.edu/ces/pubs.html>

## **Home Water Safety: Evaluating the Condition of Your Public Water Supply**

Contains a strategy to determine if public water supplies are safe and describes citizens' responsibilities. UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Bulletin #G3558-3. Home Page: <http://www.uwex.edu/ces/pubs.html>

## **Lead in Drinking Water**

Brochure, which highlights lead hazards, methods of reduction and organizations of assistance. Wisconsin DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication #PUBL-WS-015-94REV.

## **Nitrate in Drinking Water**

Brochure, which highlights nitrate hazards, methods of reduction and organizations of assistance. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication #PUBL-WS-001-94REV.

## **Tests for Drinking Water from Private Wells**

Brochure that covers a wide variety of contaminants that may be found in water supplies and information on how to have water samples tested. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication #PUBL-WS-023-92.

## **Wisconsin Bureau of Public Health Fact Sheet Series**

Approximately twenty fact sheets about environmental health effects from chemicals such as nitrates, pesticides, inorganic compounds, and specific chemical compounds. Department of Health and Family Services,

Bureau of Public Health, Water/Environment Section, 1414 E. Washington Square Bldg., Madison, WI 53703. 608/266-9337.

### **You and Your Well**

Fact sheet designed for homeowners that describes well construction requirements, certified well and pump installers, and approved types of wells and pumps. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication # PUBL-WS-002 90 Rev. 4pp.

### **Your Personal Water Supply**

1992. Booklet provides an overview of a municipal water system, includes water testing information and addresses, and how to determine whether to treat tap water. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication # PUBL-WS-021. 16 pp.

Refer to the *Groundwater Education Resource Directory* for a more detailed resource list (information on ordering a copy is in the *Groundwater* section).

### **Statewide Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses, and phone numbers)

#### **Central Wisconsin Groundwater Center**

Educational materials and technical information; an excellent starting point when looking for more detailed or local information. College of Natural Resources, Stevens Point, WI 54481. 715/346-4270.

#### **DNR Central Office**

101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-2621.

- **Bureau of Communication & Education**  
608/266-6790
- **Bureau of Drinking Water & Groundwater** 608/266-0821
- **Home Page:** <http://www.dnr.state.wi.us>

### **DNR Regional or GMU Offices**

Private water supply staff for information on groundwater wells. Approximately 30 DNR publications available on water supply. See *Organizations* section for regional and GMU offices.

### **Department of Health and Family Services**

Information related to water quality and its effects on human health. Bureau of Public Health, Water/Environment Section, 1414 E. Washington Ave., Rm. 96, Madison, WI 53703-3044. 608/267-6844.

### **Environmental Protection Agency (EPA)**

Home page for the Office of Groundwater and Drinking Water; "Kids Page" as well. Home Page: <http://www.epa.gov>

### **Wisconsin Geological and Natural History Survey**

Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

### **Regional Organizations**

(See *Organizations* section for county, regional and GMU offices)

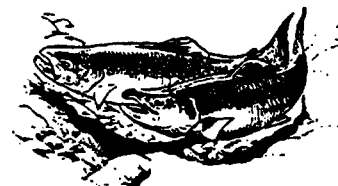
### **DNR Regional and GMU Offices**

Private and public water supply staff for information on groundwater wells.

### **Land Conservation Department County Offices**

#### **UW-Extension County Offices**

Basin educators, 4-H or Community, Natural Resource and Economic Development (CNRED) agents may do groundwater projects with youth. Family Living and/or Agriculture agent may have local data related to groundwater pollution susceptibility, types of contaminants, and other related information.



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## **Field Trip & Presentation Contacts**

(See *Organizations* section for county, regional, and GMU offices)

**Central Wisconsin Groundwater Center**  
College of Natural Resources, UW-Stevens  
Point, Stevens Point, WI 54481. 715/346-4270.

### **UW-Extension Cooperative Extension County Offices**

Basin educators, CNRED agents, and other resource personnel may be available for presentations.

### **County Planning and Zoning Department**

Refer to your local phone book

### **DNR Regional and GMU Offices**

Private water supply staff for information on groundwater wells.

### **Drinking Water Treatment Facilities**

Refer to your local phone book for contacts.

### **Land Conservation Department County Offices**

### **Natural Resources Conservation Service County Offices**

### **Private Water Well Contractors**

Contact to see how a well is drilled and for other related information. Refer to your local phone book for contacts.

### **Wastewater Treatment and Water Utility Staff**

Water treatment and wastewater plant managers. Refer to your local phone book for contacts.

## **Home Page Sites**

**DNR Home Page** <http://www.dnr.state.wi.us>

### **Environmental Protection Agency (EPA)**

Home page for the Office of Groundwater and Drinking Water; "Kids Page" as well.

Home Page: <http://www.epa.gov>

# **Drinking Water Contaminants**

*In several parts of the state there have been cases of diseases and illnesses caused by contaminated drinking water. Some examples of Wisconsin water contamination include: the Cryptosporidium outbreak which occurred in Milwaukee's drinking water, and certain wells in central and southern Wisconsin were contaminated by atrazine, a pesticide used in corn fields.*

### **Cryptosporidium Species Oocyst and Giardia species Cyst: Occurrence, Concentrations, and Distributions in Wisconsin Waters**

1995. Fact sheet. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694.

- 81-page report (Publication # WR-420-95)
- Executive Summary only (Publication # WR-429-95)

### **Fact Sheet Series, Department of Health and Family Services**

Series of fact sheets includes information on Cryptosporidium, Ecoli infections, Giardia, Swimmer's itch, and more! Bureau of Public Health, 1414 E. Washington Ave., Madison, WI 53703-3044. 608/267-7321.

## **Statewide Organizations**

### **Central Wisconsin Groundwater Center**

College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-4270.

### **Department of Health and Family Services, Bureau of Public Health**

Water/Environment Section, 1414 E. Washington Ave., Madison, WI 53703-3044. 608/267-7321.

### **University Staff**

Contact your local University water resources departments for local technical information.



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**UWEX Cooperative Extension County Offices**  
See *Organizations* section for county offices.

**Wisconsin Geological and Natural History Survey**

Well reports, hydrology information and maps, etc. Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

**Wisconsin Water Well Association**

An organization devoted to promote and protect Wisconsin's groundwater resources. 6225 60th Ave., Kenosha, WI 53142. Contact Rod Pfeiffer, 414/657-7830.

**Regional Organizations**

**County/Local Public Health Department**

For information about the human health aspects of water quality. See your local phone book.

**DNR Regional and GMU Offices**

See *Organizations* section for regional offices.

**Local Hospitals and Clinics**

See your local phone book.

**Local Pump Installers**

See your local phone book or contact the local Chamber of Commerce.

**Local Water Treatment Facilities**

See your local phone book.

**Local Well Drillers**

See your local phone book or contact the local Chamber of Commerce.

**Field Trip & Presentation Contacts**

(See above organizations)

**DNR Regional or GMU Offices**

Contact Public and Private Water Supply staff for presentations.

**Local Water Treatment Facilities**

**Local Well Drillers**

**UWEX Cooperative Extension County Offices**

**General**

*There are a wide variety of state and national water education organizations and resources. Within this sea of available materials and organizations, we have listed below some suggested resources. Please refer to the Project WET Curriculum and Activity Guide for additional recommendations for each individual activity.*

**General Wisconsin Resources**

**Educ'Ade: Environmental Education Publications for Teachers**

1995. Listing which covers a variety of topics including: environmental education, parks and recreation, recreation safety, forestry, endangered resources, wildlife, fish, water, environmental protection, air quality, and solid waste & recycling. DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707-7921. 608/266-6790. Publication #PUBL-IE-015 94 rev. 1 page.

**EE News**

Environmental education news for Wisconsin; includes educational activities, specific resources for different topics each issue, calendar of events, and literature reviews. Editor, EE News, DNR Bureau of Communication and Education, CE/6, PO Box 7921, Madison, WI 53707-7921. 608/267-5239.

**A Gathering of Waters: Education About Water Resources in Wisconsin**

1991. Introduces UW-Extension and their water resources education programs. UWEX-Cooperative Extension, 601 Extension Bldg., 432 N. Lake St., Madison, WI 53706. 608/263-2775. 18 pp.

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### **A Guide to Curriculum Planning in Environmental Education (EE)**

1994. The guide includes: the rationale and philosophy of EE, goals and subgoals of EE, and how subject areas contribute to environmental education. Wisconsin Department of Public Instruction. Copies from Publication Sales, Wisconsin DPI, Drawer 179, Milwaukee, WI 53293-0179. 800/243-8782. Bulletin #94371. 170 pp.

### **Save Wisconsin's Water: Making Every Drop Count**

1992. Includes why it is important to conserve water, ways to save water, water saving devices and appliances, and a typical water saving program. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-065 92 REV. 13 pp.

### **Water Activities to Encourage Responsibility**

Classroom activities covering concepts of water supply, geology, pollution, water-related careers, and more. DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790. Publication # PUBL-WR-324-93. 46 pp.

### **Wisconsin Water Resources Catalog**

This catalogue includes water resources publications available from DNR, UW-Extension, and other state agencies listed by topic and described briefly. Ordering information and related state organizations are included (revised annually). Available from DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-414-96REV.

## **General National Resources**

### **Aquatic WILD**

Project WILD (Wildlife in Learning Design) for aquatic environments and species. Curriculum and activity guide for K-12 educators (must attend a six hour workshop to receive materials). DNR Bureau of Communication and Education, CE/6, PO Box 7921, Madison, WI 53707-7921. 608/264-6282.

### **Educating Young People About Water: A Guide to Goals and Resources with Emphasis on Nonformal and School Enrichment Settings**

1995. An excellent starting point when developing water education programs. This series of three guides is designed to help non-formal and school enrichment educators choose and develop curricula to implement water education programs. The three guides include: *A Guide to Goals and Resources*, *A Guide to Program Planning and Evaluation*, and *A Guide to Unique Program Strategies*. Included in these guides are: water education goals, key water education topics, a thorough water education curriculum review, other support materials and selected bibliographies. ERIC Clearinghouse, 1929 Kenny Rd., Columbus, OH 43210-0462. 800/276-0462; Fax: 614/292-0263. Home Page: <http://www.ericse.org>

### **Jason Project**

International curriculum program which uses satellite communications to focus on aquatic ecosystems and water quality monitoring. Student projects are computer-linked with the ability to input on-line data. Jason Project, UW-Milwaukee, 161 W. Wisconsin Ave., Suite 6000, Milwaukee, WI 53203. 414/227-3365. Home Page: <http://www.jasonproject.org>

## **Statewide Organizations**

### **Water Education Resource Centers**

**(WERCs)** Statewide network of six WERCs offers teachers equipment and a variety of educational resources and opportunities including workshops, water testing equipment, and aquatic investigation materials. The WERCs are listed in the *Organizations* section. More WERCs are being established annually. Contact your nearest WERC or Suzanne Wade, Water Educator, UW-Extension, for more detailed information, Environmental Resources Center, 126 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/265-3257.

### **Wisconsin Association for Environmental Education**

A statewide professional organization designed to promote responsible environmental action through education in the classroom and

community. Membership includes newsletter and conference information. WAEE Inc., 10186 County Rd.MM, Amherst Junction, WI 54407. 715/346-2796.

### **Wisconsin Center for Environmental Education (WCEE)**

The WCEE provides EE outreach courses, Extended Master's Degree Program for Teachers, High School Environmental Action Conference, Wisconsin EE Network, and EE Resource Library. College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-4973.

### **Wisconsin Earth Science Teachers Association (WEST)**

An organization for elementary and middle level science educators. Provides teacher support and programs on science education. Wisconsin Academy of Sciences, Arts, and Letters, 1922 University Avenue, Madison, WI 53705. 608/263-1692.

### **Wisconsin Society of Science Teachers (WSST)**

Provides support and programs to enhance the teaching and learning of science. Coordinates annual state convention and regional science forums. University of Wisconsin-Oshkosh, Office of Outreach, 800 Algoma Blvd., Oshkosh, WI 54901. 920/424-7414; Fax: 920/424-7076.

## **National Organizations**

### **Eisenhower National Clearinghouse for Science**

Offers teachers information about publications, CD-ROMs, and professional development activities. 800/621-5785.

Home Page: <http://www.enc.org>

### **ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/CSMEE)**

The clearinghouse collects and processes all the science, mathematics, and environmental education materials to add to the ERIC database and offers products and services to educators. ERIC Clearinghouse, 1929 Kenny Rd., Columbus, OH 43210-0462. 800/276-0462; Fax: 614/292-0263.

Home Page: <http://www.ericse.org>

### **Give Water a Hand**

A self-directed resource guide that helps youth look closely at their community and provides direction for completing a service or action project. Youth design their own project based on water investigations in their community. To order the *Youth Action Guide* and accompanying *Leader Guidebook* call 800/928-3720 or contact your county UWEX Cooperative Extension county office. Home Page: <http://www.uwex.edu/erc>

### **GREEN (Global Rivers Environmental Education Network)**

206 S. 5th Ave., Suite 150, Ann Arbor, MI 48104. 313/761-8142; Fax: 313/761-4951. 272 pp. Home Page: <http://www.econet.org/green>

### **North American Association for Environmental Education (NAAEE)**

Largest international EE organization which hosts an annual conference and offers members a newsletter, educational resources, job listings, and an extensive professional network. PO Box 400, Troy, OH 45373. 513/676-2514.

## **Home Page Sites**

### **Eisenhower National Clearinghouse for Science**

<http://www.enc.org>

### **ERIC Clearinghouse**

<http://www.ericse.org>

### **Give Water a Hand**

<http://www.uwex.edu/erc/ywcl>

### **GREEN**

<http://www.econet.org/green>

## **Recommended Resources for School Library**

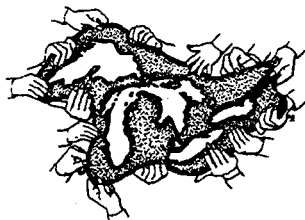
### **DNR Staff Directory**

DNR, PO Box 7921, Madison, WI 53707-7921. 608/266-2621.

## UW-Extension Staff Directory

Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

# Great Lakes



*The Great Lakes hold 20% of the entire Earth's available freshwater! We are fortunate to border two Great Lakes in Wisconsin. Both Lake Superior and Lake Michigan have rich histories of use by Native Americans, early nineteenth century traders and explorers, commercial shipping and fishing industries, and recreational users. Today, the Great Lakes are of great importance for industry, transportation, food supply, drinking water, and recreation. About 33 million people live within the Great Lakes basin, one of the most densely populated areas in North America. In response to increasing pollution concerns in the Great Lakes, a variety of management plans and pollution prevention regulations have been created.*

## Clean Bay Backer Education Package

The packet consists of a video (20 min.), *Student Activity Guide* designed for 4th and 5th graders, a *Teacher's Guide*, and a coloring book for 1st - 3rd graders. This is a northeast Wisconsin-centered water quality educational tool. The animated clean bay backers talk about polluted runoff, which is the area's largest water pollution concern. They show the causes of polluted runoff and demonstrate some of the things that everyone can do to help prevent it. To order contact: Remedial Action Plan Specialist, Clean Bay Backers, Wisconsin DNR, PO Box 10448, 1125 N. Military Ave., Green Bay, WI 54307-0448. 920/492-5825.

## The Directory of Great Lakes Education Materials

Provides a listing of available Great Lakes educational materials (1994). International Joint Commission, Information Services Section, PO Box 32689, Detroit, MI 48232-2869. 313/226-2170; Fax: 519/257-6740.

## The Great Lakes: An Environmental Atlas and Resource Book

A thorough background resource about the Great Lakes. Environmental Protection Agency, Region V, 77 W. Jackson St., Chicago, IL 60604. 800/621-8431. Free.

## Great Lakes Environmental Directory

Directory includes citizen groups, government agencies and environmental education programs concerned with Great Lakes environmental issues in Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario. International Joint Commission, National Environmental Directory, 8850 O'Brien Rd., Missoula, MT 59801. 406/543-3359.

## Great Lakes Environmental Education Project

Provides an overview of Great Lakes issues using classroom activities, games, discussions, and projects. Contact East Michigan Environmental Action Council, 21220 West 14 Mile Road, Bloomfield Township, MI 48301. 810/258-5188; Fax: 810/258-5189.

## Great Lakes in My World

Activities workbook that includes materials for educating K-8 students on the Great Lakes ecosystem. Lake Michigan Federation. 59 E. Van Buren St., Suite 2215, Chicago, IL 60605. 312/939-0838; Fax: 312/939-2708. \$10.

## Great Minds! Great Lakes!

Contains K-12 lesson plans to provide an integrated approach to Great Lakes issues for history, social studies, and science. U.S. Environmental Protection Agency, Office of Public Affairs-Region V, 77 W. Jackson St., Chicago, IL 60604. 800/621-8431. Free.

## The Life of the Lakes: The Great Lakes Fishery

A guide to great lakes fishery education materials. Contact Michigan Sea Grant College Program, Cooperative Extension Service, Michigan State University, 334 Natural Resources Building, East Lansing, MI 48824-1222. 517/336-1628; Fax: 517/336-1028.

### **Marine Education: A Bibliography of Educational Materials**

Materials available from Sea Grant College programs (Great Lakes and marine). UW-Madison, Sea Grant College Program, 1800 University Avenue, Madison, WI 53705-4094. 608/263-3259. \$2.

**OEAGLS (Oceanic Education Activities for Great Lakes Schools)** (Grades 5-9, \$3) and **OEAGLETS (Oceanic Education Activities for Great Lakes Schools early elementary grades)** (Grades K-4) \$5. Contain background information, interdisciplinary lessons and activities related to great lakes and oceans. Some activities are Lake Erie-specific or Ohio-specific but can be adapted to Lake Michigan or Lake Superior. Ohio Sea Grant College Program, Ohio State University, 1314 Kinnear Road, Columbus, OH 43212-1194. 614/292-8949; Fax: 614/292-4364.

**Our Great Lakes Connection: A Curriculum Guide for Grades Kindergarten through Eight** Includes 24 Great Lakes lessons and activities to use in science, social studies, and drama activities. For loan only (can be duplicated) from UWEX-Environmental Resources Center, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706, 608/262-1377 or the Wisconsin Center for Environmental Education, UWSP-CNR, Stevens Point, WI 54481. 715/346-4973.

### **Paddle-to-the-Sea: Supplemental Curriculum Activities**

Intended for use with Holling Clancy Holling's book *Paddle-to-the-Sea*. Written in the 1940's about the adventures of a model wooden canoe and paddler built by a Native American boy from Canada. The activities are multidisciplinary including topics in biology, ecology, geography, physical sciences, social studies, languages, and math (also includes a Great Lakes map, 24" x 36"). Send \$10 to Ohio State University, and mail to: Ohio Sea Grant College Program, Ohio State University, 1314 Kinnear Road, Columbus, OH 43212-1194. 614/292-8949; Fax: 614/292-4364.

## **Statewide Organizations**

**DNR Bureau of Watershed Management,**



**Remedial Action Programs Coordinator**  
GEF 2, WT/2, PO Box 7921, Madison, WI 53707. 608/267-9352.

### **Lake Michigan Federation**

59 E. Van Buren St., Suite 2215, Chicago, IL 60605. 312/939-0838; Fax: 312/939-2708.

### **UW-Extension Cooperative Extension County Offices**

4-H Agent, Lake Specialists, or Basin Educators. See *Organizations* section for addresses.

### **UW Sea Grant College Program and UW Sea Grant Institute Communications Office**

Technical information source. 1800 University Avenue, University of Wisconsin, Madison, WI 53706. 608/263-3259; Fax: 608/263-2063.

## **Regional Organizations**

### **Bay Lake Regional Planning Commission**

Suite 211, Old Fort Square, 211 N. Broadway, Green Bay, WI 54303. 920/436-6116; Fax: 920/436-4225.

### **DNR Regional Offices**

See *Organizations* section for regional offices.

- **Northeast Region & Northern Region**  
Contact Departments of Water Resources Management, Water Supply, Water Regulation and Zoning, Wastewater Management, or Fisheries Management depending on the information needed.

### **Lake Superior Center**

For newsletters and Lake Superior aquatic education programs. 353 Harbor Drive, Duluth, MN 55802, 218/720-3033; Fax: 218/720-3407  
email: lakesuperior@igc.org

### **Northern Great Lakes Center**

This center in Ashland will open in May 1998 with exhibits and environmental education programs about The northern Great Lakes region. Before May 1998, contact Chequamegon National Forest, Box 1170 Fourth Ave. South, Park Falls, WI 54552. 715/762-2461.

### **Schlitz Audubon Center**

Nature center on Lake Michigan that offers staffed school and general public programs and educator workshops. Produces "Living Lightly in the City" curriculum. 1111 E. Brown Deer Rd., Milwaukee, WI 53217. 414/351-4200.

### **UW-Extension Cooperative Extension County Offices**

See *Organizations* section for county offices.

### **UW Sea Grant Institute, Advisory Services**

600 E. Greenfield Ave., Milwaukee, WI 53204-2944. 414/227-3291.

### **University of Wisconsin-Superior**

- Lake Superior Research Institute, 1800 Grand Avenue, Superior, WI 54880. 715/394-8315.
- Sea Grant Advisory Service, Sunquist 143, Superior, WI 54880. 715/394-8472

### **Wisconsin Maritime Museum**

75 Maritime Drive, Manitowoc, WI 54220. 920/684-0218.

## **Field Trip & Presentation Contacts**

### **DNR Regional and GMU Offices**

See *Organizations* section for regional offices.

### **Door County Maritime Museum**

Sturgeon Bay, WI 54235. 920/743-5958.

### **UWEX Cooperative Extension County Offices**

See *Organizations* section for county offices.

### **UW-Sea Grant Institute, Advisory Services**

600 E. Greenfield Ave., Milwaukee, WI 53204-2944. 414/227-3291.

### **University of Wisconsin-Superior**

UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

### **Wisconsin Maritime Museum**

See above



## **Groundwater**

*Would you believe we walk on water every day? Groundwater is essentially just that, water in saturated soil and rock beneath the surface of the ground. Although some people may think of groundwater as an underground river, most groundwater flows in the cracks and spaces between rocks and soil found beneath the surface of the earth. Wisconsinites walk on groundwater so plentiful that if it were all brought to the surface it would cover the entire state in 30 feet of water. Rain is the main source of "groundwater recharge" (water that supplies the flow of groundwater). More than 70% of Wisconsin residents get their drinking water from groundwater. In Wisconsin, 570 million gallons of groundwater is drawn by public and private wells every day.*

### **Better Farms and Groundwater**

A farmer's guide to groundwater-protecting farming practices. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821.

### **Better Homes and Groundwater**

A 15-page homeowner's guide to groundwater-safe maintenance of lawns, gardens, workshops, garages and septic systems, plus disposal alternatives for household hazardous wastes. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication # PUBL-WR-386-95.

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### Groundwater Fact Sheets

Thirty-three different topics are covered in this series of fact sheets about groundwater quality and its effects on public health. Department of Health and Family Services, Bureau of Public Health, 1414 E. Washington Ave., Rm. 96, Madison, WI 53703-3044. 608/267-6844.

### Groundwater Flow Demonstration (model, manual, and video)

Includes a three-dimensional groundwater model constructed of soil materials and plexiglass. The effects of clay barriers and water withdrawals on groundwater movement from recharge areas to discharge areas are effectively demonstrated as well as concepts related to groundwater pollution. Available for loan from:



- Central Wisconsin Groundwater Center. 715/346-4270.
- University of Wisconsin Cooperative Extension County Office or Land Conservation Department Office. See *Organizations* section for contacts.
- UWEX Basin Educator, Western Area. 715/836-5513.
- Water Education Resource Centers (WERCs). See *Organizations* section for contacts.
- Wisconsin Geological and Natural History Survey. 608/262-3799.

Available for purchase from:

- Groundwater Model Project, Student Chapter AWRA, College of Natural Resources, UW-Stevens Point, WI 54481. 715/346-2372.
- National Project WET, 201 Culbertson Hall, Montana State University, Bozeman, MT 59717-005. 406/994-5392.

### Groundwater Investigation Kit

Assorted guides, videos, and equipment available for loan through some Wisconsin Water Education Resource Centers (WERCs), UWEX Basin Educators, Cooperative Extension offices, or county Land Conservation Departments (see *Organizations* section for contacts).

### Groundwater Report Special Issue

This reprint of a 1984 *Wisconsin Natural Resources* magazine provides a summary of the major Wisconsin groundwater laws. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. 4 pp.

### Groundwater Study Guide

A curriculum development guide for 6th-9th grade teachers is adaptable to other grades, non-formal youth, and adult education programs. The guide comes with a packet of copy-ready student activity sheets, overhead masters, one large and 10 small "Groundwater and the Water Cycle" posters, and "Groundwater: Wisconsin's Buried Treasure." DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790. Publication #PUB-IE-004(90).

### Groundwater: Wisconsin's Buried Treasure

A 32-page 1989 supplement to the *Wisconsin Natural Resources* Magazine reviews the relationship between land use and water quality and principles of groundwater movement. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication # PUBL-WR-224 89.

### A Guidebook to Groundwater Resources & Education Opportunities in the Great Lakes Region

1993. This guide includes: basic groundwater information, groundwater in the Great Lakes Region, land use activities and impacts on groundwater quality and quantity, groundwater education programs, community and citizen involvement, protection programs, and available resources and literature. Great Lakes Commission, The Argus II Building, 400 Fourth Street, Ann Arbor, MI 48103-4816. 313/665-9135. 92 pp.

### **Water Cycle Poster**

This graphic representation of the water cycle includes groundwater in the cycle (four color poster available in two sizes: 11" x 17" and 24" x 38"). Wisconsin Geological and Natural History Survey, Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

### **Wisconsin Groundwater (slide/tape & video)**

Includes two videotapes by this title. The first is a 26-minute color videotape, which provides a general introduction to Wisconsin's groundwater resources and issues. The second is a 14-minute videotape/slide presentation that provides general information on the quality and quantity of Wisconsin's groundwater. Cooperative Extension Media Collection, PO Box 2093, 45 N. Charter St., Rm. 21, Madison, WI 53715. 608/262-3514 for ordering and prices.

### **Wisconsin Groundwater Education Resource Directory**

Lists over 200 publications and other resources related to groundwater in Wisconsin. The catalogue features four reference sections, including: state and federal agencies with their groundwater-related activities, statewide groundwater education programs, resources (publications, fact sheets, etc.), ordering information, and schools with groundwater courses and majors available. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication #PUBL-WR-381-94.

Refer to the *Wisconsin Groundwater Education Resource Directory* for a more detailed resource list.

### **Statewide Organizations**

(See *Organizations* section for more detailed information, addresses and phone numbers)

#### **Central Wisconsin Groundwater Center**

Educational materials and technical information; an excellent starting point when looking for more detailed or local information. College of Natural Resources, Stevens Point, WI 54481. 715/346-4270; Fax: 715/346-2965. email: cmecheni@uwsp.edu

### **DNR Central Office**

PO Box 7921, Madison, WI 53707-7921.

- **Bureau of Communication & Education**  
608/266-6790
- **Bureau of Drinking Water and Groundwater**  
608/266-0821
- **Home Page:** <http://www.dnr.state.wi.us>

### **U.S. Geological Survey**

There is a specific web page for Wisconsin, which includes groundwater data and other information about state projects.

- **Wisconsin District Office**  
8505 Research Way, Middleton, WI 53562.  
608/828-9901.
- **Home Page:** <http://www.dwdimdn.er.usgs.gov/>

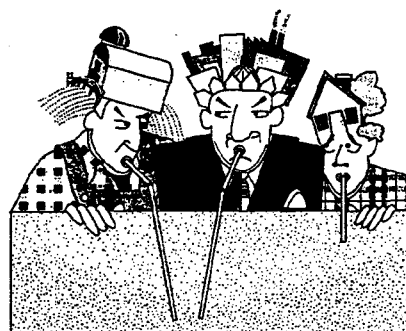
### **Wisconsin Geological and Natural History Survey**

Specific information on almost every county, groundwater flow maps, and geological information. Catalogue is indexed by county and includes a variety of maps and groundwater publications. Contact Hydrogeologist or Map Sales Department. Wisconsin Geological and Natural History Survey, Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

### **Regional Organizations**

#### **Central Wisconsin Groundwater Center**

College of Natural Resources, Stevens Point, WI 54481. 715/346-4270; Fax: 715/346-2965. email: cmecheni@uwsp.edu





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### **DNR Regional and GMU Offices**

Private and public water supply staff for information on groundwater wells.

Approximately 30 DNR publications are available on water supply. See "*Organizations*" section for regional and GMU offices.

### **Land Conservation Departments**

#### **County Offices**

Usually affiliated with the Priority Watershed Projects and has groundwater-related information and expertise. See "*Organizations*" section for county offices.

#### **Local College or University**

Contact for information on courses and other programs related to groundwater.

#### **Priority Watershed Projects**

There are over 90 Priority Watershed projects throughout Wisconsin where special attention is being given to protect the integrity of these watersheds, including groundwater. Contact your county offices of Land Conservation Department, UW-Cooperative Extension, DNR Regional or GMU office (see *Organizations* section for county, regional, and GMU offices), or the DNR and UWEX Home Pages:

DNR: <http://www.dnr.state.wi.us/eq/wq/nps/index.htm>

UWEX: <http://www.uwex.edu/waterres>

#### **Stevens Point-Whiting-Plover Wellhead Protection Project**

Works with homeowners, farmers, schools, and the general public to help develop land use practices to protect water resources (groundwater and surface water). Focused specifically on the watershed's nitrate and pesticide groundwater contamination concerns but, information is relevant to most of the state. They offer packets of information and educational programs. Contact Water Quality Educator, SWP Wellhead Protection Project, 817 Whiting Ave., Stevens Point, WI 54481. 715/345-5978.

### **U.S. Geological Survey Field Headquarters**

- **Madison** 6606 Seybold Rd., Madison, WI 53719. 608/274-3925.
- **Merrill** 2011 E. Main, Merrill, WI 54452. 715/536-2200.
- **Rice Lake** 313 West Knapp St., Rice Lake, WI 54868. 715/234-4015.

### **UW-Extension Cooperative Extension County Offices**

Basin educators, 4-H or Community, Natural Resource, Economic and Development (CNRED) agents may do groundwater projects with youth. Family Living and/or Agriculture agent may have local data related to groundwater pollution susceptibility, types of regional contaminants, and other related information. See *Organizations* section for county offices and water educators.

### **Water Education Resource Centers (WERCs)**

Offer teachers equipment and a variety of educational resources and opportunities including workshops and investigation materials. The six regional WERCs are listed in the *Organizations* section. Contact Suzanne Wade, Water Educator, UW-Extension, for more detailed information, Environmental Resources Center, 126 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/265-3257.

### **Field Trip & Presentation Contacts**

See *Organizations* section for regional and county offices.

#### **Central Wisconsin Groundwater Center**

College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-4270.

#### **County Planning and Zoning Department**

Refer to your local white pages under county name.

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## DNR Regional and GMU Offices

Private water supply staff for information on groundwater wells.



## Engineering and Consulting Firms

Many firms are involved with groundwater cleanup projects. Refer to your local yellow pages for contacts.

## Land Conservation Department County Offices

## Natural Resources Conservation Service County Offices

## Private Water Well Contractors

Contact to see how a well is drilled and for related information. Refer to your local phone book for contacts.

## Regional Planning Commission Offices

## UW-Extension Cooperative Extension County Offices

Basin educators, CNRED agents, and other resource personnel may be available for presentations.

## Wastewater Treatment and Drinking Water Treatment Facilities

Refer to your local white pages

## Home Page Sites

### DNR

<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>

### Environmental Protection Agency (EPA)

Home pages for Office of Ground Water and Drinking Water and a drinking water "Kids' Page." Home Page: <http://www.epa.gov>

### U.S. Geological Survey

<http://water.usgs.gov>

#### • Wisconsin Home Page:

<http://www.dwimdn.er.usgs.gov>

### UWEX

<http://www.uwex.edu/waterres>

# Impact of Water Quality on Plant and Animal Communities

*The quality of a stream, river, lake, groundwater, or wetland area has a great effect on the plants and animals living there. Some species are more sensitive to pollution than others. By first learning about the species found in your region, you can better understand what they need in order to live as well as how they tolerate degraded water quality. There are a variety of things you and your students can do to help protect plant and wildlife communities as members of a watershed.*

## Aquatic WILD, Project WILD program

Curricular materials include K-12, interdisciplinary guidebooks of activities about wildlife and ecosystems available through six-hour workshops. Contact Project WILD Office, DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790.

## DNR Fact Sheets

Information is available on most Wisconsin mammals, many reptiles, amphibians, mussels, fish, and birds (including many game birds, non-game birds, and waterfowl). DNR Bureau of Fisheries Management and Habitat Protection or Bureau of Wildlife Management, PO Box 7921, Madison, WI 53707-7921. 608/266-1877 or DNR Regional offices (see *Organizations* section for addresses).

## DNR Series on Contaminants

Fact sheet series topics include: radon, nitrates, pesticides, iron, and bacteria among others. Contact DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821; Fax: 608/264-9200.

## Findings

Newsletter includes all current research of the Wisconsin DNR. Contact DNR Bureau of Integrated Science Services, PO Box 7921, Madison, WI 53707. 608/266-4359.

## Wisconsin's Biodiversity as a Management Issue

Includes chapters on aquatic systems and background information on aquatic habitats of Wisconsin's lakes, rivers, streams, and wetlands. DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790. \$12.

## Wildlife

### All About Loons

Loonwatch Program. Sigurd Olson Environmental Institute, Northland College, 1411 Ellis Ave., Ashland, WI 54806. 715/682-1223.

### The Great River Flyway

The management strategy for migratory birds on the Upper Mississippi River. U.S. Fish and Wildlife Service. Upper Mississippi River National Wildlife Refuge, Rm. 226, Post Office Bldg., 425 State St., LaCrosse, WI 54601. 608/784-3910.

## Wisconsin Fishing

Wisconsin DNR Bureau of Fisheries Management and Habitat Protection, PO Box 7921, Madison, WI 53707. 608/266-1877. Publication #PUBL-FM-204 91REV.

## Aquatic Insects

### Aquatic Insects of Wisconsin

Provides current taxonomic keys to Wisconsin's water bugs. UWEX, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #G3648. 60 pages. \$6. Home Page: <http://www.uwex.edu/ces/pubs.html>

### Key to Life in the Pond

An 11"x17" one-page key for identifying pond and lake invertebrate species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.



## Key to Macroinvertebrate Life in the River

An 11"x17" one-page key for identifying aquatic, riverine insect species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.

## Water Bugs

18 min. video and fact sheets about aquatic insects, how to catch, identify, and interpret the quality of the water depending on species found. UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410. \$5.

## Aquatic Plants

### Through the Looking Glass: A Field Guide to Aquatic Plants

Book illustrates and interprets about 120 plants, regional locations, descriptions, identification tips, and species value to wildlife and humans. Wisconsin Lakes Partnership, College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-2116. Publication #PUBL-FH-207-97. Cost.

## Fish

### Sportfish Advisory

DNR publishes surface water quality information to determine recommendations for eating fish. DNR Bureau of Fisheries Management and Habitat Protection. PO Box 7921, Madison, WI 53707. 608/266-1877.

## Statewide Organizations

DNR Bureau of Fisheries Management and Habitat Protection and Bureau of Wildlife Management  
PO Box 7921, Madison, WI 53707. 608/266-1877.

## Regional Organizations

(See *Organizations* section for contacts)

## DNR Regional or GMU Offices

## Local State, County, or City Parks

## U.S. Fish and Wildlife Service

## U.S. Forest Service

### **Field Trip & Presentation Contacts**

(See *Organizations* section for contacts)

#### **Audubon Society, Local Chapter**

See local phone book or Chamber of Commerce

#### **DNR Regional or GMU Offices**

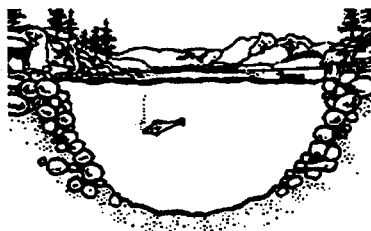
- **Watchable Fish Sites and Fish Hatcheries**

#### **Land Conservation Department County Offices**

#### **Local Fishing/Hunting Clubs**

#### **Local State, County, or City Parks**

#### **UWEX Cooperative Extension County Offices**



## Lakes

*More than 10,000*

*years ago, glaciers in the Wisconsin area left behind a multitude of lakes as huge chunks of ice slowly melted in low spots on the land. This glacial heritage has endowed Wisconsin with over 15,000 lakes that play an important role in the lives of residents and visitors alike. In Wisconsin, two out of three adults use lakes each year and they are one of the top destinations for visitors. Lakes are valued by humans for sources of food, means of transportation, recreational sites, and aesthetic beauty. These important waterways also provide flood control, pollutant stabilization, wildlife breeding grounds, and year-round habitat for many species. Lakes vary greatly throughout the state. Many lake enthusiasts are finding the need to balance our love of lakes with maintaining the health and integrity of these precious waters.*

#### **Adopt-A-Lake Project: A Resource Guide for Leaders**

Includes a wide range of information, techniques, and suggestions for planning, implementing, and evaluating an Adopt-A-Lake

project with students and community members. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-3366.

#### **Caring for our Lakes: A Curriculum on the Yahara Watershed**

This curriculum can be used in any community with a lake in its watershed. University of Wisconsin-Madison, Institute for Environmental Studies, 550 N. Park St., 64 Science Hall, Madison, WI 53706. 608/263-3064.

#### **DNR Technical Bulletin Series**

These bulletins cover a variety of lake-specific issues. DNR Regional or GMU offices for Publication #s 60-70. See *Organizations* section for DNR Regional and GMU offices.

#### **Do You Need a Mechanical Aquatic Plant Harvester?**

Booklet of background information pertinent to making decisions about the need for an aquatic plant harvester. Contact the county UW-Extension Office, DNR Regional Office, or the Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-3366. Publication #PUBL-FH-206-97.

#### **EPA Lake and Reservoir Restoration Guide**

A manual to assist in the restoration of the natural ecology of lakes and reservoirs. EPA, Region V, 77 W. Jackson St., Chicago, IL 60604. 800/621-8431.

#### **Interactive Lake Ecology: Student Workbook**

1991. Booklet that includes: introduction to lake ecosystems, experiments, worksheets, and a glossary. New Hampshire Department of Environmental Services, Water Supply and Pollution Control Division, Biology Bureau, 6 Hazen Dr., Concord, NH 03301. 603/271-3503.

#### **Key to Life in the Pond**

An 11"x17" one-page key for identifying pond and lake invertebrate species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.

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### **The Lake Connection**

This newsletter of the Wisconsin Association of Lakes, Inc. is published four times/year and is available with membership. Wisconsin Association of Lakes, PO Box 126, Stevens Point, WI 54481-0126. 715/346-3424. 800/542-5253. Home Page: <http://www.nalms.org/wal/wal.htm>

### **The Lake in Your Community**

A 20-page booklet that describes lake ecology, lake problems and solutions, citizens roles in lake protection, and benefits and costs of lake management. Wisconsin Lakes Partnership, UW-Extension, CNR, Stevens Point, WI 54481. 715/346-2116. Or contact your county UW-Extension agent, or DNR lakes specialist.

### **Lake Leaders' Handbook**

Reference to help citizens develop lake associations and lake districts, become familiar with laws, and learn how to become more involved in lake protection. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116. Or contact your county UW-Extension agent, or DNR lakes specialist.

### **The Lake List**

Includes all lake associations and local sources of assistance from organizations and firms which can provide equipment and services. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.

### **Lake Use Surveys**

Surveys conducted around the state to understand how people use lakes in Wisconsin. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116; or your local lake organization; or UWEX Cooperative Extension county office (see *Organizations* section for county offices).

### **LakeTides**

Quarterly newsletter for people interested in Wisconsin's lakes. Wisconsin Lakes Partnership, College of Natural Resources, University of Wisconsin, Stevens Point, WI 54481. 715/346-2116. Or contact your county UW-Extension agent, or DNR lakes specialist.

### **Leap into Lakes**

A hands-on exhibit and related educational materials about lakes and water quality. "Check out the Lakes" educational resource trunk includes books, videos, cassette tapes, curriculum guides, and posters and is available to borrow. Small fee required. Madison Children's Museum. 100 State St., Madison, WI 53703. 608/256-6445.

### **Life on the Edge**

A 110-page illustrated guide which includes information on buying waterfront property, landscape practices to protect water quality, how to manage unwanted aquatic plants, how to limit shoreline erosion, and conflicts with the living things that share your property. Also includes information on laws that affect waterfront residents. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116. Or contact your county UW-Extension agent, or DNR lakes specialist.

### **Pond Manual**

This newly developed manual will help you or your high school students with pond and lake investigations. UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

### **Surface Water Inventory of Counties or 'The Green Book'**

Includes all lakes and streams in each county. Available from DNR Regional Offices (see *Organizations* section for addresses).



### **Understanding Lake Data**

An educational booklet that helps make lake water quality data easy to understand. UW-Extension Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publications #G3582, \$2.75. Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Wisconsin Lakes**

A 174-page booklet that lists all lakes in the state, their physical characteristics; and the fish species found in each. Wisconsin Lakes Partnership, DNR Bureau of Watershed Management-Lakes and Wetlands Section, PO Box 7921, Madison, WI 53707. 608/267-7694. Publication #PUB-FM-800-91.

### **Your Aquatic Plant Harvesting Program: A How-to Field Manual**

A handbook designed to assist organizations with aquatic plant management. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.

## **National Organizations**

### **North American Lake Management Society (NALMS)**

Corporate Office, PO Box 5443, Madison, WI 53705-5443. 608/233-2836; Fax: 608/233-3186. Home Page: <http://www.nalms.org>

- **Kids and Lakes Web Site**  
<http://www.nalms.org/kidslks/kidslks.htm>

## **Statewide Organizations**

### **Adopt-A-Lake**

A project-oriented program which provides direction and resources to teachers, youth leaders, and youth (K-12) interested in "adopting" a lake in their community. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-3366. Email: [lmccann@uwsp.edu](mailto:lmccann@uwsp.edu)

### **Madison Children's Museum**

"Leap into Lakes" educational materials. 100 State St., Madison, WI 53703. 608/256-6445.

### **Self-Help Lake Monitoring Program**

Provides training and equipment to volunteers interested in collecting lake water quality data over time. Wisconsin Lakes Partnership, DNR, PO Box 7921, Madison, WI 53707. 608/266-8117.

### **Wisconsin Lakes Partnership**

A collaborative effort among DNR, UW-Extension, and citizens primarily represented by the Wisconsin Association of Lakes (WAL). UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.

The partnership involves the following programs:

- **DNR Bureau of Fisheries Management and Habitat Protection, Lakes and Wetlands Section**  
PO Box 7921, Madison, WI 53707-7921. 715/267-7694.
- **UW-Extension Lake Management Office**  
UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.
- **Wisconsin Association of Lakes**  
PO Box 126, Stevens Point, WI 54481-0126. 715/346-3424. 800/542-5253.  
Home Page: <http://www.nalms.org/wal/wal.htm>

### **Wisconsin Waterways Commission**

The Commission reviews and approves recreational boating projects under the Recreational Boating Facilities Program administered by the DNR. Contact DNR Liason, Bureau of Community Financial Assistance, PO Box 7921, Madison, WI 53707. 608/266-5897.

## **Regional Organizations**

(See *Organizations* section for regional and county offices)

### **DNR Regional Lake Coordinators**

### **Local Lake Associations and Districts**

See your local white pages or *The Lake List* (above)

### **UWEX Cooperative Extension County Agents**

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## Field Trip & Presentation Contacts

(See *Organizations* section for regional and county offices)

### County Cooperative Extension Agents

### DNR Regional Lake Coordinators

### Local Fishing/Hunting Clubs

See your local phone book or contact local Chamber of Commerce

### Local Lake Associations and Districts

See your local white pages or *The Lake List* (above)

## Home Page Sites

(See "Computer Networking" list in *Organizations* section for more information)

### Lakes Student-L

A computer discussion site for lakes; where youth and others concerned about lake protection can learn more about lakes, lake issues, and projects youth can get involved in to protect lake resources. Send an email message to: MAJORDOMO@BADGER.STATE.WI.US then write in lower case letters: subscribe lakes-Student-l

**North American Lake Management Society**  
<http://www.nalms.org/wal/wal.htm>

### Wisconsin Lakes BBS

An electronic bulletin board system about lake management in Wisconsin. Contact LAKEBB@DNR.STATE.WI.US

## Rivers and Streams

*Wisconsin is the gathering place of 10,865 rivers and streams, which course a total of 41,641 miles within the state. These waterways are the veins that carry the lifeblood -- water -- throughout our state. Rivers and streams provide sources*



*of food, habitat, avenues for transportation, industry needs, drinking water, and peaceful refuges. As a result, many of the state's rivers are feeling the impact of this use.*

### Carry Creek Teaching Tool

Creek model that can be set up in a classroom. Aquatic insects from your local creek can be added to the model. Available for loan from Central Wisconsin Groundwater Center, 715/346-4270, Wisconsin Geological Survey, 608/262-3799, UW-Extension Basin Educators and Water Education Resource Centers (WERCs). See *Organizations* section for addresses and phone numbers.

### A Citizen's Guide to Governmental River Management and Protection Programs and Agencies in Wisconsin

To order contact Department of Urban and Regional Planning (UW-Extension), Old Music Hall, 925 Bascom Hall, Madison, WI 53706. 608/262-1004.

### A Citizen's Streambank Restoration Handbook

Izaak Walton League of America, National Office, 707 Conservation Lane, Gaithersburg, MD 20878. 1/800/BUG-IWLA.

### Coon Creek's Contribution (video)

Follows Coon's creek where it starts as a coldwater trout stream south of LaCrosse to where it becomes a warmwater carp stream as it meets the Mississippi River. The video investigates what affected those changes to the stream. Concepts can be applied to all streams. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7610. Publication #A-309.

### Getting to Know Your Streams

General information and activities designed to assist citizens in becoming more aware of local streams. Dane County WaterWatchers, Dane County Extension, 1 Fen Oak Ct. Rm. 138, Madison, WI 53704. 608/224-3718.

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**Key to Macroinvertebrate Life in the River**

An 11"x17" one-page key for identifying aquatic, riverine insect species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.

**Making Streams Better**

A basic source of information for conducting stream studies. UW-Extension Basin Educator, UW-Extension, Geology Dept., UWEC, Eau Claire, WI 54702. 715/836-5513. Cost: \$5.

**The Milwaukee: Rebirth of a River**

Video about the Milwaukee River, its history, pollution concerns, and efforts to protect and restore the health of the river. DNR Bureau of Water Resources Management, PO Box 7921, Madison, WI 53707. 608/267-7610.

**Our Wisconsin River: Border to Border**

by Nels Akerlund and Joe Glickman. 1997. Picture and history book. Pamacheyon Publishing. Rockford, IL. 815/636-8218.

**Pond and Stream Safari**

Learn about the diverse world of aquatic invertebrates, their life histories, adaptations, and food webs in streams, lakes and ponds. Includes many illustrations, resources list, and a glossary. Designed for Grades 3-8, and recommended for stream studies. Cornell University Media Services, 7-8 Business and Technology Park, Ithaca, NY 14850. 607/255-2090 or 2091; Fax: 607/255-9946. \$12.75.

**The Rivers Curriculum Project**

Interdisciplinary (Language Arts, Chemistry, Math, Earth Science, Geography, and Biology) curriculum unit and water quality monitoring program for schools that provides background information, activities, a world wide web site for exchange with other schools, and a newsletter. The river project offers the following programs: middle school groundwater project (includes a model and curriculum), and a zebra mussel curriculum and trunks to borrow. The Rivers Project, Southern Illinois University, PO Box 2222, Edwardsville, IL 62026. 618/692-3788. Home Page: <http://www.siu.edu/OSME/river>

**Save Our Streams (video)**

This video demonstrates a step-by-step process of stream monitoring with aquatic insects; includes species identification and ecology. Izaak Walton League of America, National Office, 707 Conservation Lane, Gaithersburg, MD 20878. 1/800/BUG-IWLA.

**Stream Flow Model**

3" x 7" model demonstrates how stream channels are formed, change, and influence bank erosion based on effects from sediment, vegetation, and water flow. DNR, 608/785-9009.

**Stream Investigation Kit**

Kit of stream sampling equipment and identification materials available for loan. Western Wisconsin Water Education Resource Center, Beaver Creek Reserve, Route 2, Box 92, Fall Creek, WI 54742. 715/877-2212 or UWEX Basin Educator, 715/836-5513.

**Surface Water Inventory of Counties**

'The Green Book' includes all lakes and streams in each county. Available from DNR Regional Offices (see *Organizations* section for regional offices).

**Water Action Volunteers: Introductory, Hands-On Stream and River Projects for Wisconsin**

1995. Manual includes information to do a stream walk survey, stream or river clean-up, critter search, storm drain stenciling, watershed in a box activity, erosion in a bottle activity, creative erosion control activity; contains a creek model, and a resources section. UW-Extension Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html> Publication #GWQ018, or Wisconsin DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication # PUBN-WR-388-95 or for information contact WAV Program, DNR/UWEX, PO Box 7921, Madison, WI 53707. 608/264-8948.



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### **Water Quality and Stream Biology**

A guide that explains what determines stream water quality, including both biological and chemical indicators. Dane County WaterWatchers, Dane County Extension, 1 Fen Oak Ct., Rm. 138, Madison, WI 53704. 608/224-3718.

### **Working for the Rivers**

Statewide resource directory of the 60 community-based citizen groups in Wisconsin that are involved in river conservation. The River Alliance of Wisconsin, 122 State St., Suite 200, Madison, WI 53703. 608/257-2424; Fax: 608/251-1655.

### **National Organizations**

(See *Organizations* section for further information)

### **GREEN (Global Rivers Environmental Education Network)**

GREEN, 206 S. 5th Ave., Suite 150, Ann Arbor, MI 48104. 313/761-8142; Fax: 313/761-4951. Home Page: <http://www.econet.org/green>

### **Statewide Organizations**

(See *Organizations* section for addresses and numbers)

### **Department of Natural Resources**

PO Box 7921, Madison, WI 53707. 608/267-7694.

- **Bureau of Watershed Management**
- **Bureau of Fisheries Management and Habitat Protection**

### **River Alliance of Wisconsin**

122 State St., Suite 200, Madison, WI 53703. 608/257-2424; Fax: 608/251-1655.

### **U.S. Geological Survey**

- **Wisconsin District Office**  
8505 Research Way, Middleton, WI 53562.  
608/828-9901.

### **Water Action Volunteers (WAV) Program**

An action oriented program that focuses on stream and river education for local citizens. DNR/UWEX, PO Box 7921, Madison, WI 53707. 608/264-8948. email: [ppacker@facstaff.wisc.edu](mailto:ppacker@facstaff.wisc.edu)

### **Regional Organizations**

#### **Izaak Walton League, Local Chapters**

Contact local Chamber of Commerce, or phone book

#### **Local Angler Organizations**

Contact Chamber of Commerce, or phone book

#### **Local River Organizations**

Contact River Alliance of Wisconsin (see above address)

#### **Priority Watershed Projects or Local Watershed Associations**

Contact Chamber of Commerce or county Land Conservation Department, UW-Extension county office, or regional DNR office.

#### **Riveredge Nature Center**

"Testing the Waters" river monitoring program. 4458 W. Hawthorne Dr., PO Box 26, Newburg, WI 53060. 414/375-2715.

#### **U.S. Geological Survey Field Headquarters**

River monitoring projects:

- **Madison** 6606 Seybold Rd., Madison, WI 53719. 608/274-3925.
- **Merrill** 2011 E, Main, Merrill, WI 54452. 715/536-2200.
- **Rice Lake** 313 West Knapp St., Rice Lake, WI 54868. 715/234-4015.

#### **St. Croix National Scenic Riverway**

"Rivers Are Alive" Program. Division of Interpretation, PO Box 708, St. Croix Falls, WI 54024. 715-483-3284.

#### **UW-Extension County Offices**

See *Organizations* section for addresses and numbers.

### **Field Trip & Presentation Contacts**

(See *Organizations* section for addresses and numbers)

#### **DNR Regional and GMU Offices**

#### **Land Conservation Department County Offices**

#### **Local Nature Centers**

Local State and County Park staff

UW-Extension Cooperative Extension  
County Agents

## Home Page Sites

### American Rivers

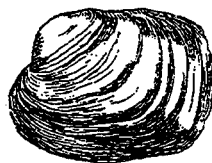
<http://www.igc.apc.org/amrivers>

### Global Rivers Environmental Education Network (GREEN)

<http://www.igc.apc.org/green/green.html>

### U. S. Geological Survey

<http://water.usgs.gov>



# Mississippi River

*Did you know that most of Wisconsin (about 60%) drains into the Mississippi River? This 1,300-mile waterway connects five states to the Gulf of Mexico and area export markets. The Upper Mississippi River system supports a wide variety of uses from commercial navigation, recreation, industrial and public needs, to the aquatic plants and animals that rely on this important ecosystem. The Mississippi River flyway is an important thoroughfare providing food and refuge for many species of migratory birds. The Mississippi is a vital river to the livelihood of the central states.*

### A Strategic Plan For Managing The Mississippi River Into The Next Century

The strategic plan establishes direction for future management plans for the river. It also provides an overview of the major issues affecting the river. U.S. Army Corps of Engineers. St. Paul District, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, MN 55101-1638. 612/290-5375; Fax: 612/260-5330.

### Commerce and Conservation on the Upper Mississippi River

History of commerce and conservation efforts on the river. U.S. Army Corps of Engineers - St. Paul District, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, MN 55101-1638. 612/290-5375; Fax: 612/260-5330.

### Protecting the Mississippi River: A Directory of People and Organizations

Includes a separate resource guide of contacts for newsletters, books, and reports. This directory includes organizations from Minnesota, Wisconsin, Illinois, and Iowa. The Minnesota Project, 1885 University Avenue West, Suite 315, St. Paul, MN 55104. 612/645-6159

### Dredging on the Upper Mississippi

Brochure describing dredging practices on the Upper Mississippi. U.S. Army Corps of Engineers., St. Paul District, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, MN 55101-1638. 612/290-5375; Fax: 612/260-5330.

### Educator's Guide to the Upper Mississippi River National Fish and Wildlife Refuge

Guide designed for educators visiting the Refuge with their students but can also be used to introduce students to the Upper Mississippi Region. U.S. Fish and Wildlife Service, Rm. 226 Post Office Bldg., 425 State St., LaCrosse, WI 54601. 608/784-3910.

### Fishing and Boating on the Mississippi River

Provides background information on Mississippi River habitats, river maps, sportfishing information, and pollution concerns. Wisconsin DNR Bureau of Fisheries Management and Habitat Protection, PO Box 7921 Madison, WI 53707-7921. 608/266-1877. Publication # PUBL-FM-745-94.

### Freshwater Mussels of the Upper Mississippi River

Pocket field guide to the freshwater mussels of the Upper Mississippi River. DNR State Office Building Rm. 104, 3550 Mormon Coulee Rd., LaCrosse, WI 54601. 608/785-9000.

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### **How Clean Is the Mississippi River?**

Mississippi River Basin Alliance, PO Box 3878,  
St. Louis, MO 63122. 314/822-4114.  
Home Page: <http://www.mrba.org/mrba>

### **Meeting the Challenge: Upper Mississippi River System Environmental Management Program**

Mississippi River Basin Alliance, PO Box 3878,  
St. Louis, MO 63122. 314/822-4114.  
Home Page: <http://www.mrba.org/mrba>

### **Mississippi Blues**

Magazine article about the Mississippi River that appeared in *The Minnesota Volunteer* Nov-Dec. 1994 issue. Minnesota Department of Natural Resources, 500 Lafayette Road, St. Paul, MN 55155-4046. 612/296-0888

### **Mississippi River Museum**

Includes Woodward Riverboat Museum and a variety of exhibits. PO Box 266, Third St., Ice Harbor, Dubuque, Iowa 52004-0266. 319/557-9545

### **Mississippi River Workshops**

Workshops offered by the DNR which include background information, a binder full of resources, and activities about the Mississippi River, its history, present status and concerns, and future plans. DNR Western Boundary Rivers Unit, Mississippi River Specialist, State Office Building Rm. 104, 3550 Mormon Coulee Rd., LaCrosse, WI 54601. 608/785-9000.

### **Rivers of Life Program**

Interdisciplinary, hands-on learning program for students, grades 3-12, that focuses on the Mississippi River watershed. It includes on-line programs and multidisciplinary approaches to science, math, social studies, and art. Hamline University, Center for Global Environmental Education, 1536 Hewitt Ave., St. Paul, MN 55104-1284. 612/523-2855.  
Home Page: <http://cggee.hamline.edu>

### **Sediment: Clogging the Lifelines of the Upper Mississippi River System**

Mississippi River Basin Alliance, PO Box 3878, St. Louis, MO 63122. 314/822-4114.  
Home Page: <http://www.mrba.org/mrba>

## **Mississippi River Organizations**

### **DNR Western Office**

DNR Western Boundary Rivers Unit (LaCrosse, Alma and Prairie du Chien). DNR, State Office Building Rm. 104, 3550 Mormon Coulee Rd., LaCrosse, WI 54601. 608/785-9000.

### **Environmental Management Technical Center**

This center for ecological monitoring and analysis manages the Long Term Resource Monitoring Program; the largest river-related inventory, monitoring, research, spatial analysis, and information sharing program in the United States. EMTC, 575 Lester Ave., Onalaska, WI 54650. 608/783-7550. Web site (see below).

### **Local Libraries**

Maps and other Mississippi River resources.

### **Minnesota-Wisconsin Boundary Area Commission**

619 Second St., Hudson, WI 54016. 715/386-9444.

### **Mississippi River Basin Alliance**

A citizen coalition that unites environmental justice groups and traditional conservation groups around issues impacting the Mississippi River. PO Box 3878, St. Louis, MO 63122. 314/822-4114.  
Home Page: <http://www.mrba.org/mrba>

**Upper Mississippi River Basin Association**  
408 St. Peter St., 415 Hamm Building, St. Paul, MN 55102. 612/224-2880.

### **Upper Mississippi River Conservation Committee (UMRCC)**

4469 48th Avenue Court, Rock Island, IL 61201. 309/793-5800.

## **Mississippi River Field Trip & Presentation Contacts**

### **Army Corps of Engineers**

Lock and dam tours, including **Blackhawk Park**. For further information contact office in LeCrescent, MN. 507/895-6341.

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### **Effigy Mounds National Monument**

Interpretive school programs. 151 Hwy. 76, Harpers Ferry, Iowa 52146. 319/873-3491.

### **Minnesota Valley National Wildlife Refuge**

U.S. Fish and Wildlife Service, 3815 E, 80th St., Bloomington, MN 55425. 612/828-0725.

### **Mississippi River Museum**

PO Box 266, Third St., Ice Harbor, Dubuque, Iowa 52004-0266. 319/557-9545

### **Mississippi Valley Archaeological Center**

Youth programs through UW-Lacrosse. 1725 State St., UW-LaCrosse, LaCrosse, WI 54601. 608/785-8454.

### **Science Museum of Minnesota**

Mississippi River exhibit in Minneapolis/St. Paul. "Museum on the Move" Program, 30 E. 10th St., St. Paul, MN 55101. 800/221-9444, ext. 4748. See *Organizations* section for more detail.

### **U.S. Fish and Wildlife Service, Upper Mississippi River**

U.S. Fish and Wildlife Service, Rm. 226 Post Office Bldg., 425 State St., LaCrosse, WI 54601. 608/784-3910. Web site (see below).

### **Villa Louis**

School programs and site visits. PO Box 65, Prairie du Chien, WI 53821. 608/326-2721.

### **Wyalusing State Park**

Newly developed activity guide for use within the park, summer programs mostly. Contact 608/996-2261.

## **Home Page Sites**

### **Environmental Management Technical Center**

U.S. Geological Survey, Biological Resources Division. Web page includes biological, physical, spatial, technical data and information about the Upper Mississippi River system. Web site includes aerial photography of the Upper Mississippi River. <http://www.emtc.nbs.gov>

### **Mississippi River Basin Alliance**

See description above. <http://www.mrba.org/mrba>

### **National Biological Survey**

Information related to various projects and can access information about Wisconsin programs; including Upper Mississippi River system Long Term Resource Monitoring Program. <http://www.its.nbs.gov>

### **Upper Mississippi River Fish and Wildlife Service Web Page**

Information about the longest wildlife refuge in the lower 48 states. [http://www.emtc.nbs.gov/umr\\_refuge.html](http://www.emtc.nbs.gov/umr_refuge.html)

### **U.S. Army Corps of Engineers**

Information about floods, local Army Corps districts, dam sites, and water control centers. <http://www.ncs.usace.army.mil>

### **U.S. Geological Survey**

Web Site includes a wide variety of information related to water resources in the United States. <http://water.usgs.gov>

- **Wisconsin Web Page**

Includes streamflow data for state projects. <http://www.dwimdn.er.usgs.gov>



## **Waste Water Treatment Issues**

*Most of Wisconsin's larger communities and businesses have wastewater treatment facilities to ensure that water leaving our homes and industries is returned clean to local streams, rivers or lakes. As populations grow, it is important for city planners to accommodate increased wastewater treatment needs.*

*Treatment for certain chemical compounds is difficult for some facilities. The more we know about what we send down the drain and what our treatment facilities can handle could greatly affect the water quality of our local waterways.*

### **Biosolids**

Four-page brochure about the rich organic fertilizer and soil conditioner derived from wastewater used on Madison area farms. Madison Metropolitan Sewerage District, 1610 Moorland Rd., Madison, WI 53717. 608/222-1201, ext. 272; Fax: 608/222-2703.

### **Eco Masters**

Interactive computer (Macintosh-compatible) game for all age levels developed by the Green Bay Metropolitan Sewerage District that follows water through a house (free installation for Green Bay area schools, if you have enough memory and a designated staff person to be responsible for the program). Green Bay Metropolitan Sewerage District, 2231 N. Quincy St., Green Bay, WI 54301. 920/432-4893.

### **Septic System Model**

The septic system model is a 3-panel unit 20" high x 24" wide and includes a house model with both "standard" and "mound" septic systems displayed in cutaway views. To borrow the septic system model, contact UW-Extension, Western Basin Educator, Geology Dept., UWEC, Eau Claire, WI 54702. 715/836-5513; Fax: 715/836-2380. Email: strussr@uwec.edu

### **Septic Tank Model**

A 6" x 11" x 8" clear plastic model of a septic tank with instructions for how to make sludge and scum! To borrow the septic tank model, contact UWEX - Environmental Resources Center, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

### **Water Environment Federation Packet (video series)**

Series includes "Saving Water: The Conservation Unit," "The Groundwater Video Adventure," "The Surface Water Unit," and "The Wastewater Treatment Unit: H2O TV." Each video is filled with action and animation. The series comes with a Teachers' Guide of 20 activities. Contact your local Cooperative Educational Service Agency (CESA) to borrow the packet.

### **The Water Source Book**

Information and activity guide includes hands-on projects dealing with water and wastewater treatment designed for grades 1-5 but adaptable to higher grades. Water Environment Federation, Central States Offices Public Education Committee, Department of Civil Engineering, 1 University Plaza, Platteville, WI 53818-3099. 608/324-1543; Fax: 608/324-1566. \$12.

## **Statewide Organizations**

**Department of Natural Resources, Bureau of Watershed Management,**  
Wastewater Management, PO Box 7921,  
Madison, WI 53707-7921. 608/267-7694.

### **Water Environment Federation (WEF) Wisconsin Chapter**

A professional organization of sewage treatment plants. Contact WEF chairman, Public Education Committee for the Water Source Book (see above). At the national level, contact Water Environment Federation, 601 Wythe St., Alexandria, VA 22314-1994. 800/666-0206, 703/684-2452. Home Page: <http://www.wef.org>

## **Regional Organizations**

(See *Organizations* section for contacts)

**DNR Regional or GMU Offices**  
Wastewater treatment staff

**Green Bay Metropolitan Sewerage District**  
Green Bay Metropolitan Sewerage District, 2231 N. Quincy St., Green Bay, WI 54301. 920/432-4893.

### **Local Sewerage District or Wastewater Treatment Facilities**

For potential field trips, school presentations, pamphlets, or other educational materials.

**Madison Metropolitan Sewerage District**  
1610 Moorland Rd., Madison, WI 53717.  
608/222-1201, ext. 272.

**Milwaukee Metropolitan Sewerage District**  
Contact 414/272-5100.

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## UWEX Cooperative Extension County Offices

### Water Environment Federation

See above address

## Field Trip & Presentation Contacts

### DNR Regional or GMU Offices

Wastewater treatment staff. See *Organizations* section for offices.

### Local Sewerage Districts, Local Wastewater Treatment Facilities

Large and some small facilities may offer organized tours. Many districts have educational materials and brochures. Refer to local phone book or contact Wisconsin Wastewater Operators Association (see below).

### Wisconsin Wastewater Operators Association

Composed of all wastewater treatment plants in Wisconsin (approximately 660 statewide). Individual treatment plants may offer school trips and instructional materials. Contact Association Chairman for list, W8779 Hwy. 10, Ellsworth, WI 54011. 715/273-6461; Fax: 715/273-6164.

# Water Quality: Risk Assessment and Reduction



*State and federal agencies determine water quality standards and work together with local governments and citizens to assess the quality of waterways. Water quality standards are also designed to protect aquatic life. Understanding what influences the quality of our water can empower us as citizens to consider our daily actions and how they impact our waterways.*

### Areawide Water Quality Management Plan

Each large river basin has a new water quality management plan developed every 5 years with

details about the watershed and water quality issues in that basin. Contact DNR regional offices or the central office at 608/266-0152 for more information. See *Organizations* section for regional offices.

### Be Wisconsin Water Wise Placemats

Paper placemat of activities including a maze, cartoons, and search and find picture. Schools can laminate the placemat to use as part of their water education programs. UW-Extension Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>.

### Give Water A Hand

A self-directed resource guide that helps youth look closely at their community and provides direction for completing a service or action project. Youth design their own project based on water investigations in their community. To order the *Youth Action Guide* and accompanying *Leader Guidebook* call 800/928-3720 or contact your county UWEX Cooperative Extension county office. Home Page: <http://www.uwex.edu/erc>

### It All Adds Up (video series)

Video series which introduces nonpoint source pollution concerns and prevention strategies. Includes: *Taking Action for Cleaner Water* (series overview, 22 min.), *Conservation in the 90's* (19 min.), *From Barnyard to Field* (17 min.), *Streamside Protection* (14 min.), and *From Curb to Stream* (19 min.). Available to borrow from most county Land Conservation Department offices or DNR Regional offices. See *Organizations* section for contacts.

### Keeping Current Newsletter

Newsletter of priority watershed projects; includes information of local watershed interest. There may also be newsletters for some individual priority watershed projects. Newsletter editor, UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-1369.

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### **Priority Watershed Project Plans**

Contact county offices of Land Conservation Department, UW-Cooperative Extension, or DNR regional offices. See *Organizations* section for contacts.

### **Remedial Action Plans (RAP)**

Comprehensive Management Plans or Clean-up plans for areas identified as having severe environmental problems including: Lower Green Bay, Lower Menominee River, Sheboygan River, Milwaukee Estuary, St. Louis River, and the Petenwell and Castle Rock Flowages. Contact DNR, Remedial Action Plan Coordinator, 608/267-9352.

### **Water Action Volunteers: Introductory, Hands-On Stream and River Projects for Wisconsin**

1995. Manual includes information to do a stream walk survey, stream or river clean-up, critter search, storm drain stenciling, watershed in a box activity, erosion in a bottle activity, creative erosion control activity, a creek model, and a resources section. To order, contact UW-Extension Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>. Publication #GWQ018, or DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBN-WR-388-95 or contact WAV Program, 608/264-8948.

### **Water Activities to Encourage Responsibility**

Classroom activities covering concepts of water supply, geology, pollution, water-related careers, and more. DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790. Publication # PUBL-WR-324-93. 46 pp.

### **WILD and WET**

Series of videos from the Neville Public Museum exhibit on water use, runoff, agriculture, and water quality issues. Provide the museum with a blank videocassette and they will make copies. Neville Public Museum, 210 Museum Place, Green Bay, WI 54303. 920/448-4460.

### **The Wisconsin Water Quality Assessment Report to Congress**

DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694. Publication #PUB-WR254-96 Rev.

### **Wisconsin's Forestry Best Management Practices for Water Quality**

Provides an understanding of best management practices for forestry and other background information. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694. Publication #PUB-FR-093-95.

### **Statewide Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses and phone numbers)

#### **DNR Bureau of Watershed Management, Nonpoint Pollution Program**

DNR, PO Box 7921, Madison, WI 53707. 608/266-0140.

#### **UWEX-Environmental Resources Center**

UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-1369.

#### **Water Action Volunteers (WAV)**

DNR, WR/2, PO Box 7921, Madison, WI 53707. 608/264-8948.

### **Regional Organizations**

(See *Organizations* section for contacts)

#### **DNR Regional GMU or Offices, Water Resources Staff**

#### **Land Conservation Department County Offices**

#### **Priority Watershed Project Managers**

County your county Land Conservation Department, UW-Cooperative Extension office, DNR office, or the DNR and UWEX Web Sites: DNR:

<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>

UWEX: <http://www.uwex.edu/waterres>

## UWEX Basin Educators

## UWEX Cooperative Extension County Offices

## Water Education Resource Centers

See "State Water-Related Organizations" in *Organizations* section for contacts.

## Field Trip & Presentation Contacts

(See *Organizations* section for contacts)

## Land Conservation Department County Offices

## Local Water Treatment Facilities

See local phone book

## UWEX Basin Educators

## UWEX Cooperative Extension County Offices



# Water Quality Monitoring

*By monitoring water quality, people have become more aware of the health of their local waters. Continuous monitoring enables people to more easily detect changes in water quality over time. Some monitoring groups have found problems in their streams and were able to trace the pollutant to its source and help remedy the situation. Water quality monitoring can be a simple way to get involved in protecting the health of your community and provides for hands-on science education with both youth and adults.*

## Adopt-A-Lake Packet

Includes a wide range of information, survey techniques, and suggestions for planning, implementing, and evaluating an Adopt-A-Lake project with students and community members. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-3366.

## Field Manual for Water Quality Monitoring: An Environmental Education Program for Schools

by Mark K. Mitchell and William B. Stapp. Identification booklet of background information and detailed explanations of monitoring methods including field sheets and data from other projects. There is also an elementary school guide (see *Water Studies for Young Folks* below). Internet access is available to compare data with water quality monitors from around the world. GREEN, 206 S. 5th Ave., Suite 150, Ann Arbor, MI 48104. 313/761-8142; Fax: 313/761-4951. \$19.95.

Home Page: <http://www.econet.org/green>

## Hydrologic Maps

Maps are available for the entire state and for each of the twelve major watersheds within the state. Wisconsin Geological and Natural History Survey, Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

## Key to Life in the Pond

An 11"x17" one-page key for identifying pond and lake invertebrate species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.

## Key to Macroinvertebrate Life in the River

An 11"x17" one-page key for identifying aquatic, riverine insect species. UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-2634.

## Save Our Streams

See *Rivers/Streams* section for more information. Contact Izaak Walton League. 800/BUG-IWLA.

## Surface Water Inventory of Counties or 'The Green Book'

Includes all lakes and streams in each county. Available from DNR Regional Offices. See *Organizations* section for addresses.

## Testing the Waters

Information and materials used for testing the Milwaukee River, including *Wonderful Wacky Water Critters*. Riveredge Nature Center, PO Box 26, Newburg, WI 53060. 414/375-2715.



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**Water Action Volunteers (WAV) Packet**  
See description in "Water Quality: Risk Assessment and Reduction" section for more information. Water Action Volunteers. 608/264-8948.

**Water Bugs (video)**

18 minute video and fact sheet about aquatic insects including: how to catch, identify, and interpret the quality of the water depending on the species found. Contact UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410. \$5.

**Water Studies for Younger Folks**

An elementary school version of the above. See above description and address for *Field Manual for Water Quality Monitoring*. \$9.95

**National Organizations**

**Global Rivers Environmental Education Network (GREEN)**

206 S. 5th Ave., Suite 150, Ann Arbor, MI 48104. 313/761-8142; Fax: 313/761-4951.  
Home Page: <http://www.econet.org/green>

**Statewide Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses and phone numbers)

**Adopt-A-Lake**

Adopt-A-Lake works in collaboration with the Self-Help Lake Monitoring program to provide lake monitoring opportunities to youth groups. College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-3366.

**Izaak Walton League (National Office)**

Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878. 800/BUG-IWLA.

**The River Alliance**

The River Alliance of Wisconsin, 122 State St., Suite 200, Madison, WI 53703. 608/257-2424; Fax: 608/251-1655.

**Self-Help Lake Monitoring Program**

Provides training and equipment to volunteers interested in collecting lake water quality data over time. DNR, PO Box 7921, Madison, WI 53707. 608/266-8117.

**Water Action Volunteers (WAV)**

DNR/UWEX, WR/2, PO Box 7921, Madison, WI 53707. 608/264-8948.

**Regional Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses and phone numbers)

**DNR Regional or GMU Offices**

Students may want to contact their local water resources staff to see if they are interested in receiving the students' monitoring data.

**Priority Watershed Projects**

Contact your county Land Conservation Department, UW-Cooperative Extension office, DNR office, or the DNR and UWEX Home Pages: DNR:

<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>  
UWEX: <http://www.uwex.edu/waterres>

**The River Alliance of Wisconsin Member Organizations**

See above address

**Riveredge Nature Center**

"Testing the Waters" program. Riveredge Nature Center, PO Box 26, Newburg, WI 53060. 414/375-2715.

**Field Trip & Presentation Contacts**

**DNR Regional or GMU Offices**

See *Organizations* section for contacts

**Priority Watershed Projects**

See above

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## Home Page Sites

### GREEN

Share water quality data with water quality monitors from around the world. Home Page: <http://www.igc.apc.org/green>

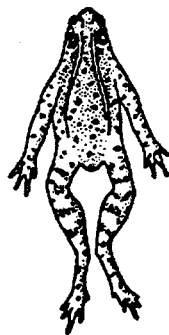
### Lakes Student-L

A computer discussion site for lakes; where youth and others concerned about lake protection can learn more about lakes, lake issues, and projects youth can get involved in to protect lake resources. Send an email message to: MAJORDOMO@BADGER.STATE.WI.US then write in lower case letters: subscribe lakes-student-l

### Wisconsin Lakes BBS

An electronic bulletin board system about lake management in Wisconsin. Contact LAKEBB@DNR.STATE.WI.US

# Water Resources Management & Protection Strategies



*Water resources management has been a priority for Wisconsin since statehood. The laws protecting the integrity of and public access to our state's waterways have set a precedent for continued protection. Our water resources are managed for a variety of uses including agriculture, industry, business, recreation, and drinking. Water management techniques such as dams, irrigation ditches, reservoirs, wetland impoundments, and stream diversions are designed for varying water control purposes. Each strategy has costs and benefits associated with altering natural systems to accommodate human needs.*

### Gathering Waters

A publication of the statewide organization of land trusts. Gathering Waters, Inc. 633 W. Main St., Madison, WI 53703. 608/251-9131.

### License to Dam

Dam licensing information for state rivers. UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

### Water Resources: A Guide for Municipal Officials

Educational and informational manual for town officials to assist them in decision-making which impacts the environment. It is designed for non-technical people making technical decisions and also includes descriptions of issues related to watersheds, public water supply, non-point source pollution, and animal waste. The guide offers suggestions for how to evaluate local township issues and make decisions based on the evaluations. Water Resources Management Program, Room 64 Science Hall, University of Wisconsin-Madison, Madison WI 53706. 608/263-1796.

### Wisconsin Natural Resources Magazine

Listed below are eleven publications which are full-color supplements to *Wisconsin Natural Resources* magazine. They feature a variety of easy-to-read articles (complete with color photographs) describing the history, science, policy and progress of water resources management in Wisconsin. To request all eleven of the series, write "magazine series" on the DNR order blank at the back of this *Wisconsin Supplement*.

- *Down to the Shoreline: Cutting Pollutants that Flow to Coastal Waters.* 1995. (PUBL-WR-413-95) [WR]
- *Groundwater: Protecting Wisconsin's Buried Treasure.* 1989. PUBL-WR-224-89 [DG]
- *How and Why We Monitor the Environment (Vital Signs).* 1995 (PUBL-AM-187-95) [AM]
- *Paying for the Past, Investing in the Future: Wisconsin Plans for Cleaner Harbors.* 1990 (PUBL-WR-259-90) [WR]
- *Shallow Lakes: Wisconsin's Most Misunderstood Waters.* 1995. PUBL-WR-387-95 [FH]
- *Superior: A Vision for the Future.* 1993

- (PUBL-WR-346-93) [WR]
- *A Tale of One City: A Community Searches for Solutions to Urban Nonpoint Pollution.* 1990. PUBL-WR-257-90 [WT]
  - *Water Rich and Water Wise: Progress in Meeting Wisconsin's Water Quality Challenges.* 1988 (PUBL-WR-206-88) [WR]
  - *Wetlands, Wonderlands.* 1994. (WZ-015) [WT]
  - *Wisconsin: Grateful for the Great Lakes.* 1986. (PUBL-WR-999-86) [WT]
  - *Wisconsin: Searching for Common Ground.* 1993. Land use planning related to air and water quality. (PUBL-IE-066-93) [CE]

### **Statewide Organizations**

(DNR offices can be reached at PO Box 7921, Madison, WI 53707-7921)

**DNR Bureau of Fisheries Management and Habitat Protection** 608/266-1877

**DNR Bureau of Watershed Management** 608/267-7694

#### **Gathering Waters**

Serves as an education and technical assistance center for land trusts and landowners. 633 W. Main St., Madison, WI 53703. 608/251-9131.

#### **The Nature Conservancy**

An international, non-profit organization that works to preserve natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. 633 W. Main St., Madison, WI 53703. 608/251-8140; Fax: 608/251-8535.

### **Regional Organizations**

(See *Organizations* section for offices)

#### **DNR Regional and GMU Offices**

Contact for information about dam removal projects, best management practices, and other water resources management information.

#### **Regional Planning Commissions**

#### **UWEX Cooperative Extension County Offices**

## **Field Trip & Presentation Contacts**

#### **DNR Regional and GMU Offices**

See *Organizations* section for offices

#### **UWEX Cooperative Extension County Offices**

See *Organizations* section for county offices

## **Acid Rain (Deposition)**

*Acid deposition has caused changes in the water chemistry of some northern Wisconsin lakes. As a result, entire lake ecosystems have been affected where sensitive species cannot tolerate the acidic conditions of the water. Many of Wisconsin's northern lakes cannot tolerate acid rain due to low buffering capacity (based on lake chemistry and geology). Wisconsin's acid rain law of 1985 mandated research of the environmental effects from acid rain, air pollution, and their prevention strategies. Recently, there have been national efforts to increase industry's requirements for treating smokestack effluent to improve air quality and reduce the concentration of acid rain.*

#### **Acid Rain in Wisconsin**

Pamphlet of general information about acid rain in Wisconsin. DNR Bureau of Air Management. PO Box 7921, Madison, WI 53707. 608/266-7718.

Listed below are fact sheets on Acid Rain in Wisconsin available from UWEX-Publications:

- **Acid Precipitation's Impact on Materials, Visibility and Human Health**
- **Acid Rain: Impact on Aquatic Organisms Other Than Fish**
- **Acid Rain Measurements: What They Mean**
- **Acid Rain: Potential Effects of Acidic Deposition on Forest Soil Biology**
- **Can Acid Rain Damage Lakes in Wisconsin?**

- **Forest Impacts: Acid Rain, Air Pollutants and Other Stress Factors**
- **The Role of Geologic Materials and Soils**
- **Wisconsin Fisheries and Acid Rain**
- **Wisconsin's Sensitivity to Acid Rain**

To order contact Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Home Page: <http://www.uwex.edu/ces/pubs.html>  
or complete the order form at the end of this *Supplement*.

**A Status Report of Acid Research in Wisconsin**  
Wisconsin Acid Deposition Council. Department of Administration, PO Box 7868, Madison, WI 53707-7868. 608/266-7375.

### **Statewide Organizations**

#### **DNR**

For technical information on acid precipitation, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921.

- **Bureau of Fisheries Management and Habitat Protection** 608/266-1877
- **Bureau of Integrated Science Services** 608/267-4231

#### **Trout Lake Environmental Station, UW-Madison Center for Limnology**

This research station in northern Wisconsin conducts a variety of research projects including long-term effects of acid rain on lakes. 1081 County Hwy. N, Boulder Junction, WI 54512. 715/356-9494.

**Wisconsin Acid Deposition Council**  
Department of Administration, PO Box 7868, Madison, WI 53707-7868. 608/266-7375.

### **Regional Organizations**

#### **DNR Regional or GMU Offices**

See *Organizations* section for regional offices

#### **University Researchers**

Contact your nearest university

**UWEX Cooperative Extension County Offices**  
See *Organizations* section for county offices

### **Field Trip & Presentation Contacts**

(See above organizations)

## **Agricultural Management Practices**

*The increased mechanization of the farming industry and the increased size and specialization of farms has brought with it greater impacts on water quality. Improvements to agricultural management practices have decreased nonpoint pollutants such as soil erosion, chemical runoff, groundwater contamination, and animal waste. The 1996 Farm Bill has furthered efforts to assist Wisconsin landowners to reduce water quality impacts through subsidized conservation practices. As a result, the reduction in pollutants reaching lakes, streams, wetlands, and groundwater has been significantly reduced and has benefited wildlife (i.e. songbirds, waterfowl, grassland, and wetland species). Programs such as the Farm Bill's Conservation Reserve Program (CRP) and those supported by UW-Extension, Land Conservation Department, Natural Resource Conservation Service, as well as individual farmers' and sustainable agriculture techniques, have been extremely successful and innovative in reducing agricultural impacts to Wisconsin's waterways.*

#### **Agricultural Management Practices to Minimize Groundwater Contamination**

1987. UW-Extension Environmental Resources Center, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-0020.

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**Barnyard Runoff Management**

1989. Contact UWEX-Publications .  
Cooperative Extension Publications, 630 W.  
Mifflin St., Rm. 170, Madison, WI 53703.  
608/262-3346. 608/262-3346.

**Best Management Practices for Wisconsin Farms**

Summary of the management practices used to protect soil and water on farms. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Publication #A3467.

Home Page: <http://www.uwex.edu/ces/pubs.html>

**Farm Operation Model**

Table-top model of a farm that highlights possible sources of nonpoint source pollution. Wisconsin Geological and Natural History Survey. 608/263-4175.

**FARM\*A\*SYST** Farmstead assessment system

**HOME\*A\*SYST** Homestead or subdivision assessment system. Worksheets and materials which help home and farm owners troubleshoot potential problems with wells. **FARM\*A\*SYST**, UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

**Fertilizers and Wisconsin Lakes**

1987. DNR Bureau of Watershed Management, Lakes and Wetlands Section, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694. Publication #PUBL-WR-163-87.

**Impacts of Phosphorus on Streams**

1984. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694.

**Nutrient Pest Management Program**

Many publications on a variety of topics related to nutrients and pest management. Nutrient Pest Management Program, 1535 Observatory Dr., Madison, WI 53706. 608/262-6140 or 265-2660.

**Pesticides and Water Quality**

1991. UWEX-Publications Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. 608/262-3346. Publication #GWQ005.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

**Toward A Sustainable Agriculture: A Teacher's Guide**

1991. This guide includes the following: introduction to sustainable agriculture, sustainable cropping and livestock systems, the economics of sustainable agriculture, alternative agricultural enterprises, new ways to sustainability, public policy issues in sustainable agriculture, and ethics and agriculture. Center for Integrated Agricultural Systems, 240 Agriculture Hall, UW-Madison, Madison, WI 53706. 608/262-5200. 151 pp.

**Statewide Organizations**

**Center for Integrated Agricultural Systems**  
240 Agriculture Hall, UW-Madison, Madison, WI 53706. 608/262-5200.

**FARM\*A\*SYST, UWEX-ERC**

216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

**Natural Resources Conservation Service**

**(NRCS)** State Conservationist. 6515 Watts Rd., Suite 200, Madison, WI 53719-2726.  
608/264-5341.

**Nutrient Pest Management Program, UW-Extension**

1535 Observatory Dr., Madison, WI 53706.  
608/262-6140.

**Regional Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses and phone numbers)

**Land Conservation Department County Offices****Natural Resources Conservation Service (NRCS) County Offices**

## UWEX Basin Educators

## UWEX Cooperative Extension County Offices

### **Field Trip & Presentation Contacts**

(See above)

## Exotic Species

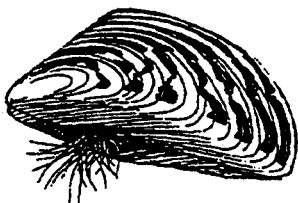
*"Exotic" species are organisms introduced into habitats where they are not considered native. They are a major cause of worldwide loss of biological diversity and can alter and degrade habitats. Species introduced into new habitats often crowd out native species because they have no natural predators, parasites, and/or competitors to keep their numbers in check. Humans cause most exotic species' introductions, either intentionally or accidentally. Some of the aquatic exotic species found in Wisconsin include: zebra mussel, ruffe, spiny water flea, Eurasian watermilfoil, and purple loosestrife.*

### **Aquatic Exotics Species Chest**

This chest filled with information and hands-on teaching materials about exotic species is available to borrow. Contact DNR, West Central Regional Office, 1300 Clairemont Ave., PO Box 4001, Eau Claire, WI 54702. 715/839-3700 or UWEX Cooperative Extension county offices (see *Organizations* section for county offices).

### **Eurasian Water Milfoil: A Threat to Wisconsin Lakes**

1995 Brochure. Wisconsin Lakes Partnership, College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-2116. Publication #PUBL-WR-393-95.



### **Eurasian Water Milfoil and Northern Water Milfoil**

Laminated 3 1/2" x 5" color ID card, showing both the native, northern species and the nuisance Eurasian species. UWEX-CNR, Wisconsin Lakes Partnership, UWEX-CNR, UWSP, Stevens Point, WI 54481. 715/346-2116. Publication #PUBL-WR-394-95.

### **Exotics: Don't Let Them Ride With You!**

Tacklebox identification card on zebra mussels, ruffe, spiny water flea and Eurasian water milfoil. Describes how to clean your boat and equipment. See also, "Zebra Mussels, A Boater's Guide," in this section. UW-Sea Grant, 1800 University Avenue, Madison, WI 53705-4094. 608/263-3259.

### **Exotic Species Advisory Poster**

8 1/2" x 11", black on yellow poster warns that nearby waters contain Eurasian water milfoil, ruffe, zebra mussels and spiny water flea. Gives boaters tips for preventing the spread of these potentially disruptive species to other lakes. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-411-95.

### **Exotic Species Problems/Public Education Solutions (video)**

"Stop the Invasion" video (25 min.) and handbook of background information, lesson plans, and activities designed to heighten awareness of exotic species invasions of our public waters and to assist in planning and implementing strategies to protect lakes and streams from invasion by aquatic exotic species. UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

### **A Field Guide to Aquatic Exotic Plants and Animals**

1995. Color brochure that describes the zebra mussel, ruffe, spiny water flea, Eurasian water milfoil, purple loosestrife and several other non-native flora and fauna that are disruptive or po-



tentially disruptive to Wisconsin ecosystems. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-407-95.

### **Monitoring Milfoil**

Brochure. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-397-95.

### **Recognizing Eurasian Water Milfoil**

Fact sheet with illustrations. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-438-95.

### **Status and Control of Purple Loosestrife in Wisconsin**

1987 Findings #4. DNR Bureau of Integrated Science Services, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/266-4359.

### **Zebra Mussels, A Boaters Guide**

Brochure. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WR-383-95.

### **Zebra Mussel: An Unwelcome North American Invader**

UW-Sea Grant Institute, 1800 University Ave., Madison, WI 53705-4094. 608/263-0644.

### **Zebra Mussel Monitoring Handbook for Inland Waters**

UW-Sea Grant Institute, 1800 University Ave., Madison, WI 53705-4094. 608/263-0644.

### **Zebra Mussel Trunk**

Information, pictures, and hands-on teaching materials about zebra mussels. There are several zebra mussel trunks available in Wisconsin including: UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410; DNR, State Office Building Rm. 104, 3550 Mormon Coulee Rd., La Crosse, WI 54601. 608/785-9000; UW-Extension Basin Educators; or Water Education Resource Centers (see *Organizations* section for contacts).

## **Statewide Organizations**

**DNR Bureau of Watershed Management**  
101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694.

**Exotic Species Management Program**  
UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

**UW-Sea Grant Institute**  
1800 University Ave., Madison, WI 53705-4094. 608/263-0644.

## **Regional Organizations**

(See *Organizations* section for contacts)

### **DNR Regional and GMU Offices**

### **Land Conservation Department County Offices**

### **Priority Watershed Programs**

County your county Land Conservation Department, UW-Cooperative Extension office, DNR office, or the DNR and UWEX Web Sites:  
DNR: <http://www.dnr.state.wi.us/eq/wq/nps/index.htm>  
UWEX: <http://www.uwex.edu/waterres>

### **UWEX Cooperative Extension County Offices and Basin Educators**

## **Field Trip & Presentation Contacts**

(See *Organizations* section for contacts)

### **The Bell Museum of Natural History**

10 Church St. SE, University of Minnesota, Minneapolis, MN 55455. 612/624-2090.

### **DNR Regional and GMU Offices**

### **Land Conservation Department County Offices**

### **UWEX Cooperative Extension Offices and Basin Educators**

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# Fisheries Management

*Fishing is the second oldest form of recreation known to humans (the first is bowling!). More than one in four adult citizens of the United States fish. At the time of the first colonists, there was an abundance of fish throughout the country's waterways. During the Industrial Revolution, fish populations continued to decline in nearly all of the Nation's major rivers. Early management practices such as season closings and stocking of hatchery fish did not stem the tide of decline in the Nation's recreational fisheries. Because of Wisconsin's vast water resources, fishing is a popular sport, source of income, and provides food for many state residents. The state fisheries are strongly supported by the public and government agencies to maintain the abundance of fish. Some of Wisconsin's management practices include aquatic habitat improvement, hatchery production and stocking, watershed protection and land acquisition, fisheries research, public education, and exotic species control.*

**Angler Education Program and Materials**  
Includes student and instructor reference and activity guides with lesson plans, support materials, fact sheets, fish identification pamphlets, skills-related information, types of water habitats, habitat protection, and individual responsibility to maintain habitats. Instructors must attend a workshop training to receive all materials; otherwise, you can receive all other publications except the activity guides. DNR Bureau of Fisheries Management and Habitat Protection, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-2272.

**Methods in Fish Population Analysis: Basic Tools for Understanding Aquatic Ecosystems (Draft)**

A curriculum focused on fishery analysis. UW-Extension, Dept. of Biology, UW-Superior, Superior, WI 54880. 715/394-8410.

## **Watchable Fish**

Pamphlet of information on fish watching sites around Wisconsin. DNR Bureau of Fisheries Management and Habitat Protection, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-1877.

Publication #PUBL-FM-815 92REV.

## **Wisconsin's Aquatic Resources Education Program for Fish, for Fun, for the Future!**

General information about DNR's aquatic resources education programs. DNR Bureau of Fisheries Management and Habitat Protection, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-1877.

Publication #PUBL-FM-701 92REV.

Refer to "Water Quality Impacts on Wildlife and Plants" section for more information.

## **Statewide Organizations**

### **DNR Bureau of Fisheries Management and Habitat Protection**

101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-1877.

### **Federation of Fly Fishers**

State and local chapters are active in stream protection and restoration. Contact Jim Abbs, 126 Nautilus Dr., Madison, 53705. 608/238-5214 home, 608/263-5907 work.

### **Izaak Walton League**

Contact Tom Gustin, Lake Emily Park Ranger, 3961 Park Dr., Amherst Junction, WI 54407. 715/824-3175 or the national office, Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878. 800/BUG-IWLA.

### **The River Alliance of Wisconsin**

122 State St., Suite 200, Madison, WI 53703. 608/257-2424; Fax: 608/251-1655.

### **Trout Unlimited**

Dedicated to the protection of coldwater streams. Local chapters in each county or region of the state. Contact John Crane, N2629 Pleasant Park Lane, Waupaca, WI 54981. 715/258-9173.



## Regional Organizations

(See your local phone book or Chamber of Commerce for local organizations and county offices)

### Fishing Clubs

Some have youth angler education programs. Contact your local fishing clubs.

### Local County, State, or City Park

Staff may offer water recreation safety skills programs for kids.

### Sport Fishing Outfitters and Guides

Bait and tackle shops may have a list of local guides.

## Field Trip & Presentation Contacts

### DNR Bureau of Fisheries Management and Habitat Protection

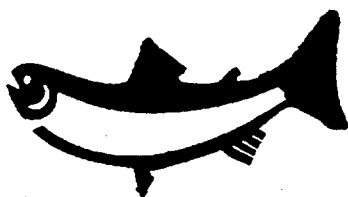
Fisheries biologists can set up a wide range of field trips (usually for adults such as: fish shocking demonstrations and hatcheries). There are fourteen fish sites to visit including both hatchery and "Watchable Fish" sites (all but one are open to public). Of these sites, some have visitor centers and watchable fish areas (viewing windows) to see spawning fish like sturgeon, trout, and salmon. Call 608/266-1430 to set up field trips, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921.

### DNR Bureau of Wildlife Management

Working on a field trip guide for wildlife viewing. Contact 608/266-8204, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921.

### State and Tribal Fish Hatcheries and Watchable Fish Sites

Contact DNR Regional or GMU and Tribal Natural Resources Offices. See *Organizations* section for contacts.



## Nonpoint Source Pollution

*Nonpoint source pollutants are usually carried by water as runoff. Soil and water from land to waterways carry many different kinds of pollutants such as sediment, organic matter, and chemicals. Both rural and urban areas contribute nonpoint sources: from construction sites; stormwater runoff from streets and parking lots; soil runoff; and manure, pesticides, and fertilizer residue from lawns and fields. Because it is difficult to detect the sources of nonpoint pollutants, it is equally challenging to manage the sources and reduce their impacts. A 1985 survey showed that over a third of Wisconsin's rivers and streams are affected or threatened by nonpoint pollution sources. As a result, nonpoint sources have been the major pollution concern for water in the 1980's and 1990's.*



### Brown Water, Green Weeds

Cartoons used to illustrate the impact of sediment and nutrients on water quality, fish and wildlife. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publications #GWQ003.

Home Page: <http://www.uwex.edu/ces/pubs.html>

### Clean Bay Backer Education Package

The packet consists of a video (20 min.), *Student Activity Guide* designed for 4th and 5th graders, a *Teacher's Guide* and also a coloring book for 1st through 3rd graders. This is a Northeast Wisconsin-centered water quality educational tool. The animated clean bay backers talk about, polluted runoff, the area's largest water pollution problem. They show the causes of polluted runoff and demonstrate some of the things that everyone can do to help stop it. To order contact: Remedial Action Plan Specialist, Clean Bay Packers, Wisconsin DNR, PO Box 10448, 1125 N. Military Ave., Green Bay, WI 54307-0448. 920/492-5825.

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### **EnviroScape Runoff Pollution Model**

Plastic model of a watershed that can be used to demonstrate runoff pollution sources and effects on a waterway. Contact UWEX Cooperative Extension Basin Educators and Water Education Resource Centers to borrow (see *Organizations* section for contacts).

### **Fields and Streets**

A quarterly newsletter about nonpoint source pollution (1989 - current). Contact DNR Bureau of Watershed Management, Nonpoint Source Program, PO Box 7921, Madison, WI 53707. 608/266-0140.

### **It All Adds Up**

A 21-minute overview video as part of a Nonpoint Source Series. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Keeping Current**

Bi-monthly newsletter that shares information on nonpoint source pollution programs. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Nonpoint Source Pollution: Where to Go with the Flow, Wisconsin's Challenge for the Next Decade**

DNR Bureau of Watershed Management, Nonpoint Source Program DNR, PO Box 7921, Madison, WI 53707. 608/266-0140.

### **Priority Watershed Projects**

A priority watershed projects map (updated yearly). DNR Bureau of Watershed Management, Nonpoint Source Program, PO Box 7921, Madison, WI 53707. 608/266-0140.

### **Soil Erosion Trays**

A simple, effective model of soil erosion featuring three trays lined with bare soil, sod, and straw mulch that work by tilting at an angle and using water to simulate rain. Appropriate for schools, construction sites, erosion field days, and workshops. UWEX Basin Educator, 715/836-5513.

### **Storm Sewers: The River Beneath our Feet**

Cartoon portrayal of how nonpoint source pollutants pass through storm sewers and offers suggestions for how to prevent these impacts. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #GWQ004. Home Page: <http://www.uwex.edu/ces/pubs.html>

### **A Tale of One City: A Community Searches for Solutions to Urban Nonpoint Pollution**

1990. DNR publication about a community searching for solutions to an urban nonpoint source pollution problem where community members learn how to make decisions to help solve this problem. *Wisconsin Natural Resources* magazine supplement. DNR Bureau of Watershed Management, Nonpoint Source Program, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #WR-257 90.

## **Statewide Organizations**

**Central Wisconsin Groundwater Center**  
College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481. 715/346-4270.

**DNR Bureau of Watershed Management, Nonpoint Source Program**  
PO Box 7921, Madison, WI 53707. 608/266-0140.

**UWEX-Environmental Resources Center**  
UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

## **Regional Organizations**

(See *Organizations* section for contacts)

## **Land Conservation Departments County Offices**

### **Priority Watershed Projects**

There are over 90 Priority Watershed projects throughout Wisconsin where special attention is being given to protect the integrity of those watersheds. Contact your county Land Conservation Department, UW-Cooperative Extension office, DNR office (see *Organizations* section for county offices), or the DNR and

UWEX Home Pages:  
DNR:  
<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>  
UWEX: <http://www.uwex.edu/waterres>

### Regional Planning Commissions

### UW-Extension Basin Educators

### UW-Extension Cooperative Extension County Offices

### Field Trip & Presentation Contacts

(See above organizations)

### Home Page Sites

#### NPSINFO

To subscribe send message to  
[listserv@unixmail.rtpnc.epa.gov](mailto:listserv@unixmail.rtpnc.epa.gov)

## Point Source Pollution

*Point sources are the more familiar sources of pollution because they are easier to identify than nonpoint source pollutants. Examples of point sources in urban areas include: power plants, factories, and municipal wastewater treatment plants. With point source pollution, the pollutant is discharged directly to lakes, rivers, or groundwater and may contain heated water or a variety of chemical or organic pollutants. Most of the federal water pollution prevention programs in the 1970's were focused on controlling point source pollutants. These programs have been highly successful according to a 1984 national survey showing that 97% of the rivers and streams tested were not affected by point sources.*



Refer to the individual sections on "Rural and Residential Homeowners," "Industries and Businesses," "Agricultural Management Practices," "Urban Water Issues," and "Stormwater Management" for resources information.

## Pollution Prevention

*The most effective way to manage waste is to prevent it at its source. Pollution prevention programs of state and federal agencies, and industries share the common goal of working together to develop strategies to reduce the amount of pollutants produced by industries. At home, work, and in selecting our purchases, we are often confronted with choices of convenience versus increased waste. Not only is the volume of waste, air pollutants, and water pollutants a concern, but the spread and toxicity of our waste has caused contamination to our air and water. In recognizing these problems, questions have been investigated that have led to actions to reduce pollutants at home and in the workplace.*

### Air Study Guide

DNR Bureau of Air Management, PO Box 7921,  
Madison, WI 53707. 608/266-7718;  
Fax: 608/267-0496. Publication # PUBL-IE-130.

### Clean Air Publications Order Form

DNR Bureau of Air Management, PO Box 7921,  
Madison, WI 53707. 608/266-7718;  
Fax: 608/267-0496.

### The 4th R: Action Booklet for Recycling

DNR Bureau of Communication and Education,  
PO Box 7921, Madison, WI 53707. 608/266-  
6790; Fax: 608/267-0496.  
Publication # PUBL-IE-035.

### Great Lakes Regional Pollution Prevention Roundtable Newsletter

Project Manager. Waste Management and  
Research Center, 1 E. Hazelwood Dr.,  
Champaign, IL 61820. 217/333-8948.

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**The Green Square Game and The Fun Factory: Interactive Exercises for Waste Reduction Training**

1991. The Waste Reduction Institute for Training and Applications Research, Inc., 1313 5th St. SE, Suite 325, Minneapolis, MN 55414.

**Industrial Waste Reduction Information Clearinghouse**

1996. Includes information on pollution and waste prevention/management, recycling, and more. Resources for industries such as food products, wood products, printing and publishing, chemical manufacturing, fabricated metals, electrical and electronics, transportation equipment, dry cleaning, health services and more. For order form, write to: DNR Bureau of Cooperative Environmental Assistance, PO Box 7921, Madison, WI 53707. 608/267-9700; Fax: 608/267-0496. 7 pp.

**Living Lightly on the Planet: A Global Environmental Education Curriculum Guide**

1985. For grades 7-12. Schlitz Audubon Center, 1111 E. Brown Deer Rd., Milwaukee, WI 53217. 414/351-4200.

**Pollution Prevention Case Studies and Fact Sheets**

DNR Bureau of Cooperative Environmental Assistance, PO Box 7921, Madison, WI 53707. Phone: 608/267-9700; Fax: 608/267-0496. Publication # PUBL-TS series and PUBL-SW series.

**Recycling Publications Order Form**

DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790; Fax: 608/267-0496. Publication # PUBL-IE-138 12/96.

**Recycling Study Guide and K-3 Study**

**Guide** DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790; Fax: 608/267-0496. Publication # PUBL-IE-020 and K-3 Supplement, Publication # PUBL-IE-049.

**Waste Less News**

Quarterly newsletter of the DNR Bureau of Cooperative Environmental Assistance, PO Box 7921, Madison, WI 53707. 608/267-9700; Fax: 608/267-0496. Publication # PUBL-SW-190.

**The Waste Reduction Guide**

Guide includes waste reduction and prevention programs; partnerships, projects, and assistance in the DNR. DNR Bureau of Cooperative Environmental Assistance, PO Box 7921, Madison, WI 53707. 608/267-9700; Fax: 608/267-0496. Publication # PUBL-TS-058 96.

**National Organizations**

**EPA Region V, Pollution Prevention Office**

77 W. Jackson St., Chicago, IL 60604. 312/353-4669, 800/621-8431, or Public Affairs Hotline, 800/424-9346.

**Statewide Organizations**

**DNR**

PO Box 7921, Madison, WI 53707.

- **DNR Bureau of Cooperative Environmental Assistance**  
608/267-9700; Fax: 608/267-0496.
- **Recycling Education Coordinator**  
608/266-2711.

**Federation of Environmental Toxicologists**

Dedicated to pollution prevention and economic growth. 414/251-8163.

**Solid and Hazardous Waste Education**

**Center (SHWEC)** UW-Madison, UW-Extension, 610 Langdon St. Rm. 529, Madison, WI 53703. 608/262-0385.

**A Speakers Bureau on Business and the Environment**

Wisconsin Manufacturers and Commerce, Wisconsin Environmental Working Group, PO Box 352, Madison, WI 53401-0352. 608/258-3401, ext. 3061.

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## Regional Organizations

### County Waste Management and Recycling Offices

See local phone book under county name

### DNR Regional and GMU Offices

See *Organizations* section for regional offices

## Field Trip & Presentation Contacts

(See local phone book for industries and businesses)

### Local Industries, Paper Manufacturers

May offer tours.

### Power Companies (Wisconsin Power and Light, Wisconsin Public Service)

### A Speakers Bureau on Business and the Environment

Speakers for topics related to Business and the Environment with subjects such as: Wisconsin Industry and Environmental Choices, Business Environmental Success Stories, Beneficial Reuse, Pollution Prevention, among others (several topics are in development). Contact Wisconsin Environmental Working Group, PO Box 352, Madison, WI 53401-0352. 608/258-3401, ext. 3061.

# Stormwater Management

*Stormwater runoff is the water that runs off the land and does not soak into the ground.*

*Stormwater flows off streets, lawns, paved parking lots, and other areas while carrying pollutants such as litter, salt, fertilizers and oil with it to nearby waterways. The water usually reaches these streams and lakes through storm sewer pipes that collect stormwater drained from streets and parking areas. Stormwater is usually not treated before it reaches local lakes and*



*streams. This means that anything that runs off lawns, streets, parking lots, and construction areas flows directly into nearby lakes and streams. The goals of stormwater management are to: reduce the amount of water runoff by increasing its infiltration into the soil, thereby reducing soil erosion; and keeping oil, pesticides, litter, and other pollutants from reaching the ground where stormwater can sweep them away.*

### Cleaning Up Stormwater Runoff

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #GWQ016.

Home Page: <http://www.uwex.edu/ces/pubs.html>

### Erosion Control for Home Builders

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication # GWQ001.

Home Page: <http://www.uwex.edu/ces/pubs.html>

### Floodplain Management: Sharing the Challenge

DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694 or West Central Regional Office, 1300 Clairemont Ave., PO Box 4001, Eau Claire, WI 54702. 715/839-3700.

### Keeping our Shores (video and packet)

18 different fact sheets and video about shoreline Best Management Practices (BMPs) for the Lake Superior Region. To order send \$20 to Lake County Soil and Water Conservation District, PO Box 14, Two Harbors, MN 55616. 218/834-6638.

### An Ounce of Detention: A New Look at Stormwater Ponds (video)

Designed for city officials, engineers, and useful for teachers and high school students. UWEX Publications, Environmental Resources Center, UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-0020.

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### **Shoreline Plants and Landscaping**

Describes options for shoreline landscaping that protect water quality. UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #GWQ014.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Standard Erosion Control Plan for 1 & 2 Family Dwelling Construction Sites**

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Publication #GWQ001A.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Storm Drain Stenciling: How You Can Prevent Water Pollution**

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Publication #GWQ015.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Storm Sewers: The River Beneath Our Feet**

Cartoons illustrate how pollutants pass through storm sewers and suggest prevention ideas. UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Publication #GWQ004.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Stormwater Ponds: An Effective Way to Control Urban Runoff**

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Publication #GWQ0107.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

**What is Stormwater Runoff?** A one-page fact sheet which generally explains stormwater runoff and how communities can reduce their runoff. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.

### **Wisconsin Stormwater Manual (#1720)**

1994. Overview of urban water quality problems/issues. DNR Bureau of Watershed

Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694.  
Publication # PUB-WR-349-94. 800/362-7253 for credit card users. Cost.

Refer to the *Rural and Residential Homeowners* and *Urban Water Issues* sections for additional information

## **Statewide Organizations**

### **Department of Natural Resources, Bureau of Watershed Management**

101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694.

## **Regional Organizations**

(See *Organizations* section for contacts)

### **County Planning And Zoning Offices**

See local white pages under county offices

### **DNR Regional and GMU Offices**

Water Regulation and Zoning staff

### **Land Conservation Department County Offices**

### **Regional Planning Commissions**

### **Stormwater Pond Engineers and Construction Companies**

Refer to yellow pages

### **UWEX Cooperative Extension County Offices**

## **Field Trip & Presentation Contacts**

(See above organizations)



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# Sustainable Resource Management

*There tends to be a basic disagreement of philosophy between conservation and development. The process of development throughout the world usually means that natural resources need to be used in order to improve human welfare. It is the approach we take which makes the difference in the future health of our environment as a whole. Clean water is essential to Wisconsin's economy and quality of life. The way we manage our natural resource use in areas such as forestry and the paper industry, hydropower, and farming and irrigation can greatly impact our water resources. Sustainable resource management practices strive to consider the future health and abundance of resources while planning to utilize those resources.*

## **Best Management Practices for Wisconsin Farms**

UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.  
Home Page: <http://www.uwex.edu/ces/pubs.html>

## **Best Management Practices to Protect Water Quality**

Wisconsin Department of Agriculture, Trade, and Consumer Protection, Agricultural Resources Management (ARM) Division. PO Box 8911, Madison, WI 53708-8911.  
608/224-4500.

## **Wisconsin's Forestry Best Management Practices for Water Quality: A Field Manual for Loggers, Landowners, and Land Managers**

DNR Bureau of Forestry, PO Box 7921, Madison, WI 53707. 608/267-7494.  
Publication #PUB-FR-093-95.



## **Statewide Organizations**

(See *Organizations* section for contacts)

**Department of Natural Resources Bureaus**  
101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-2621.

## **Regional Organizations**

(See *Organizations* section for contacts)

**County Planning And Zoning Offices**  
See local white pages under county offices

**DNR Regional and GMU Offices**  
Water Regulation and Zoning staff

**Land Conservation Department County Offices**

**Regional Planning Commissions**

**UWEX Cooperative Extension County Offices**

## **Field Trip & Presentation Contacts**

(See above organizations)

# Urban Water Issues

*Urban communities can have tremendous impacts on water quality because of the great concentration of people. Wastewater from sewers and industries was the major cause of urban water pollution in the past. With improvements to wastewater treatment facilities, the major pollution concern has shifted to nonpoint source pollution runoff. Urban areas have greater runoff problems than rural areas because the paved surfaces and rooftops do not allow water to soak into the ground. This runoff carries a mixture of pollutants from our streets, construction sites, parking lots, industrial storage yards, and lawns. Storm sewers carry the polluted runoff to nearby streams and lakes.*

*"What we do on our land is reflected in our water" (from *Urban Runoff: How Polluted Is It?*, fact sheet, Carolyn D. Johnson, UW-Extension).*

**Impacts of Stormwater Runoff on Urban Streams** 1994. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694.

**A Tale of One City: A Community Searches for Solutions to Urban Nonpoint Pollution** 1990. DNR publication about a community searching for solutions to an urban nonpoint source pollution problem where community members learn how to make decisions to help solve this problem. *Wisconsin Natural Resources* magazine supplement Contact DNR Bureau of Watershed Management, Nonpoint Source Program, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #WR-257-90.

**Urban Cost-Sharing for Cleaner Water** 1994. Fact Sheet. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>

**Urban Programs for Cleaner Water** 1991. Fact Sheet. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>

**Urban Runoff: How Polluted Is It?** Summarizes monitoring data for urban runoff from Wisconsin cities; describes problem pollutants, common sources, and impacts on human health and the aquatic environment. UW-Extension, Basin Educator, 1304 S. 70th St., Suite 228, West Allis, WI 53214-3154. 414/475-2881.

**Urban Runoff Model** Self-assembled model shows how runoff increases as impervious landscapes replace natural landscapes. UW-Extension, Western Basin Educator, Geology Dept., UWEC, Eau Claire, WI 54702. 715/836-5513; Fax: 715/836-2380, email: [strussr@uwec.edu](mailto:strussr@uwec.edu)

**Water Quality Effects of Potential Urban Best Management Practices: A Literature Review** 1977 Technical Bulletin #97. DNR Bureau of Integrated Science Services, 101 S. Webster St., PO Box 7921, Madison, WI 53707-7921. 608/266-4359.

## **Statewide Organizations**

**DNR Bureau of Watershed Management, Nonpoint Source Program** WR/2 PO Box 7921, Madison, WI 53707-7921. 608/266-0140.

**UWEX-Environmental Resources Center** UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

## **Regional Organizations**

(See *Organizations* section for contacts)

### **Land Conservation Department County Offices**

#### **Priority Watershed Programs**

County your county Land Conservation Department, UW-Cooperative Extension, DNR office, or the DNR and UWEX Home Pages: DNR: <http://www.dnr.state.wi.us/eq/wq/nps/index.htm> UWEX: <http://www.uwex.edu/waterres>

#### **UWEX Basin Educators**

- **Southeast Basin Educator** 1304 S. 70th St., Suite 228, West Allis, WI 53214-3154. 414/475-2881.

### **UWEX Cooperative Extension County Offices**

## **Field Trip & Presentation Contacts**

(See above organizations)



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# Water Use

*The state's waters play a central role in the lives of state residents and visitors, in both historical and current day perspectives. The Wisconsin Constitution (1848) stated that all navigable waters belong to the public. This is called the Public Trust Doctrine. Over the past century, the state's growing human population has put increasing demand on our water resources for agriculture, timber harvesting and processing, industry, power production, and recreation. Mechanization of water use and recreation has intensified conflicts between businesses, communities, recreationists, and shoreland property owners. Wisconsin policy makers have been debating and revising public policies to protect water resources since statehood. The following subsections include resources related to some of the ways in which water is used currently and historically in Wisconsin.*

## Cultural and Historical Uses



*Water is what defines Wisconsin. The name "Wisconsin" was taken from the state's principal river, the Wisconsin River, which runs nearly through the heart and length of the state. One theory of the origin of the name is that it is derived from an Ojibwe word, "Wees-kon-san," meaning "gathering of waters," describing the many bodies of water that are found here. Water has played a great role in developing the lifestyles of state residents for thousands of years. Lakes and rivers provided transportation, power, waste disposal areas, and plenty of water to support the early Wisconsin tribes, fur traders, lumber industry, farmers, and many other businesses. Did your community develop because it was located where a dam could be built to power a saw, pulp, or paper mill? Many original Native American and European settlements in the state resided along waterways and include: the Winnebago tribe settled along the Fox River and Lake Winnebago (Green Bay area), Fort*

*Howard which is now the city of Green Bay, Fort Winnebago is now Portage, and Fort Crawford is now Prairie du Chien.*

### **American Indian Resource Manual for Public Libraries**

A resource directory designed to assist libraries with choosing books to acquire, with an emphasis on resources related to Wisconsin tribes. Descriptions of each resource (books and A/V materials), ordering information, and costs are included. Wisconsin Department of Public Instruction, Publication Sales, 125 S. Webster St., PO Box 7841, Madison, WI 53707-7841. 800/243-8782.

### **The Blue Book of Wisconsin**

Reprinted every two years. General information about Wisconsin including: history, census information, political organization and history, businesses and industry, culture, and more. Document Sales and Distribution, Department of Administration, 202 S. Thornton Ave., PO Box 7840, Madison, WI 53707. 608/266-3358, or contact local library.

### **Champions of the Public Trust**

Video about Wisconsin citizens' concerns and involvement in creating public water use laws to protect the public's access to Wisconsin's waters. Available for loan from state libraries (see "State Libraries" in *Organizations* section) or DNR library, 608/266-8933.

### **Cultural Map of Wisconsin**

1997. Map of the history, culture, land, and people of Wisconsin. More than 1,200 points of interest are located on the map. The University of Wisconsin Press, 114 N. Murray St., Madison, WI 53715-1199. 800/829-9559.

### **Intensive Cultural Survey of Communities**

Check your local, county or state library, planning department or historical society. See local phone book for contacts.

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### **Masinaigan**

Newspaper that emphasizes articles on environmental issues, government relations, and economics of Great Lakes area Native American tribes. Great Lakes Indian Fish and Wildlife Commission, PO Box 9, Odanah, WI 54861. 715/682-6619.

### **Of Time and the River**

This environmental history project combines written stories, music, activities, and a video about the Fox and Wolf river watersheds. The organization has a database of resources, stories, historical societies, people, museum contacts, and libraries. This resource could be used as a model for other watersheds. Fox/Wolf Rivers Environmental History Project, PO Box 1161, Green Bay, WI 54305-1161. 800/369-9653.

### **On the Waterfront**

1996. Adopt-A-Lake Newsletter. Wisconsin lake history and references. Adopt-A-Lake Program, Wisconsin Lakes Partnership, UWEX-CNR, UWSP, Stevens Point, WI 54481. 715/346-3366; Fax: 715/346-4038.

### **Storytelling Resources**

For storytelling resources and information, referrals to performers, local groups, workshops and events, contact your local storytelling group, library, or one of the following guild coordinators: Susan Gilchrist, Madison Storyteller's Guild, 3126 Buena Vista, Madison, WI 53704, 608/249-5030 (evenings and weekends); Judy Farrow-Busack, Milwaukee Area Storytelling Guild, 821 Walnut St., West Bend, WI 53095, 414/334-7868 (H) or 414/253-7760 (W); Tom Clark, TALES, Kenosha Storyteller's Guild, 414/652-5194; Colleen Sutherland, NEWTS (Northeast Wisconsin Tellers of Stories), 539 Lincoln St., Seymour, WI 54165, 920/833-7506; or Joe Puckett, Northwoods Storytelling Guild, PO Box 941, Land O Lakes, WI 54540, 715/547-3605.

### **Transactions**

Natural history magazine of Wisconsin for the last 126 years. Contact the Wisconsin Academy of Science, Arts, and Letters, 1922 University Ave., Madison, WI 53705. 608/263-1692.

### **Voyageur: Northeast Wisconsin's Historical Review**

A non-profit magazine about the history and pre-history of a 17 county region of northeast Wisconsin. Magazine started in 1984 and is printed each June and December. Voyageurs Magazine, PO Box 8085, Green Bay, WI 54308-8085. 920/465-2446; Fax: 920/465-2890; email: voyageur@gbms01.uwgb.edu

### **The Voyageurs Guide to the Lower Wisconsin River**

1984. Contact Wisconsin Geological and Natural History Survey, Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289. Cost: \$3. 27 pp.

### **Wild Rice and Ojibway People**

by Thomas Vennum, Jr. 1988. A discussion of the importance of wild rice to Ojibway culture. Minnesota Historical Society Press, 690 Cedar St., St. Paul, MN 55101. 612/296-2264.

### **Wisconsin: A History**

by Robert C. Nesbit and William F. Thompson. 1989. University of Wisconsin Press. Contact local library.

### **Wisconsin River of History**

by William F. Stark. 1988. History book of the Wisconsin River. Contact local library.

### **The Woodland Indians of the Western Great Lakes**

by Robert R. and Pat Ritzenthaler. 1991. Introduction to the cultures of all tribes now living in Wisconsin. Waveland Press, PO Box 400, Prospect Heights, IL 60070. 708/634-0081.

Refer to the *American Indian Resource Manual for Public Libraries* for a more detailed list of publications, organizations, presenters, and museums related to Wisconsin Native American tribes.

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## **Statewide Organizations**

### **American Indian Center**

All Wisconsin tribes are represented in this center and museum. 3415 E. Pierce, Milwaukee, WI 53215. 414/384-8208 or 278-6800.

### **Great Lakes Indian Fish and Wildlife Commission**

PO Box 9, Odanah, WI 54861. 715/682-6619.

### **The Nature Conservancy**

An international, non-profit organization that works to preserve natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive. 633 W. Main St., Madison, WI 53703. 608/251-8140; Fax: 608/251-8535.

### **State Historical Society**

816 State St., Madison, WI 53706. 608/264-6400, Public Information Office, 608/264-6586.

### **Wisconsin Academy of Science, Arts, and Letters**

1922 University Ave., Madison, WI 53705. 608/263-1692.

### **Wisconsin Conservation Hall of Fame**

Exhibit and related information regarding Wisconsin's conservation history and leaders. Schmeeckle Reserve, UWSP, Stevens Point, WI 54481. 715/346-4992.

### **Wisconsin Geological and Natural History Survey**

Map and Publication Sales (MAPS) Office, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7289.

## **Regional Organizations**

### **Area Research Centers (ARCs)**

Associated with state historical societies containing regional documents, records from courthouse, baptisms, genealogy, and more. Contact nearest UW campus library. See "State Libraries" in *Organizations* section.

### **Community Members**

Interview community members for local historical information (oral histories).

### **DNR Bureau of Forestry**

Historical forestry practices information. PO Box 7921, Madison, WI 53707-7921. 608/267-7494.

### **Fox/Wolf River Environmental History Project**

PO Box 1161, Green Bay, WI 54305-1161. 800/369-9653 (800/FOX-WOLF).

### **Local Government Offices (Planning and Zoning, Land Conservation Department, Regional Planning Commission)**

Contact for land use maps which include waterways. See local white pages under county offices and/or the *Organizations* section for contacts.

### **Local Historical Society (County or City)**

See local phone book

### **Local Library**

See local phone book

### **Universities/Colleges Library**

Special Collections Departments, regional history, genealogy information, among other materials. See "State Libraries" in *Organizations* section.

### **Wisconsin Maritime Museum**

75 Maritime Dr., Manitowoc, WI 54220. 920/684-0218.

## **Field Trip & Presentation Contacts**

### **American Indian Center**

(all Wisconsin tribes). 3415 East Pierce, Milwaukee, WI 53215. 414/384-8208 or 278-6800.

### **Chippewa Valley Museum**

Museum and library of artifacts and photographs of Ojibwe, Menominee, and Winnebago tribe. PO Box 1204, Carson Park Dr., Eau Claire, WI 54703. 715/834-7871.

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**Effigy Mounds National Monument**

151 Highway 76, Harpers Ferry, Iowa 52146.  
319/873-3491.

**Fort Folles Avoine**

Reconstruction of the French fort and trading post. St. Croix Ojibwe and Burnett County Historical Society. 715/866-8890.

**Heritage Hill State Park**

Living history park that offers 2nd and 4th grade "Discovery Tours" as well as self-guided tours. 2640 S. Webster Ave., Green Bay, WI 54301. 920/448-5150.

**Kickapoo Indian Caverns and Native American Museum**

This cave was a shelter used by various native peoples over time (guided tours). Hwy. 60, 608/875-5223.

**Land Conservation Department County Offices**

See *Organizations* section for county offices

**Leopold Memorial Reserve and Aldo Leopold Foundation**

Limited visits to reserve and classroom presentations available. Contact Aldo Leopold Foundation, E12919 Levee Rd., Baraboo, WI 53913. 608/355-0279; Fax: 608/356-7309 or Sand County Foundation, 608/242-5319.

**Little Norway Historical Park**

Hwy. JG, Blue Mounds, WI 53517.  
608/437-8211.

**Local Historical Society**

See your local white pages for information

**Old World Wisconsin**

An outdoor museum of immigrant farm and village life. S103 W37890 Highway 67, Eagle, WI 53119. 414/594-6300.

**Madeline Island Historical Museum**

Museum of the Apostle Islands exploration and settlement. La Pointe, WI 54850.  
715/747-2415.

**Milwaukee Public Museum**

Natural and human history, exhibits, and museum library. 800 West Wells, Milwaukee, WI 53233. 414/278-2702.

**State Historical Society Museum**

30 North Carroll St., Madison, WI 53703.  
608/264-6555.

**UWEX Cooperative Extension County Offices**

See *Organizations* section for county offices



## Government & Citizen Issues

*Many of us are probably unaware of the state's water laws, yet they affect us daily. Whether we're out fishing on a lake, irrigating our fields, taking a sip of some cool, ice water or planning to build a pier on our lakefront property; water laws impact us every day. Since 1787, the state's navigable waters have been considered public and for the use of all citizens. As a result, we all share responsibility for water protection in Wisconsin. By learning more about the state and local government water laws, you can have a stake in the future health of these waterways.*

**Building Near Wetlands**

Pamphlet includes suggestions for construction techniques to reduce impacts on wetlands. DNR Bureau of Watershed Management, Lakes and Wetlands section, PO Box 7921, Madison, WI 53707. 608/267-7694.

**Champions of the Public Trust Doctrine**

Video about Wisconsin citizens' concerns and involvement in creating public water use laws to protect the public's access to Wisconsin's waters. Available for loan from state libraries (see "State Libraries" in *Organizations* section) or DNR library, 608/266-8933.

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### **Chippewa Treaty Rights**

Chippewa treaty rights issues are examined in detail, from before the first treaty was signed to 1991. Wisconsin Academy of Sciences, Arts, and Letters, 1922 University Avenue, Madison, WI 53705. 608/263-1692.

### **Common Groundwork: A Practical Guide to Protecting Rural and Urban Land**

Handbook for making land use decisions. Contact UWEX Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>

### **DNR Laws**

Chapters of the administrative codes are available on a variety of subjects through the DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694.

### **A Guide to Wisconsin's Lake Management Law, 10th edition**

1996. Contact UW-Extension Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #PUBL-FH-821.96. Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Law of the Land: A Citizen's Guide... Influencing Local Land Use Decisions That Affect Water Quality**

Wisconsin Lakes Partnership, UWEX-CNR, UWSP, Stevens Point, WI 54481. 715/346-2116. Fax: 715/346-4038 or County UWEX Cooperative Extension Office.

### **Life on the Edge**

A 110-page illustrated guide which includes information on buying waterfront property, landscape practices to protect water quality, how to manage unwanted aquatic plants, how to limit shoreline erosion, and conflicts with the living things that share your property. Also includes information on laws that affect waterfront residents. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116 or UWEX Cooperative Extension county Offices.

### **Treaty Resource Manual**

Includes a summary of significant court decisions, legislative acts, and treaties that affect member tribes. Great Lakes Indian Fish and Wildlife Commission (GLIFWC). PO Box 9, Olanah, WI 54861. 715/682-6619.

### **Wisconsin Water Law**

by Adolph Canonburg. A book on the historical perspective of Wisconsin's water laws. Contact your local library or bookstore.

### **Wisconsin Water Law: A Guide to Water Rights and Regulations**

200-page guide outlining all Wisconsin water laws. UW-Extension Publications, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346. Publication #G3622. \$15. Home Page: <http://www.uwex.edu/ces/pubs.html>

## **Statewide Organizations**

### **Army Corps Of Engineers**

Department of the Army, St. Paul District, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, MN 55101-1638. 612/290-5375; Fax: 612/260-5330.

### **DNR**

101 S. Webster, PO Box 7921, Madison, WI 53707

- **Bureau of Law Enforcement**  
608/266-2141
- **Bureau of Watershed Management**  
608/267-7694

### **Midwest Treaty Network**

731 State St., Madison, WI 53703. 608/246-2256, email: [igc@apc.org](mailto:igc@apc.org)  
Home Page: <http://www.alphacdc.com/treaty>

## **Regional Organizations**

(See *Organizations* section for more detailed organization descriptions, addresses and phone numbers)

### **County Planning and Zoning Offices**

Shoreland zoning, etc. See your local white pages for county offices.

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**DNR Regional and GMU Offices**  
Water Regulation and Zoning, Law  
Enforcement staff

**Land Conservation Departments County Offices**

**Regional Planning Commissions**

**UWEX Cooperative Extension County Offices**

### **Field Trip & Presentation Contacts**

(See above organizations)

## **Industry and Business**

*Water is a crucial component to the processes of many of Wisconsin's businesses and industry. In the past, businesses and industries have been blamed for many of Wisconsin's water pollutants. With regulations and pollution prevention efforts, companies are implementing innovative approaches to environmental protection. Many Wisconsin businesses are trying new manufacturing processes to produce products with less waste, improve operations to decrease chances of spills or accidents, and employees are being trained in pollution and waste prevention practices. Increasingly, we are seeing more partnerships between businesses and environmental organizations working towards the same goals.*

### **EE News; Business/Environmental Education Partnerships Issue**

Vol. 12, No. 1. DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790.

### **Wisconsin Manufacturers and Commerce**

A speaker's Bureau on Business and the Environment with subjects such as: Wisconsin Industry and Environmental Choices, Business Environmental Success Stories, Beneficial Reuse, Pollution Prevention, among others (several topics are in development). Contact

Wisconsin Environmental Working Group, PO Box 352, Madison, WI 53401-0352. 608/258-3401, ext. 3061.

See "Pollution Prevention" section for more information

### **Statewide Organizations**

#### **DNR Bureau of Cooperative Environmental Assistance**

PO Box 7921, Madison, WI 53707. 608/267-9700; Fax: 608/267-0496.

#### **Federation of Environmental Toxicologists**

Dedicated to pollution prevention and economic growth. 414/251-8163.

#### **A Speakers Bureau on Business and the Environment**

Wisconsin Environmental Working Group, PO Box 352, Madison, WI 53401-0352. 608/258-3401, ext. 3061.

### **Regional Organizations**

#### **DNR Regional and GMU Offices**

See *Organizations* section for regional offices

#### **Local Businesses**

See local phone book for industries and businesses

### **Field Trip & Presentation Contacts**

(See local phone book for industries and businesses)

#### **Local Industries**

May offer tours

#### **Power Companies (Wisconsin Power and Light, Wisconsin Public Service)**

#### **A Speakers Bureau on Business and the Environment**

See above description of Wisconsin Manufacturers and Commerce

# Lifestyle and Water Conservation

*About 78% of water used in a typical home is used in flushing toilets, washing hands, and bathing. Household leaks waste about 20%-35% of water withdrawn from public supplies.*

*Because water costs so little and few incentives are provided for water conservation efforts, home water conservation is not taken very seriously.*

*Since 1950, total water withdrawal has more than doubled in the United States.*

*Each person in the U.S. uses about*

*100 gallons of water a day. An estimated 30%-50% of the water*

*used in the United States is unnecessarily wasted. Of the*

*world's population, 40% live in areas that have serious droughts*

*and 1.5 billion people do not have a safe supply of drinking water. It is*

*easy to take our plentiful water sources for granted in Wisconsin.*



Also refer to the resources in the "Rural and Residential Homeowners" section. In addition to the resources listed below, there are a number of excellent national materials listed in the "References" section of activities in the *Project WET Curriculum and Activity Guide* which address water conservation in the home.

## Save Wisconsin's Water

Booklet of water-saving ideas to help save water, energy, and money in the home. Water-saving devices and appliances are discussed. Year-round reference for water conservation in the home. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694. Publications #PUBL-WR-065 92rev.

## Water Activities to Encourage Responsibility

Classroom activities covering concepts of water supply, geology, pollution, water-related careers, and more. DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707. 608/267-7694.

Publication # PUBL-WR-324-93. 46 pp.

## Statewide Organizations

(See *Organizations* section for organization descriptions)

**Central Wisconsin Groundwater Center**  
CNR, UWSP, Stevens Point, WI 54481.  
715/346-4270.

**DNR Bureau of Watershed Management**  
PO Box 7921, Madison, WI 53707.  
608/267-7694.

**UWEX-Environmental Resources Center**  
UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-3799.

## Regional Organizations

(See *Organizations* section for county and regional contacts)

### DNR Regional and GMU Offices

### Priority Watershed Programs

County your county Land Conservation Department, UW-Cooperative Extension, DNR office, or the DNR and UWEX Web Sites:  
DNR:

<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>

UWEX: <http://www.uwex.edu/waterres>

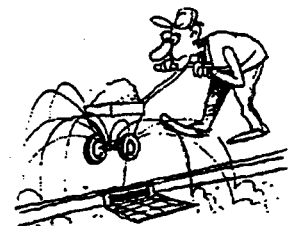
### UWEX Basin Educators

See *Organizations* section for contacts

## Field Trip & Presentation Contacts

### DNR Regional and GMU Offices

See *Organizations* section for contacts



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# Mining

*Mining has become a very controversial issue in Wisconsin. With much of northern Wisconsin containing valuable minerals such as copper, zinc, lead, gold, and silver many mining companies seek to do business in the state. Although mining could bring income to northern communities for a number of years, there are concerns about the potential impacts of mining on water resources and the people dependent on the health of those waters. As with all natural resource concerns, we must understand all sides of the issue if we are to make wise decisions.*

**Crandon Mining Company's Summary Report: A Project Description and Environmental Baseline Data**  
May 1995. Contact DNR or Crandon Mining Company, 7 N. Brown St., 3rd Floor  
Rhineland, WI 54501-3161. 715/365-1450.

**Mining Information Fact Sheets available from Wisconsin DNR including:**

- **Local Decisions in Mining Projects**
- **Protecting Groundwater at Mining Sites**
- **The Cumulative Impacts of Mining Development in Northern Wisconsin**
- **How a Mine is Permitted**
- **Potential Mining Development in Northern Wisconsin**
- **Wisconsin's Net Process Tax on mining and Distribution of Funds to Municipalities**

To order, contact Wisconsin DNR, PO Box 7921, Madison, WI 53707. 608/266-3524.

**Public Concerns Regarding the Proposed Crandon Mine Discharge in to the Wisconsin River**

Summary Report of public comments and questions from a public hearing held in Tomahawk in May 1996. Wisconsin DNR, PO Box 7921, Madison, WI 53707. 608/266-3524.

## **Sulfide Mining - Mole Lake**

Mole Lake Band, Sokaogon Chippewa Tribal Center, Route 1, Box 625, Crandon, WI 54520. 715/478-2604.

## **Sulfide Mining: The Process & the Price: A Tribal & Ecological Perspective**

1996. Masinaigan Supplement. Great Lakes Indian Fish and Wildlife Commission, PO Box 9, Odanah, WI 54861. 715/682-6619.

## **Statewide Organizations**

**Crandon Mining Company**  
7 N. Brown St., 3rd Floor, Rhineland, WI 54501-3161. 715/365-1450.

**DNR Mining Project Managers**  
608/266-3524

**Mining Impact Coalition**  
3918 Paunack Ave., Madison, WI 53711.  
608/233-8455. email: [goblinfern@aol.com](mailto:goblinfern@aol.com)  
Home Page:  
<http://www.earthwins.com/micwinc.html>

**Wisconsin Resources Protection Council**  
210 Avon Street #4, LaCrosse, WI 54603.  
608/784-4399 or 6824 Hwy. 8 West,  
Rhineland, WI 54501.

## **Regional Organizations**

(See your local white pages and Chamber of Commerce for county offices and local organizations)

**County Planning and Zoning offices**

**Local Environmental Organizations**

**Local Mining Companies**

## **Field Trip & Presentation Contacts**

**Crandon Mining Company**  
See above

**Mining Impact Coalition**  
See above

**Mining Museum**  
Guided tours of an 1845 lead mine. 405 E. Main, PO Box 252, Platteville, WI 53818.  
608/348-3301.



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# Rural and Residential Homeowners

*It is surprising how much of an impact we can have on the environment by the small-scale choices we make about how we manage our personal properties. The sheer number of Wisconsin residents (over 5 million) when added together can greatly affect the state's waterways. The minor changes we make to our own lawn care, for example, can have noticeable effects on the health of local waters.*

## Better Homes and Groundwater

A 15-page homeowner's guide to groundwater-safe maintenance of lawns, gardens, workshops, garages and septic systems, plus disposal alternatives for household hazardous wastes. DNR Bureau of Drinking Water and Groundwater, PO Box 7921, Madison, WI 53707. 608/266-0821. Publication # PUBL-WR-386-95 WR.

## Better Homes and Gutters

Dane County Lakes and Watershed Commission, 210 Martin Luther King, Jr. Blvd., Rm. 421 City/County Bldg., Madison, WI 53709. 608/266-2626.

## Home Water Safety Education Packet

Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>

## House Builders Guide to Protect Water Resources

Contact county Land Conservation Department (see *Organizations* section) or county Planning and Zoning Office (see local white pages under county offices).

## Life on the Edge

A 110-page illustrated guide which includes information on buying waterfront property, landscape practices to protect water quality, how to manage unwanted aquatic plants, how to limit shoreline erosion, and conflicts with the

living things that share your property. Also includes information on laws that affect waterfront residents. Wisconsin Lakes Partnership, UW-Extension, CNR, UWSP, Stevens Point, WI 54481. 715/346-2116.

## Rural Conservation Practices for Cleaner Water

1994. Fact Sheet. Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>

## Shorelandscaping

Offers tips to help in landscaping shoreline property in an environmentally sensitive manner. Wisconsin Lakes Partnership, UWEX-CNR, UWSP, Stevens Point, WI 54481. 715/346-2116; Fax: 715/346-4038.

## Shoreline Development and Aesthetic Issues

Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>

## A Tale of One City

1990. DNR publication about a community searching for solutions to an urban nonpoint source pollution problem where community members learn how to make decisions to help solve this problem. *Wisconsin Natural Resources* magazine supplement. Contact DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694. Publication #WR-257 90.

## Yard Care and the Environment Series

Series of fact sheets available from UW-Extension, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703. 608/262-3346.

Home Page: <http://www.uwex.edu/ces/pubs.html>  
The series includes the following:

- **Beneficial Landscape Practices**

Successful landscaping can prevent pollutants from being washed off your yard and into lakes and streams. Practices are suggested for healthier plants and improved water quality. (GWQ008) free

- **Erosion Control for Home Builders**  
(GWQ001) free
- **Lawn and Garden Fertilizers** (GWQ002)
- **Lawn and Garden Pesticides** (GWQ011)
- **Lawn Watering**  
Offers ways to save water while producing healthy, attractive lawns. (GWQ012) free
- **Lawn Weed Control**  
Explains targeted weed control methods that reduce the use of herbicides. (GWQ013) free
- **Pet Waste and Water Quality**  
Offers alternatives to improper disposal of pet waste, which can affect water quality and human health. (GWQ006)
- **Practical Tips for Home and Yard**  
Suggests ways to protect water quality. (GWQ007) free
- **Rethinking Yard Care**  
Discusses a new approach to yard care that protects human health and environmental quality. (GWQ009)
- **Shoreline Plants and Landscaping**  
Describes options for shoreline landscaping that protect water quality. (GWQ014)
- \* **Other brochures are also available by request from UW-Extension Publications.**

### **Statewide Organizations**

(See *Organizations* section for organization descriptions, addresses, and numbers)

#### **DNR Bureaus**

- Drinking Water and Groundwater.  
608/266-0821
- Watershed Management. 608/267-7694.

#### **UWEX Environmental Resources Center**

### **Regional Organizations**

(See *Organizations* section for organization descriptions, addresses, and numbers)

#### **Land Conservation Department**

#### **UWEX Cooperative Extension County Offices**

### **Field Trip & Presentation Contacts**

(See *Organizations* section for organization descriptions, addresses, and numbers)

#### **Local Nature Centers**

#### **UWEX Cooperative Extension County Offices**

## **Watersheds**

*A watershed is the area of land that drains into a specific body of water. For example, the Mississippi River watershed includes all of the land where its surface water (streams, rivers, stormwater runoff, etc.) and groundwater (not always the same area) flow into the Mississippi River. Watersheds directly connect people through waterways. Someone living at the source of a river can affect the water quality for those living downstream. Watershed awareness and management has become a movement around the world to refocus the way we look at and treat our landscape. The Wisconsin Department of Natural Resources and University of Wisconsin-Extension have reorganized many of their offices to coincide with the major watersheds of Wisconsin. The reason behind this reorganization is to integrate the natural resources managers at a watershed level to work together on management issues and strategies specific to the state's major watersheds.*

#### **Basin Water Quality Management Plan**

Every river basin has a new plan developed every five years with details about the water quality issues and management strategies for that basin. Contact DNR Regional Offices (see *Organizations* section for regional offices).

#### **Caring for our Lakes: A Curriculum on the Yahara Watershed**

Curriculum Guide and activities for teaching about the Yahara Watershed. University of Wisconsin-Madison, Water Resources Management, Institute for Environmental Studies, 550 N. Park St., Rm.15 Science Hall, Madison, Wisconsin 53706. 608/263-3064.

### **Hydrologic Unit Maps**

Maps of the 12 major water basins in Wisconsin. Wisconsin Geological and Natural History Survey, Map and Publication Sales office (MAPS), 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7389.

### **Keeping Current**

Statewide newsletter of the priority watershed program. DNR Bureau of Watershed Management, Nonpoint Source Section, 101 S. Webster St., Madison, WI 53707. 608/266-0140; Fax: 608/267-2800.

### **Map of Priority Watershed Projects in Wisconsin**

DNR Bureau of Watershed Management at 608/266-0140.

### **Priority Watershed Program Publications**

Educational publications developed for the priority watershed programs. Examples include: *Pet Waste and Water Quality*, *Rural Conservation Practices for Cleaner Water*, *Yard Care and the Environment Series* of fact sheets such as *Beneficial Landscape Practices*, *Lawn Weed Control*, etc. County UW-Extension offices or Cooperative Extension Publications, 630 W. Mifflin St., Madison, WI 53703. 608/262-3346. Home Page: <http://www.uwex.edu/ces/pubs.html>

### **Priority Watershed Project Plans**

Strategic plans for the Wisconsin watershed projects. Contact your county Land Conservation Department, UW-Cooperative Extension office, DNR Regional or GMU office, or the DNR and UW-Extension Home Pages: DNR: <http://www.dnr.state.wi.us/eq/wq/nps/index.htm> UWEX: <http://www.uwex.edu/waterres>

### **Priority Watershed Reports**

These reports involve both stream and lake projects and offer background information and project status reports at the local level. Contact UW-Extension Basin Educators (see *Organizations* section) or Publications staff, Environmental Resource Center, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-1369; Fax: 608/262-2031.

### **Sourcebook for Watershed Education**

Provides detailed guidelines for the development of watershed-wide education programs focusing on program goals, funding, and school/community partnerships. It contains a rich set of interdisciplinary classroom activities and outlines GREEN's educational philosophy. GREEN, 206 S. 5th Ave., Suite 150, Ann Arbor, MI 48104. 313/761-8142; Fax: 313/761-4951. \$29.95. Home Page: <http://www.econet.org/green>

### **Watershed in a Box**

Demonstration model to explore what happens to a rural watershed as it becomes urbanized. UW-Extension, Western Basin Educator, Geology Dept., UWEC, Eau Claire, WI 54702. 715/836-5513; Fax: 715/836-2380. email: [strussr@uwec.edu](mailto:strussr@uwec.edu)

### **What is a Watershed?**

Fact sheet about watersheds. DNR Bureau of Watershed Management, 101 S. Webster St., Madison, WI 53707, 608/266-0140; Fax: 608/267-2800 or Wisconsin Lakes Partnership, UWEX-CNR, UWSP, Stevens Point, WI 54481. 715/346-2116. Publication #PUBL-WR-174-87.

### **Statewide Organizations**

(See *Organizations* section for organization descriptions, addresses and numbers)

#### **DNR Nonpoint Source Program, Education Coordinator**

Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-0140.

#### **UW-Extension, Environmental Resources Center**

UWEX-ERC, 216 Agriculture Hall, 1450 Linden Dr., Madison, WI 53706. 608/262-1369; Fax: 608/262-2031.

### **Regional Organizations**

(See *Organizations* section for organization descriptions, addresses and numbers)

#### **DNR Regional and GMU Offices**

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## Land Conservation Department County Offices

### Natural Resources Conservation Service Field Offices

### Priority Watershed Projects

Contact your county Land Conservation Department, UWEX Cooperative Extension Office, DNR office, or the DNR and UWEX Web Sites:

DNR:

<http://www.dnr.state.wi.us/eq/wq/nps/index.htm>

UWEX: <http://www.uwex.edu/waterres>

### UW-Extension

- Basin Educators
- Cooperative Extension County Offices
- Watershed Educators

### Field Trip & Presentation Contacts

(See *Organizations* section for organization descriptions, addresses and numbers)

### Land Conservation Department County Offices

### Priority Watershed Projects (see above)

### UW-Extension Cooperative Extension County Offices

### Home Page Sites

**Watershed Education Resources on the Internet**  
Includes river publications and water education links.

<http://www.igc.apc.org/green/resources.html>

## Wetlands

*Wisconsin's more than 5.3 million acres of wetlands play a vital role by providing important habitat and breeding grounds for a variety of species. These wetlands act as filters*

*and can help clean polluted waters. They can also protect soil from getting washed into waterways, which then cause erosion and sedimentation problems. About 50% of Wisconsin's wetlands have been drained, filled, or otherwise lost to make way for homes, roads, industries, and farms. It is important for us to gain a better understanding of wetlands in order to appreciate their functions and discover ways to protect these rich resources.*

### DNR Fact Sheets

Fact sheets about wetland species. DNR Bureau of Fisheries Management and Habitat Protection or Bureau of Wildlife Management, PO Box 7921, Madison, WI 53707-7921. 608/266-1877 or your nearest DNR office. See *Organizations* section for DNR regional offices.

### Enviroscape Wetlands Model

Model demonstrates the basic functions and values of wetlands and how different human activities affect wetlands. UWEX Basin Educator, 608/265-3257.

### An Introduction to Wisconsin Wetlands

Discusses the basic characteristics and types of Wisconsin wetlands, their statewide distribution, vegetation, hydrology, and soils. Wisconsin Geological and Natural History Survey, Map and Publication Sales, 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7389. 19 pp.

### A User's Guide to the Wisconsin Wetland Inventory

DNR Bureau of Watershed Management, PO Box 7921, Madison, WI 53707-7921. 608/267-7694. Publication #PUBL-WZ-022.

### Wetland Functional Values Inventory

Four-page fact sheet that explains the types and values of wetlands. DNR Bureau of Fisheries Management and Habitat Protection: Lakes and Wetlands Section, PO Box 7921, Madison, WI 53707-7921. 608/266-1877. Publication #PUBL-WZ-026 93.

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### **Wetland Investigation Kit**

Assorted guides, videos, and equipment available for loan from Western Water Education Resource Center, Beaver Creek Reserve, Route 2, Box 92, Fall Creek, WI 54742. 715/877-2212.

### **Wetland Tool Kit**

Information and activities about wetlands that includes WULP curriculum (see below), 10 min. introductory video about Wisconsin wetlands, list of contacts in the Wisconsin and Lake Michigan area, bibliography, list of wetlands to visit in SE Wisconsin, and a collection of Wisconsin wetlands information. The League of Women Voters-Education Fund, 1126 S. 70th St., Suite S413A, West Allis, WI 53214, Attn: Wetland Tool Kit. 414/475-2100.

### **Wetland Trunk**

These K-12, educational trunks contain a wide range of wetlands teaching materials including: trunk-specific curriculum, posters, videos, coloring pages, games, brochures, and other props. The trunks can be borrowed from nearly all U.S. Fish and Wildlife Service, National Wildlife Refuge Offices. See *Organizations* section for addresses and phone numbers.

### **Wetland Understanding Leading to Protection (WULP)**

A sixteen-activity unit taught over 2-3 weeks with a multidisciplinary approach. The unit includes: wetland basics, types of wetlands, biodiversity, attitudes and values towards wetlands, laws at the state and federal level which help preserve wetlands, and action projects to protect wetlands. Contact the Outdoor Skills Center, PO Box 84, Plymouth, WI 53073. 920/893-5210.

### **Wetlands, Wonderlands**

Full color supplement to *Wisconsin Natural Resources Magazine*. The supplement includes a poster of wetland wildlife-watching highlights throughout the year. DNR Bureau of Watershed Management, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7694. 16 pp.

## **Statewide Organizations**

(See *Organizations* section for addresses and phone numbers)

### **Army Corps of Engineers**

U.S. Army Corps of Engineers, St. Paul District, Army Corps of Engineers Centre, 190 Fifth Street East, St. Paul, MN 55101-1638. 612/290-5375; Fax: 612/260-5330.

### **Department of Transportation, Bureau of the Environment**

Wetlands protection and mitigation laws. 4802 Sheboygan Ave., Madison, WI 53702. 608/266-3761.

### **DNR Bureau of Fisheries Management and Habitat Protection: Lakes and Wetlands Section**

Wetlands protection laws, etc, PO Box 7921, Madison, WI 53707. 608/266-1877.

### **EPA Region V, Wetlands Office**

Publications and expertise regarding wetlands protection. U.S Environmental Protection Agency, Office of Public Affairs-Region V, 77 W. Jackson St., Chicago, IL 60604. 800/621-8431.

### **National Wildlife Federation**

Citizens guide to wetlands protection that has a thorough description of the wetland laws. 8925 Leesburg Pike, Vienna, VA 22184. 703/790-4000

### **U.S. Fish and Wildlife Service**

### **Wisconsin Waterfowl Association**

Provides funding for wetlands protection efforts. Contact PO Box 792, Waukesha, WI 53187-0792. 414/524-8460.

### **Wisconsin Wetlands Association**

Education and advocacy group committed to the protection of Wisconsin's wetlands. The Association offers a newsletter, field trips, workshops, a slide show on Wisconsin wetlands, and database of educational resources and contacts. Contact 222 S. Hamilton St., Suite 1, Madison, WI 53703. 608/250-9971.

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## **Regional Organizations**

### **DNR Regional and GMU Offices**

See *Organizations* section for regional offices

### **Ducks Unlimited**

A national organization with state and local chapters devoted to wetland restoration and protection projects. Contact the State Chairman, Bruce Deadman, for local contacts. 421 Oak Ridge Dr., Oneida, WI 54155. 414/865-7995.

### **Izaak Walton League**

A national organization with state and local chapters focused on the conservation of aquatic environments. Lake Emily Park Ranger, 3961 Park Dr., Amherst Junction, WI 54407. 715/824-3175.

### **Local Hunting/Fishing Clubs**

See your local white pages

### **Local Parks and Nature Centers**

Directory of Environmental Education centers and nature centers provides information about local nature centers with marshes and other waterways to visit. The Directory is available through DNR Bureau of Communication and Education, PO Box 7921, Madison, WI 53707-7921. 608/266-6790.

Publication #PUBL-HVW-085-92REV.

### **UWEX Cooperative Extension County Offices**

See *Organizations* section for county offices.

## **Field Trip & Presentation Contacts**

(See *Organizations* section for addresses and numbers)

### **DNR Regional and GMU Offices**

### **Local Parks and Nature Centers**

See above

### **Outdoor Skills Center**

Non-profit organization offers teacher training programs with WULP wetlands materials (see above) including Hands-on Wetlands Education for Teachers (HAWET), a two-day wetland field experience. See "WULP" above for address.

### **UWEX Cooperative Extension County Offices**

See *Organizations* section for county offices

## **Home Page Sites**

### **Wetlands International**

<http://ngo.asiapac.net/wetlands>

### **WETNET: The Wetlands Network.**

Offers a wide variety of wetlands information and resources. <http://www.wetlands.ca>

## **Music**

Ken Londquist. PO Box 3411, Madison, WI 53704. 608/249-7714.



*"A small body of water, its back against the earth, trains its vision heavenward.  
We look into water and see the color of sky, the shape of clouds, the heat of the sun.  
At night we bathe our hands in stars, lift a languid yellow moon to our lips for sustenance.  
We will return again. Into water."*

— Norbert Blei

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# Organizations

## **Part 1**

This section includes the following types of organizations and their water related activities:

- Wisconsin State Government Organizations
- Wisconsin Water-Related Organizations
- Federal Agencies in Wisconsin
- National and International Water-Related Organizations
- Computer Networking Sites
- Great Lakes Organizations



## **Part 2**

This section includes local and regional organizations located within the three major Wisconsin watersheds:

- Lake Michigan
- Lake Superior
- Mississippi River

Maps are included to delineate each watershed section.

## **Part 3**

This section includes the county, regional, and watershed offices for the following state and federal organizations:

- County Offices
- Land Conservation Department County Offices
- Natural Resources and Conservation Service County and Field Offices
- Priority Watershed Educators and Projects
- Regional Planning Commissions
- UW-Extension Cooperative Extension District and County Offices
- Wisconsin Department of Natural Resources Regional and Geographic Management Unit (GMU) Offices

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*Part 1*

# Statewide Government Organizations

## **Department of Administration**

101 E. Wilson St.  
P.O. Box 7868  
Madison, WI 53707-7868  
608/266-2309

*Wisconsin Acid Deposition Council*  
608/266-7375

*Wisconsin Coastal Management Program*  
608/266-3687; Fax: 608/267-6931

## **Department of Agriculture, Trade and Consumer Protection**

*Agricultural Resource Management (ARM)  
Division*  
P.O. Box 8911  
Madison, WI 53708-8911  
608/224-4500

### *Bureau of Agrichemical Management*

- Regulates pesticide use
- Regulates the bulk storage of fertilizers, pesticides, and the use of pesticides
- Conducts pesticide and groundwater studies, testing programs, and information campaigns
- Offers pesticide applicator certification
- Implements the agricultural clean sweep and chemical cleanup program

### *Bureau of Land & Water Resources*

- Develops soil and water resource management programs
- Encourages farmland preservation
- Works to develop sustainable agriculture programs
- Writes agricultural impact statements
- Reviews plat maps

## **Department of Commerce**

*Division of Safety and Buildings*  
P.O. Box 7969  
Madison, WI 53707-6979  
608/266-3151  
Home Page: <http://badger.state.wi.us/agencies/commerce>

- Regulates privately owned waste treatment systems
- Reviews home water treatment devices

### *Division of Environmental and Regulatory Services*

P.O. Box 7969  
Madison, WI 53707-6979  
608/264-6152

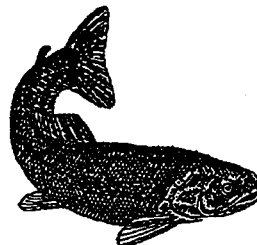
- Regulates installation and operation of petroleum storage tanks

## **Department of Health and Family Services**

*Bureau of Public Health*  
1414 East Washington Ave.  
Madison, WI 53702  
608/266-6844

Home Page: <http://www.dhfs.state.wi.us>

- Provides series of fact sheets about water-related health concerns
- Investigates health effects from contamination incidents
- Recommends enforcement standards for substances in groundwater related to health concerns
- Answers health-related questions related to groundwater contamination





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## Department of Natural Resources (DNR)

Write to any of the following DNR Bureaus at:

P.O. Box 7921

Madison, WI 53707-7921

Information Center: 608/266-2621

Home Page: <http://www.dnr.state.wi.us>

- The mission of the Department of Natural Resources (DNR) includes the protection of our natural resources--air, land, water, wildlife, fish, and forests--for all the citizens of the state, now and in the future.
- A variety of programs have been developed within the DNR to protect the natural waters of the state. These programs address many of the threats facing our lakes, rivers, groundwaters, and streams, and have firmly established Wisconsin as a leader in the protection of water resources.

To order documents from the DNR, contact the bureaus listed below or complete and mail the form at the end of this *Supplement*:

Bureau of Air Management

608/266-7718

Bureau of Communication and Education

608/266-6790

Bureau of Community Financial Assistance

608/266-7555

Bureau of Cooperative Environmental Assistance

608/267-9700

Bureau of Drinking Water and Groundwater

608/266-0821

Bureau of Endangered Resources

608/266-7012

Bureau of Facilities and Lands

608/266-0823

Bureau of Fisheries Management and Habitat

Protection

608/266-1877

Bureau of Forestry

608/267-7494

Bureau of Human Resources

608/267-7428

Bureau of Integrated Science Services

608/266-4359

Bureau of Law Enforcement

608/266 2141

Bureau of Waste Management

608/266-2111

Bureau of Watershed Management

608/267-7694

Bureau of Wildlife Management

608/266-1877

## Bureau of Air Management

608/266-7718

Home Page:

<http://www.dnr.state.wi.us/eq/air/airmat/index.htm>

- Works with industries and citizens on air pollution and emissions regulations and prevention programs
- Produces acid rain-related publications

## Bureau of Communication and Education

608/266-6790

The Bureau of Communication and Education provides:

- Public information activities
- School curriculum development materials for environmental education
- Educational materials
- Project WILD (Wildlife in Learning Design)
- Project Learning Tree (Forestry and environmental education)
- Recycling education programs

## EE News

608/267-5239; Fax: 608/264-6293

- Quarterly environmental education newsletter for Wisconsin
- Home page for newsletter with "EEK!" (Environmental Education for Kids!) home page: <http://www.dnr.state.wi.us/ee>

## Wisconsin Natural Resources Magazine

800/678-9472

E-mail: [sperld@dnr.state.wi.us](mailto:sperld@dnr.state.wi.us)

Home Page: <http://www.wnrmag.com>

- A bi-monthly magazine providing general information on the natural resources of Wisconsin. To order back copies, call the circulation manager, 608/267-7410.
- The magazine articles from 1977-present are listed on the home page

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**Bureau of Cooperative Environmental Assistance**

608/267-9700

- Develops and supports waste minimization and pollution prevention programs

*Wisconsin's Pollution Prevention Information Clearinghouse*

608/267-9700

Home Page: <http://epic.er.doe.gov/epic>

- Distributes resources and numerous publications to industries to assist them in reducing their pollutants

**Bureau of Drinking Water and Groundwater**

608/266-0821

Home Page: <http://www.dnr.state.wi.us/eq/wq/dw/index.htm>

The Bureau of Drinking Water and Groundwater conducts:

- Groundwater monitoring and coordination with other groundwater programs
- Wellhead protection
- Basin groundwater quality appraisals
- Setting and enforcing public and private drinking water standards
- Water supply monitoring
- Safe Drinking Water Act implementation

**Bureau of Fisheries Management and Habitat Protection**

608/266-1877

- Conducts fisheries ecology research
- Develops fisheries and habitat management and restoration programs

*Angler Education Program*

608/266-2272

- This program is designed to educate participants in aquatic ecology and resource stewardship as well as the secrets of fishing! The Junior Angler Program is designed for youth ages 8-11.
- Offers Master Angler Program (for anyone over 12)
- Angler Education Instructor workshops are available for those interested in volunteering to teach others.

*Fisheries and Aquatic Resources Section*

608/266-2176

*Lakes and Wetlands Section*

608/266-0502

- Wisconsin Lakes Partnership
- Offers lake planning and protection grants

*Monitoring Section*

608/266-0832

*Rivers and Regulations Section*

608/264-8554

**Bureau of Forestry**

608/267-7494

Home Page: <http://www.dnr.state.wi.us/forwild/forestry>

**Bureau of Integrated Science Services**

608/266-4359

Conducts:

- Ecological research
- Environmental restoration
- Mining review

**Bureau of Law Enforcement**

608/266-2141

- Offers boating safety courses
- Conducts environmental enforcement

**Bureau of Remediation and Redevelopment**

608/266-2111

- Coordinates state Superfund program
- Oversees clean up of leaking underground storage tanks
- Spill response

**Bureau of Waste Management**

608/266-2111

Regulates:

- Municipal and industrial wastewater systems
- Large scale on-site waste disposal systems
- Septic and animal waste disposal
- Operating and abandoned landfills
- Hazardous waste disposal

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**Bureau of Watershed Management**

608/267-7694

- Conducts water quality planning and education
- Administers Nonpoint Source Program
- Regulates wastewater management

*Floodplain/Shoreland Management Section*

608/266-1926

*Great Lakes and Watershed Planning*

608/266-1956

- Develops Remedial Action Programs for Great Lakes and some rivers

*Point Source Technical Evaluation Section*

608/266-2666

*Runoff Management Practices Section*

608/266-9254

*Self-Help Lake Monitoring Program*

608/266-8117

- This Wisconsin DNR program trains volunteer lake monitors and coordinates volunteer monitoring efforts on Wisconsin's lakes.

*Surface Water Quality Standards Section*

608/266-0156

*Water Action Volunteers (WAV)*

608/264-8948

- Encourages citizens to participate in stream or river stewardship projects
- Provides guidance and resources to groups that are interested in stewardship projects
- Works to link citizens with water resources and encourages networking among stream and river projects statewide
- The Water Action Volunteers packet provides a series of eight introductory hands-on stream and river action activities

*Water Quality Modeling Section*

608/266-0155

**Bureau of Wildlife Management**

608/266-1877

- Conducts wildlife ecology and wildlife health research

**DNR Geographic Management Unit Offices (GMU)**

The Department of Natural Resources is in the process of reorganizing their offices and staff. One of the outcomes of these changes is the creation of the Geographic Management Unit Offices (GMUs). The GMUs will work towards the protection of the 22 major water basins or watersheds in the state (see map on next page).

**DNR Publications**

2421 Darwin Road

Madison, WI 53704

Please contact the individual bureaus first to order publications

**DNR Regional Offices**

Refer to map on next page for region locations

**Northeast Region**

1125 N. Military Avenue

Green Bay, WI 54307

920/492-5800

**Northern Region Offices**

107 Sutliff Ave.

Box 818

Rhineland, WI 54501

715/362-7616

810 W. Maple

Box 309

Spooner, WI 54801

715/635-2101

**South Central Region**

3911 Fish Hatchery Road

Fitchburg, WI 53711

608/275-3266

**Southeast Region**

2300 N. Martin Luther King, Jr. Dr.

Box 12436

Milwaukee, WI 53212

414/263-8500

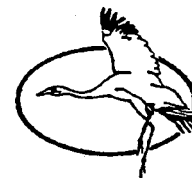
**West Central Region**

1300 Clairemont Ave.

P.O. Box 4001

Eau Claire, WI 54702

715/839-3700



**Wisconsin Department of Natural Resources Geographic Management Unit (GMU) Offices**

The goal of the GMU programs is to integrate land and water programs for successful management of Wisconsin's natural resources within the state's twenty-two major water basins.



W Water GMU Leaders  
 L Land GMU Leaders  
 --- DNR Regions  
 — Geographic Management Units (GMU)

**Black-Buffer-Trempealeau**  
 Ed Bourget 715/284-1431 W  
 Allison Beach 715/284-1407 L

**Central Wisconsin**  
 Tom Jerow 715/421-7813 W  
 Arvid Haugen 715/421-7810 L

**Grant-Platte-Sugar-Pecatonica**  
 Robert Hansis 608/275-3304 W  
 Carl Batha 608/275-3248 L

**Illinois-Fox**  
 Greg Pilarski 414/229-0866 W

**La Crosse-Bad Axe**  
 Craig Thompson 608/785-9014 W

**Lake Shore**  
 Ron Fassbender 920/746-2875 W  
 Arnie Lindauer 920/746-2867 L

**Lake Superior**  
 Ted Smith 715/635-4071 W  
 Bob Gothblad 715/635-4056 L

**Lower Chippewa**  
 John Paddock 715/839-3727 W  
 Bob Michelson 715/839-3736 L

**Lower Fox**  
 Robert Behrens 920/492-5872 W  
 Arnie Lindauer 920/746-2867 L

**Lower Rock**  
 Ken Johnson 608/275-3243 W  
 Susan Oshman 608/275-3250 L

**Lower Wisconsin**  
 Tom Bainbridge 608/275-3279 W

**Milwaukee**  
 Sharon Gayan 414/263-8707 W  
 Frank Trcka 414/263-8615 L

**Mississippi-Lower St. Croix**  
 Terry Moe 608/785-9004 W

**Root-Pike**  
 Mike Luba 414/263-8694 W

**Sheboygan**  
 Chip Krohn 414/229-0862 W  
 Frank Trcka 414/263-8615 L

**St. Croix**  
 John Gozdziwski 715/635-4055 W  
 B. Moss 715/635-4154 L

**Upper Chippewa**  
 Bruce Swanson W  
 Connie Antonuk 715/762-4684 x122 L

**Upper Fox**  
 Rob McLennan 920 or 414/492-5906 W  
 Cheryl Rezabek 920 or 414/424-4003 L

**Upper Green Bay**  
 Doug Rossberg 715/582-5022 W  
 Joseph Haug 715/582-5025 L

**Upper Rock**  
 Jim Congdon 414/387-7872 W  
 Tim Galvin 414/387-7875 L

**Upper Wisconsin**  
 Tom Bashaw 715/365-8973 W

**Wolf**  
 Dan Helf 920 or 414/492-5841

## Department of Public Instruction

P.O. Box 7841  
Madison, WI 53707  
608/266-3390

Home Page: <http://badger.state.wi.us/agencies/dpi/index.html>

- Assists in environmental education curriculum development
- New standards are being developed for all subject areas
- Performance tests and evaluative methods may be requested from DPI

### Publication Sales

125 S. Webster St.  
P.O. Box 7841  
Madison, WI 53707-7841  
800/243-8782

## Department of Tourism

201 W. Washington, 2nd Fl., P.O. Box 7976,  
Madison, WI 53707-7976. 608/266-7621,  
800/432-TRIP

- Provides state travel information and maps

## Department of Transportation

4802 Sheboygan Avenue  
Madison, WI 53702  
Public Affairs Office: 608/266-3581  
Bureau of the Environment: 608/266-3761  
Home Page: <http://www.dot.state.wi.us>

- Involved with wetland mitigation projects
- Implements erosion protection practices

## University of Wisconsin System

### University of Wisconsin-Extension

Extension Building  
432 N. Lake St.  
Madison, WI 53706-1498

Home Page: <http://www.uwex.edu>

- The home page provides a list of all UW-Extension personnel
- "Infosource" home page provides answers to commonly asked questions



### UW- Extension:

- Provides educational and informational assistance to citizens on a broad variety of topics related to water.
- County extension specialists work with local citizens on community development projects through the following programs: Agriculture/Agri-business, Community, Natural Resource and Economic Development, 4-H/Youth Development, and Family Living Education.
- State-level Extension specialists develop educational materials and distribute them through county Extension offices.

Contact your district or county Extension office for information on local water quality protection and educational efforts. To determine which district you are located in, refer to the "Cooperative Extension Districts" map below.

### Basin Educators

UW-Extension will create six-eight basin educator positions throughout Wisconsin by Spring 1998. The Basin Educators will work within one or more watersheds to develop basin-wide water quality education strategies that address priorities identified by local teams while facilitating team building. Contact your nearest UW-Extension Cooperative Extension district, county office, or the Water Resources Programs office for further information.

### Cooperative Extension County Offices

See county offices list in Part 3 of this "Organizations" section.

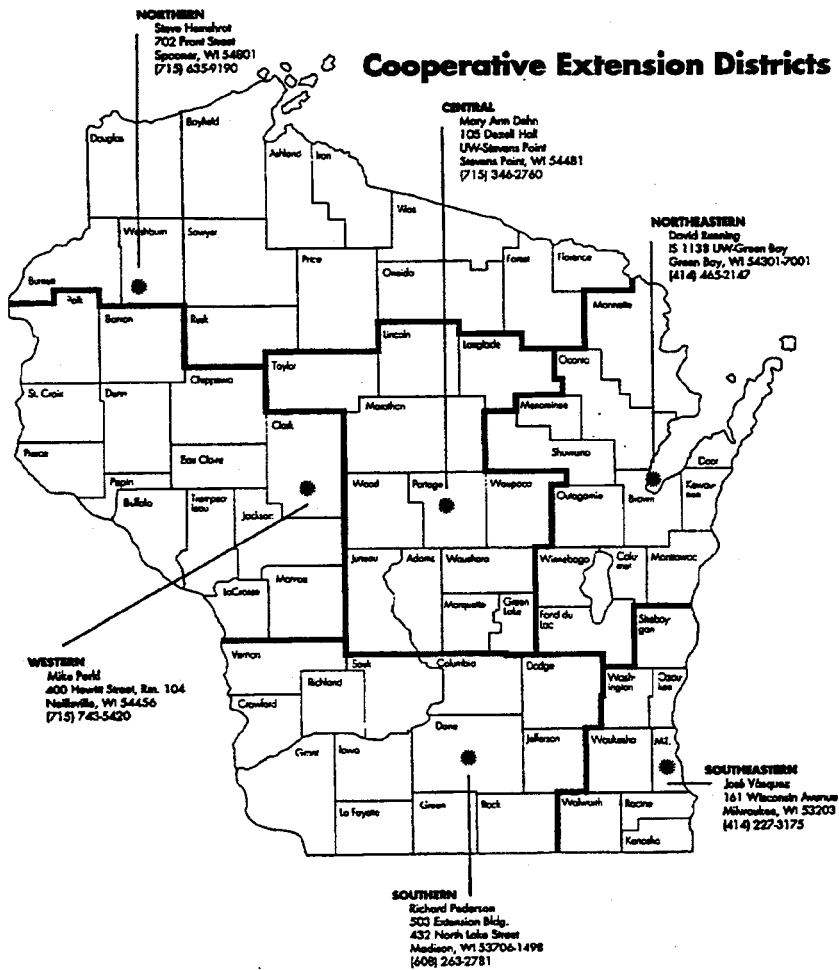
### Cooperative Extension Districts

Home Page: <http://www.uwex.edu/ces.index.html>

### Cooperative Extension Media Collection Office

P.O. Box 2093  
45 North Charter Street, Rm. 21  
Madison, WI 53715  
608/262-3514 or 800/353-3514

- Audio-visual materials available for UW-Extension offices to borrow for educational purposes



### Cooperative Extension Publications

630 W. Mifflin St., Rm. 170  
Madison, WI 53703  
608/262-3346; Fax: 608/265-8052  
Home Page: <http://www.uwex.edu/ces/pubs.html>

- **To order** any UW-Extension publications or request a catalog, contact this office or complete and mail the order form at the end of this *Wisconsin Supplement*.

### Current Water Educators (May change after Jan. 1998)

**Northeast Area**  
CES 317, UW-Green Bay  
Green Bay, WI 54302  
920/465-2240; Fax: 920/465-2376

**Southeast Area**  
State Fair Youth Center  
640 South 84th St.  
Milwaukee, WI 53214-1438  
414/290-2400; Fax: 414/290-2424  
Water Educators  
414/290-2430 & 414/290-2431

**Southern Area**  
UWEX-ERC  
216 Agriculture Hall  
1450 Linden Dr.  
Madison, WI 53706  
608/265-3257; Fax: 608/262-2031

**Western Area**  
Phillips Hall, Rm. 149  
UW-Eau Claire  
Eau Claire, WI 54702  
715/836-5513; Fax: 715/836-2380

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## **Environmental Resources Center (ERC)**

### **UW-Madison**

*Cooperative Extension Service*

School of Natural Resources

Room 216 Agriculture Hall

1450 Linden Drive

Madison, WI 53706

608/262-1377

Home Page: [http://clean\\_water.uwex.edu/erc.html](http://clean_water.uwex.edu/erc.html)

- Youth education programs
- Household hazardous waste education
- Priority Watershed Program information and education
- Groundwater and drinking water education programs
- Groundwater research and demonstration projects
- Provides a variety of publications, audio-visual materials, exhibits, and models
- Environmental issues education
- "Environment" catalogue lists adult education courses and field trips offered throughout the state

### **UW-River Falls**

*Cooperative Extension*

Dept. of Plant and Earth Science

River falls, WI 54022-5001

715/425-3851; Fax: 715/425-3785

### **UW-Stevens Point**

*Cooperative Extension*

College of Natural Resources

Stevens Point, WI 54481

715/346-3783

### **UW-Superior**

*Cooperative Extension*

Dept. of Biology

McCaskill Hall

Superior, WI 54880-2898

715/39-8410; Fax: 715/394-8454

## **Environmental Resources Center**

### **Programs:**

*Educating Young People About Water*

608/262-0142

Home Page: <http://www.uwex.edu/erc/ywc>

- Series of three guides to assist organizations in developing water education programs (see *National Organizations* section for more information)

### *Give Water A Hand*

800/WAT-ER20

Home Page: <http://www.uwex.edu/erc>

- National water action activity guide for youth and adults (see *National Organizations* section for more information)

### *Farm\*A\*Syst & Home\*A\*Syst*

608/262-3799

- The Farmstead and Homestead Assessment Programs help farmers and homeowners identify and manage potential pollution sources
- Produces fact sheets and worksheets for pollution prevention

### *Water Action Volunteers*

608/264-8948

Home Page: [http://clean\\_water.uwex.edu/wav](http://clean_water.uwex.edu/wav)

- Water Action Volunteers Packet
- See DNR listing for more information

## **UW-Extension Water Resources Programs**

UWEX Water Resources Education Coordinator

216C Agriculture Hall, 1450 Linden Drive

Madison, WI 53706

608/262-1916; Fax: 608/262-2031

E-mail: [rshepar@facstaff.wisc.edu](mailto:rshepar@facstaff.wisc.edu)

Home Page: [http://clean\\_water.uwex.edu](http://clean_water.uwex.edu)

Home Page includes:

- UW-Extension water programs
- Professional development opportunities in water quality
- *Keeping Current* newsletter on-line

Water Resources Programs:

- Watershed programs
- Agriculture/Urban Programs (Nutrient Pest Management, Integrated Pest Management, Farm Practices Inventory, Extension Information/Education Priority Watersheds)\*
- Wisconsin Lakes Programs (Wisconsin Lakes Partnership, Adopt-A-Lake)\*
- Volunteer/Teacher Programs (Project WET, Give Water A Hand, Water Action



Volunteers, Educating Young People About Water)\*

- Produces *Keeping Current* newsletter of UW-Extension's water resources programs

\*See program descriptions in this "Organizations" section

### **Central Wisconsin Groundwater Center**

University of Wisconsin-Extension  
College of Natural Resources

Nelson Hall

UW-Stevens Point

Stevens Point, WI 54481

715/346-4270; Fax: 715/346-2965

E-mail: [cmecheni@uwsp.edu](mailto:cmecheni@uwsp.edu)

Home Page: <http://www.uwsp.edu/acad/uwexcoop/gndwater/index.htm>

- Offers drinking water and groundwater education programs
- Develops materials regarding groundwater best management practices
- Collects and analyzes groundwater resource data
- Provides educational materials and county groundwater reports
- Provides technical assistance to local governments
- Wellhead protection programs

### **Farm Practices Inventory**

608/262-8756

Home Page: <http://www.uwex.edu/waterres/fpi/fpi.html>

- The Farm Practices Inventory is a landowner survey designed to assist agency staff in determining needs and targeting educational strategies for specific groups of farmers and rural residents involved in water quality programs.

### **Nutrient and Pest Management Program**

UW-Madison Cooperative Extension

College of Agriculture and Life Sciences

1535 Observatory Dr.

Madison, WI 53706

608/262-6140

Home Page: <http://ipcm.wisc.edu/npm>

- Promotes agriculture and manure management practices
- Staff works mostly with farmers and vocational/agriculture teachers

- Agricultural nutrient and pest management publications available

### **Solid and Hazardous Waste Education Center (SHWEC)**

UW-Madison, UW-Extension

610 Langdon St., Rm. 529

Madison, WI 53703

608/262-0385

### **UW-Extension Lake Management Office**

Extension Lake Management Specialists

Wisconsin Lakes Partnership

College of Natural Resources

University of Wisconsin-Stevens Point

Stevens Point, WI 54481

715/346-2116; Fax: 715/346-4038

- The Wisconsin Lakes Partnership takes a holistic approach to lake management, teaming up with lake organizations, property owners, and local governments to conduct lake monitoring, aquatic plant management, technical assistance, information and education projects, demonstration projects, and planning grants.
- Develops and distributes educational materials
- Provides organizational assistance to those interested in creating lake associations and lake management organizations
- Youth (K-12) educational programming through Adopt-A-Lake and Project WET

### **Wisconsin Geological and Natural History Survey**

3817 Mineral Point Rd.

Madison, WI 53705-5100

608/262-1705

WGNHS Map and Publication Sales (MAPS)

608/263-7389

Home Page: <http://www.uwex.edu/wgnhs>

- Maps: Topographic and hydrologic unit (surface drainage) maps, state maps, basin maps, county maps, and more!
- Provides maps and inventory of groundwater resources and aquifer conditions
- Produces technical reports and maps related to geology, soils, and water features
- Assists regulating agencies
- Produces Wisconsin Wetlands Inventory Maps
- Monitors groundwater levels and water quality



- Provides education and public information programs related to groundwater, geology, soils, and hydrology

**To order documents** from the Wisconsin Geological and Natural History Survey, contact the MAPS office or complete and mail the form at the end of this *Wisconsin Supplement*.

### **University of Wisconsin-Madison**

Madison, WI 53706  
Home Page: <http://www.wisc.edu>

### **Center for Integrated Agricultural Services**

240 Agriculture Hall  
UW-Madison  
Madison, WI 53706  
608/262-5200

- Publishes *Toward a Sustainable Agriculture: A Teacher's Guide*

### **Center for Limnology**

630 N. Park St.  
Madison, WI 53706  
608/262-2840  
Home Page: <http://www.limnosun.limnology.wisc.edu/~webadmin>

- Conducts inland freshwater research including: modeling and long-term studies, Great Lakes research, and research application to resource management and environmental issues

### **Trout Lake Station**

1081 County Hwy. N  
Boulder Junction, WI 54512  
715/356-9494

- Center for Limnology field station
- Limnology research projects including acid rain affects on lakes

### **College of Agricultural and Life Sciences**

140 Agriculture Hall, 1450 Linden Drive  
Madison, WI 53706  
608/262-1251  
Home Page: <http://www.cals.wisc.edu>

- Land grant college programs in agriculture, life sciences, natural resources, environmental stewardship, and rural community development

### **Institute for Environmental Studies**

15 Science Hall, 550 North Park St.  
Madison, WI 53706  
608/263-1796 or 265-5296

Home Page: <http://gaia7.ies.wisc.edu>

- Produces research, technical publications, and some educational materials on the Great Lakes, Madison-area lakes, Kickapoo River, and water management

### **National Institute for Science Education**

UW-Madison  
1025 W. Johnson St., 753 Educational Services  
Madison, WI 53706  
608/263-9250

Home Page: <http://www.wcer.wisc.edu/nise>

- Conducts science and math education research and development

### **University of Wisconsin-Sea Grant Institute**

Communications Office, Advisory Services  
1800 University Avenue  
University of Wisconsin  
Madison, WI 53705-4094

608/263-3259; Fax: 608/263-2063

Home Page: <http://www.seagrant.wisc.edu/home.html>

- Provides programs in living resources, biotechnology, estuarine and coastal processes, microcontaminants and water quality, aquaculture and seafood technology, new initiatives, and more
- Produces many publications related to the Great Lakes, aquatic research, and related issues
- Some K-12 teacher training is provided on the Great Lakes and related subjects (global change education, boating safety, etc.)

### **Great Lakes Research Facility**

Education Specialist  
600 E. Greenfield  
Milwaukee, WI 53204-2944  
414/227-3291; Fax: 414/382-1705  
E-mail: [jflubner@seagrant.wisc.edu](mailto:jflubner@seagrant.wisc.edu)  
Home Page: <http://h2o.seagrant.wisc.edu>

*UW-Superior Sea Grant Advisory Services*  
Sunquist 143  
Superior, WI 54880  
715/394-8472

*Water Quality Specialist*  
UW-Center, Manitowoc County  
705 Viebahn St., Rm. E105  
Manitowoc, WI 54220-6699  
920/683-4697; Fax: 920/683-4776  
E-mail: kfermani@seagrants.wisc.edu

**State Laboratory of Hygiene**  
465 Henry Mall  
Madison, WI 53706  
608/262-1293  
Home Page: <http://www.slh.wisc.edu>  
• Conducts a broad range of water tests for agencies and individuals

**Water Resources Center Library**  
University of Wisconsin-Madison  
1975 Willow Drive  
Madison, WI 53706  
608/262-3069; Fax: 608/262-0591  
E-mail: josavoy@macc.wisc.edu  
E-mail reference service:  
AskWater@macc.wisc.edu  
Home Page: [http://www.library.wisc.edu/libraries/Water\\_Resources](http://www.library.wisc.edu/libraries/Water_Resources)  
• Provides primarily technical information related to water resources in Wisconsin (high school and adult education)  
• Will locate and lend resources

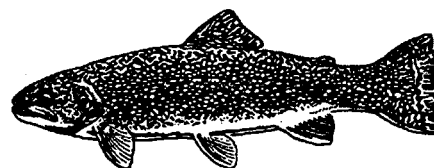
**Water Resources Management Program**  
Institute for Environmental Studies  
550 N. Park St., 70 Science Hall  
Madison, WI 53706  
608/265-5296  
Home Page: <http://www.wisc.edu/grad/catalog/interdis/wrmp.html>  
• Provides water resources-related curriculum options, research, staff, and cooperating programs and centers  
• Produces *Caring for Our Lakes: A Curriculum on the Yahara Watershed*  
• Offers a professional graduate degree program in Water Resources Management

**University of Wisconsin-Stevens Point**  
UW- Stevens Point  
Stevens Point, WI 54481  
715/346-4242

**Career Services**  
134 Old Main  
Stevens Point, WI 54481  
715/346-3136 or 715/346-3226  
Home Page: <http://www.uwsp.edu/stuserv/career>  
• Provides career services and information for teachers and students

**College of Natural Resources**  
UWSP - College of Natural Resources  
Stevens Point, WI 54481  
715/346-4617  
Home Page:  
<http://www.uwsp.edu/acad/cnr/cnr.htm>  
• Widely regarded as the leading undergraduate program in natural resources in the United States and the largest program in North America. The interdisciplinary education philosophy is the strength of the program.  
• Offers a Water Resources major  
• In cooperation with the Central Wisconsin Environmental Station, the college offers week-long summer workshops for high school students entitled "Careers in Natural Resources"

**Environmental Task Force Lab**  
UWSP - College of Natural Resources  
Stevens Point, WI 54481  
715/346-3209  
Home Page: <http://www.uwsp.edu/acad/cnr/etf/etflab.htm>  
• The Environmental Task Force Lab can perform a wide range of chemical analyses on a variety of environmental samples including groundwater analysis of both organic compounds (pesticides, petroleum, etc.) and inorganic compounds (nitrate, lead, etc.) that can be found in groundwater.



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### **Groundwater Model Project**

Water Resources Program  
UWSP - College of Natural Resources  
Stevens Point, WI 54481  
715/346-4613

- Groundwater Models are available for order
- Provides groundwater research projects

### **Wisconsin Center for Environmental Education (WCEE)**

UWSP - College of Natural Resources  
Stevens Point, WI 54481  
715/346-4973; Fax: 715/346-3025  
Resource Library Phone: 715/346-4854  
E-mail: [wcee@uwsp.edu](mailto:wcee@uwsp.edu)

Home Page: <http://www.uwsp.edu/acad/wcee>

- WCEE promotes the development, dissemination, implementation, and evaluation of environmental education programs in Wisconsin.
- Provides environmental education outreach courses
- Offers an Extended Master's Degree Program for Teachers
- Hosts a High School Environmental Action Conference
- Coordinates the Wisconsin Environmental Education Network
- Provides an Environmental Education Resource Library

### **UW-Superior**

UW-Extension, UW-Superior  
Department of Biology  
Superior, WI 54880  
715/394-8410

Home Page: <http://www.uwsuper.edu>

- Produces "Water Bugs" video
- Provides exotic species information and activity packet
- Offers expertise with fisheries biology, lake management, aquaculture, and youth programs

### **Lake Superior Research Institute**

715/394-8315  
Home Page: <http://webnt.uwsuper.edu/news/stories/Aquatic.html>

- Offers courses and field trips on Lake Superior aboard the LL Smith, Jr.
- Offers teacher training programs (includes Boundary Waters Program)

- Provides technical expertise on Lake Superior ecology

### **Sea Grant Advisory Services**

UW-Superior  
Sunquist 143  
Superior, WI 54880  
715/394-8472

### **Water Watchers Program**

UW-Superior  
McCaskill 143, 1800 Grand  
Superior, WI 54874  
715/394-8525

- Works with students and teachers to investigate and analyze stream and lake biology to understand watersheds and the importance of protecting water resources

### **Wisconsin Technical College System**

#### *Educational Consultant*

310 Price Place  
P.O. Box 7874  
Madison, WI 53707  
608/849-2400

Home Page: <http://www.board.tec.wi.us>

#### Offers:

- Adult education and customized training
- Pollution control and water/wastewater treatment education
- Hazardous material handling degree programs
- Agricultural programs related to agribusiness, agriscience, farm operation, and agricultural technology

### **USDA Natural Resources Conservation Service**

#### *State Conservationist*

6515 Watts Road, Suite 200  
Madison, WI 53719-2726  
608/264-5341

- Provides technical assistance for soil and water resource management
- Develops technical standards and specifications for conservation and water quality protection practices
- Develops soil-pesticide leaching and surface loss potential ratings for soil
- Provides nutrient and pest management planning

- Provides technical assistance for livestock waste management systems
- Assists in water quality planning and education
- Assists county land conservation committees in providing technical assistance to land users
- Provides training to SCS, county land conservation committees, and departments
- Provides co-leadership for USDA water quality demonstration and hydrologic unit projects with UW-Extension and other organizations
- Develops river basin and floodplain management studies
- Plans resource conservation and development (RC&D) projects
- Offers wetland protection/restoration programs

#### *Field Offices*

Contact the nearest Field Office or county Land Conservation Department for specific information. See the county and field offices lists in Part 3 of this "Organizations" section.

#### **United States Geological Survey**

##### *Wisconsin District*

8505 Research Way  
Middleton, WI 53562  
608/828-9901

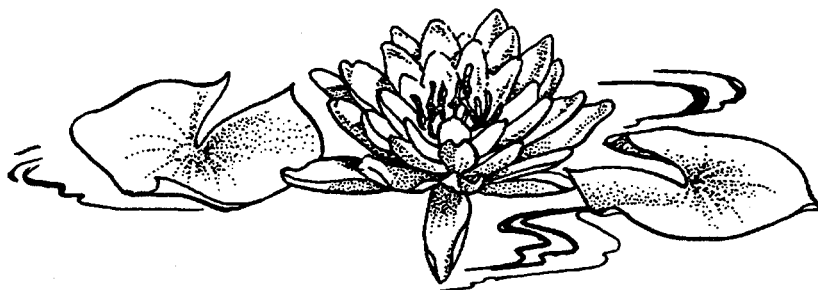
Wisconsin Home Page: <http://www.dwim.dn.er.usgs.gov>

National Home Page: <http://water.usgs.gov>

- Provides descriptions of groundwater systems within the state
- Collects data and conducts studies regarding: groundwater quality and quantity; groundwater levels in observation wells; streamflow at gauging stations and other sites; lake and reservoir ecology; and chemical, physical, and biological characteristics of surface waters

*"If you always have dry feet, you miss half the fun of life."*

--Henry David Thoreau



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# Statewide Water-Related Organizations

## **Adopt-A-Lake**

UWEX-CNR  
University of Wisconsin-Stevens Point  
Stevens Point, WI 54481  
715/346-3366

Home Page: [http://clean\\_water.uwex.edu](http://clean_water.uwex.edu)

- A project-oriented program designed to give youth and adults a better understanding of inland lakes through hands-on activities
- Provides direction and resources to teachers, youth leaders, and youth interested in "adopting" a lake in their community

## **Center for Integrated Agriculture Systems**

608/262-5200

## **Citizens for a Better Environment (CBE)**

152 W. Wisconsin Ave., Suite 510  
Milwaukee, WI 53203  
608/251-3692 or 414/271-7924;  
Fax: 414/271-5904

- CBE works towards solving environmental problems through research, legislation, community organizing, legal action, and citizen empowerment.

## **Ducks Unlimited**

Bruce Deadman, State Chairman  
421 Oak Ridge Rd.  
Oneida, WI 54155  
920/865-7995

Home Page: <http://www.ducks.org>

- A non-profit national organization that raises money for the restoration and preservation of wetlands

## **Green Wings Program**

Ken and Rosalie Kerl, State Program  
Coordinators  
N7523 Hwy. 44  
Pardeeville, WI 53954  
608/429-4321

- For youth interested in learning about wetlands, waterfowl, and the environment
- Offers summer camps and field trips

## **Farmland Preservation**

Attention: Lucy Moore  
P.O. Box 8906  
Madison, WI 53708-8906  
608/266-2442

## **Federation of Environmental Toxicologists**

Milwaukee, WI  
414/251-8163

## **Federation of Fly Fishers**

Jim Abbs, State Chapter Director  
126 Nautilus Drive  
Madison, WI 53705  
608/238-5214 or 263-5907

Home Page: <http://www.fedflyfishers.org/index2.html>

- International organization that works to preserve fly fishing opportunities and enhance habitats that will provide quality fishing in the future.

## **Gathering Waters**

633 W. Main St.  
Madison, WI 53703  
608/251-9131

- Serves as an education and technical assistance center for land trusts and landowners
- Works directly with landowners and existing land trusts statewide to preserve Wisconsin's natural heritage and rural landscape



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### **Historical Society of Wisconsin**

816 State Street  
Madison WI 53706  
608/264-6400

Public Information Office: 608/264-6586

Home Page: <http://www.shsw.wisc.edu/>

- Provides list of local historical societies
- Offers opportunities for library and archives research of North American and Wisconsin history (photo archives, civil action, labor history, and special collections)
- Provides references and suggestions for educational programs and field trips

#### *Area Research Centers*

Affiliated with State Historical Society and located at each UW Campus (See "State Libraries" listed at the end of this *State Water-Related Organizations* section)

- Government documents collection available for research

### **Izaak Walton League**

Tom Gustin, State Chapter Director  
Lake Emily Park Ranger  
3961 Park Dr.

Amherst Junction, WI 54407

715/824-3175

Home Page: <http://www.iwla.org/iwla>

- National organization founded in 1922 to conserve, maintain, protect, and restore the soils, forest, water, and other natural resources of the United States and other lands to promote opportunities for the education and enjoyment of the public
- State divisions and local chapters
- For Save-Our-Streams program information see Izaak Walton League listing in *National Organizations* section

### **The League of Women Voters**

Education Fund  
1126 S. 70th St., Suite S413A  
West Allis, WI 53214  
414/475-2100

- Provides and distributes "Wetland Tool Kit"

### **Legislative Council**

*Legislative Document Room*  
608/266-2400

### *Document Sales*

Post Office Box 7840  
202 South Thornton Avenue  
Madison WI 53707-7840  
608/266-3358  
or 800/DOC-SALE

### *Legislative Hotline*

800/362-9472

### *Legislative Reference Library*

608/266-0341

### **LoonWatch Program**

Northland College

1411 Ellis Ave.

Ashland, WI 54806

715/682-1223

Home Page: <http://bobb.northland.edu/soei/LOON.HTML>

- This loon conservation program provides volunteer training for Loon Rangers who protect loons and their habitat; monitor loon populations and lake quality; and educate lake users and residents.

### **Michael Fields Agricultural Institute**

W2493 County Rd. ES

East Troy, WI 53120

414/642-3303; Fax: 414/642-4028

Home Page: <http://www.steinercollege.org/anthrop/mfai.html>

- A public non-profit education and research organization committed to promoting resource-conserving, ecologically sustainable, and economically viable food and farming systems
- Provides programs in education, research, food systems, international support, and farm policy



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**Midwest Treaty Network**

731 State Street  
Madison, WI 53703  
608/246-2256

E-mail: [igc.apc.org](mailto:igc.apc.org)

Home Page: <http://www.alphacdc.com/treaty>

- An alliance of Indian and non-Indian community groups that supports the sovereign rights of Native American nations.

**Mining Impact Coalition**

3918 Pauanack Ave.  
Madison, WI 53711

608/233-8455

E-mail: [goblinfern@aol.com](mailto:goblinfern@aol.com)

HYPERLINK mail to: [goblinfern@aol.com](mailto:goblinfern@aol.com)

Home Page: <http://www.earthwins.com/micwinc.html>

**National Audubon Society (local chapters)**

Great Lakes Regional Office

692 N. High St., Suite 208

Columbus, Ohio 43215

614/224-3303

Home Page: <http://www.audubon.org>

- State and local chapters listed on home page (call the Great Lakes Office for local chapter contacts)
- Dedicated to conserve and restore natural ecosystems with an emphasis on birds and other wildlife
- Supports wetlands preservation
- Encourages conservation of marine wildlife

**The Nature Conservancy**

Wisconsin Chapter

633 W. Main St.

Madison, WI 53703

608/251-8140; Fax: 608/251-8535

Home Page: <http://www.tnc.org>

- International non-profit organization dedicated to preserve plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and water they need to survive
- Offers volunteer stewardship programs
- Field trip opportunities to Nature Conservancy preserves
- Wisconsin Preserves Directory available

**The Northeast Wisconsin Sustainable Farm Network**

9896 County Hwy. D

Brussels, WI 54204

920/825-1369

**Project WILD Aquatic**

Project WILD Wisconsin

Wisconsin DNR Bureau of Communication and Education

P.O. Box 7921

Madison, Wisconsin 53707

608/266-6790

- *Project WILD Aquatic Activity Guide* is a curriculum supplement that focuses on aquatic wildlife and is available when you participate in a *Project WILD* workshop.

**The River Alliance of Wisconsin**

122 State Street, Suite 200

Madison, WI 53703

608/257-2424; Fax: 608/251-1655

E-mail: [wisrivers@igc.apc.org](mailto:wisrivers@igc.apc.org)

- The River Alliance of Wisconsin is a non-partisan, non-profit statewide citizen advocacy organization for rivers. It is committed to building a statewide grassroots river conservation movement.

**Sierra Club - Midwest Office****Great Lakes Ecoregion Program**

214 North Henry Street, Suite 203

Madison, WI 53703

608/257-4994; Fax: 608/257-3513

Home Page: <http://www.sierraclub.org>

- A non-profit, member-supported public interest organization that promotes conservation of the natural environment by influencing public policy decisions -- legislative, administrative, legal, and electoral.

**Sigurd Olson Environmental Institute**

Northland College

1411 Ellis Ave.

Ashland, WI 54806

715/682-1223

Home Page: <http://bobb.northland.edu/soei>

- The Institute works with federal and state agencies, local governments, business leaders, public interest groups, and local citizens on

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regional issues such as water quality, protection of wildlife and their habitats, land-use and zoning issues, and sustainable economic development.

- Programs work toward a sustainable future in the Lake Superior region as an outreach arm of Northland College

#### **Trout Unlimited**

John Crane, State Chapter Director  
N2629 Pleasant Park Lane  
Waupaca, WI 54981  
715/258-9173

Home Page: <http://www.tu.org/trout/index.html>

- Dedicated to the conservation, protection, and restoration of North America's trout and salmon fisheries in their watersheds
- Volunteer network
- Policy issues/lobbying

#### **Water Education Resource Centers (WERCs)**

- Six sites around the state provide training and equipment loans to promote water education in their area.
- Each location provides a variety of water quality monitoring equipment, curricula/activity guides, aquatic nets, stenciling kits, and training services.
- New WERC sites are being established over time, contact UW-Extension Water Educator, 608/265-3257, for further information.

#### **Water Education Resource Center (WERC)**

##### **Eau Claire Area**

Beaver Creek Reserve  
Route 2, Box 94  
Fall Creek, WI 54742  
715/877-2212

#### **Water Education Resource Center (WERC)**

##### **Grant County Area**

Grant County Land Conservation Department  
Lancaster, WI 53813  
608/723-6377

- Provides equipment loans only

#### **Water Education Resource Center (WERC) Madison Area**

Coordinating Agency: Dane County UW-Extension

1 Fen Oak Court, Rm. 138  
Madison, WI 53704-8810  
608/224-3718; Fax: 608/224-3745  
E-mail: [habecker@co.dane.wi.us](mailto:habecker@co.dane.wi.us)

#### **Water Education Resource Center (WERC) Milwaukee River Watershed**

Riveredge Nature Center  
Box 26  
Newburg, WI 53060  
414/375-2715

#### **Water Education Resource Center (WERC) Sheboygan Area**

Maywood Environmental Park  
3615 Mueller Rd.  
Sheboygan, WI 53083  
920/459-3906

#### **Water Education Resource Center (WERC) Stevens Point Area**

Central Wisconsin Environmental Station  
10186 County Rd. MM  
Amherst Junction, WI 54407  
715/824-2428

#### **Water Education Resource Center (WERC) Waukesha Area**

Retzer Nature Center  
W284 S1530 Road DT  
Waukesha, WI 53188  
414/896-8007

#### **Water Environment Federation**

*State Chapter:*

Max Anderson

Department of Civil Engineering

1 University Plaza

Platteville, WI 53818-3099

608/324-1543; Fax: 608/324-1566

Home Page: <http://www.wef.org>

- International non-profit educational and technical organization of water experts
- Members include environmental, civil, and chemical engineers; biologists; chemists; government officials; treatment plant managers and operators; laboratory



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technicians; researchers; professors; students;  
and equipment manufacturers.

strengthens leadership of local lake  
management organizations

### **Wisconsin Academy of Science, Arts, and Letters**

1922 University Avenue

Madison, WI 53705

608/263-1692; Fax: 608/265-3039

Home Page: <http://www.wisc.edu/wiscacad>

Offers the following programs and organizations:

- FIRST program: Field science research for teachers and students (Middle School/High School)
- FEST program: Hands-on science teacher education programs
- WEST: Wisconsin Elementary and (Middle School) Science Teachers organization

### **Wisconsin Academy Staff Development Initiative (WASDI)**

See address above

608/263-1692

- Offers teacher development programs including hands-on science programs in ten different academies located around Wisconsin.

### **Wisconsin Association for Environmental Education**

10186 County Rd. MM

Amherst Junction, WI 54407

715/346-2796

- Statewide organization of environmental educators
- Offers a fall conference, winter workshop, and spring adventure
- Produces a newsletter and other educational materials

### **Wisconsin Association of Lakes, Inc.**

P.O. Box 126

222 Nelson Hall, UWSP

Stevens Point, WI 54481-0126

800/542-LAKE

- This organization, comprised of lake management organizations around Wisconsin, is dedicated to the protection and preservation of Wisconsin's inland waterways, their watersheds, and ecosystems.
- Represents member lake management organizations in state and federal policy decisions, advances aquatic education, and

### **Wisconsin Center for Environmental Education**

UWSP - College of Natural Resources

Stevens Point, WI 54481

715/346-4973; Fax: 715/346-3025

Resource Library Phone: 715/346-4854

E-mail: [wcee@uwsp.edu](mailto:wcee@uwsp.edu)

Home Page: <http://www.uwsp.edu/acad/wcee>

- Promotes the development, dissemination, implementation and evaluation of environmental education programs in Wisconsin
- Offers environmental education outreach courses
- Offers an Extended Master's Degree Program for Teachers
- Hosts the High School Environmental Action Conference
- Coordinates Wisconsin Environmental Education network
- Environmental Education Resource Library available to the public

### **Wisconsin Conservation Hall of Fame Foundation**

Schmeckle Reserve Visitor Center

N. Point Drive

Stevens Point, WI 54481

715/346-4992

- Exhibits designed to honor the leaders who created Wisconsin's great conservation legacy
- Retrospective exhibit of resource management in Wisconsin
- Public education programs

### **Wisconsin Earth Science Teachers Association (WEST)**

See Wisconsin Academy of Science, Arts, and Letters for address and numbers

- Wisconsin Elementary and (Middle School) Science Teachers organization

### **Wisconsin's Environmental Decade**

122 State St., Suite 200

Madison, WI 53703

608/251-1655

- Provides educational materials related to environmental quality issues

- Produces the Green Thumb video and information on landscaping techniques to improve water quality
- Lobbies for environmental laws and water quality issues

#### **Wisconsin Lakes Partnership**

- A collaborative effort among the Wisconsin Department of Natural Resources, the University of Wisconsin-Extension, and citizens represented by the Wisconsin Association of Lakes working towards watershed restoration and lake protection

See the following individual organizations for further information:

- UW-Extension Lake Management Program, UW-Stevens Point
- DNR Bureau of Fisheries Management and Habitat Protection, Lakes and Wetlands Section
- Wisconsin Association of Lakes

#### **Wisconsin Land and Water Conservation Association**

608/833-1833

#### **Wisconsin Manufacturers and Commerce**

Wisconsin Environmental Working Group

P.O. Box 352

Madison, WI 53401-0352

608/258-3401, ext. 3061

- Coordinates "A Speaker's Bureau on Business and the Environment"

#### **Wisconsin Resources Protection Council**

210 Avon Street, #4

LaCrosse, WI 54603

608/784-4399

or

6824 Hwy. 8 West

Rhineland, WI 54501

#### **Wisconsin Rural Development Center, Inc.**

1406 Hwy. 18-ISE

Mount Horeb, WI 53572

608/437-5971; Fax: 608/437-5972

#### **Wisconsin Rural Development Center**

N. 2934 750th St.

Hager City, WI 54014

715/792-5227

#### **Wisconsin Rural Water Association**

350 Water Way

Plover, WI 54467

715/344-7778

E-mail: [wrwa@coredcs.com](mailto:wrwa@coredcs.com)

Home Page: <http://www.nrwa.org>

- Assists small municipalities with wellhead protection and public water supply protection issues
- Provides technical assistance to water and wastewater treatment operators

#### **Wisconsin Society of Science Teachers (WSST)**

University Of Wisconsin-Oshkosh

Office of Science Outreach

800 Algoma Blvd.

Oshkosh, WI 54901

920/424-7414; Fax: 920/424-7076

Home page: <http://www.netnet.net/users/pinney/wsst/WSST.html>

- Promotes, supports, and improves science education in Wisconsin by providing leadership, advocacy, and programs to enhance the teaching and learning of science
- Coordinates annual state convention and regional science forums

#### **Wisconsin Valley Improvement Authority**

2301 N. Third St.

Wausau, WI 54403

715/848-2976

- Regulates the water flow of the Wisconsin River from Lac Vieux Desert to the Eau Pleine Reservoir through dam and reservoir control

#### **Wisconsin Wastewater Operators**

W8779 Hwy. 10

Ellsworth, WI 54011

715/273-6461; Fax: 715/273-6164

Home Page: <http://www.winbright.net/wwoai>

- Organization that includes wastewater treatment plants and operators throughout Wisconsin

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### **Wisconsin Water Well Association**

Rod Pfeffer  
6225 60th Ave.  
Kenosha, WI 53142  
414/657-7830

- Promotes and protects Wisconsin's groundwater resources through lobbying, educational programs, and publications

### **Wisconsin Waterfowl Association**

Chuck Sauer, Executive Director  
P.O. Box 792  
Waukesha, WI 53187-0792

715/359-7844 or 414/524-8460

- Provides funding for wetland protection efforts

### **Wisconsin Waterways Commission**

DNR Liaison  
P.O. Box 7921  
Madison, WI 53707-7921  
608/266-5897

- Reviews and approves recreational boating projects under the Recreational Boating Facilities Program administered by the Department of Natural Resources

### **Wisconsin Wetlands Association**

222 S. Hamilton St., Suite 1  
Madison, WI 53703  
608/250-9971

- Education and advocacy group committed to the protection of Wisconsin's wetlands
- Offers a newsletter, field trips, workshops, slide show on Wisconsin wetlands, and database of educational resources

## **On Your Own**

### **Cooperative Education Service Agency (CESA)**

CESAs can provide excellent resources, development workshops, and information to assist you in developing your water education programs. Contact your local school board or school office for information about your local CESA.

### **Local Nature Centers**

Although there are some local nature centers listed in this "Organizations" section, there are many more centers which can provide educational programs and materials, field trip opportunities, and classroom presentations.

To find out what nature centers are near you, contact your local UWEX Cooperative Extension office, local school district, or you can order the *Directory to Wisconsin's Environmental Education and Nature Centers* from: DNR Bureau of Communication and Education Box 7921

Madison, WI 53707-7921

608/266-6790

Ask for Publication

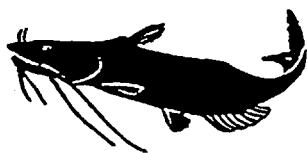
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The following organizations may offer presentations, field trips, and information as well:

### **Local Environmental Groups**

### **Local Hunting/Fishing Clubs**

### **Local Parks - City/County/State/National Forests**

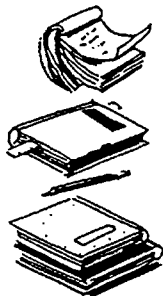


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# State Libraries

Many state government publications are available through state reference and loan libraries. Please help conserve paper and use your library whenever possible!

Appleton Public Library  
Lawrence University Library  
UW-Center - Baraboo/Sauk County  
Beaver Dam Public Library  
Beloit College Library  
L.E. Phillips Memorial Library  
UW-Eau Claire Library  
Fond du Lac Public Library  
Brown County Public Library  
UW-Green Bay Library  
Janesville Public Library  
UW-Center - Rock County  
UW-Parkside Library  
LaCrosse Public Library  
UW-LaCrosse Library  
Legislative Reference Bureau  
Madison Public Library  
State Historical Society  
Wis. Dept. of Natural Resources Library (WDNR staff only)  
Manitowoc Public Library  
UW-Center - Marshfield Library  
UW-Stout Library  
Alverno College Library  
Milwaukee Public Library  
UW-Milwaukee Golda Meir Library  
New Berlin Public Library  
Oshkosh Public Library  
UW-Oshkosh Library  
UW-Platteville Library  
Portage Public Library  
Racine Public Library  
Nicolet Area Tech. College, Lake Julia Campus Library  
UW-River Falls Chalmer Davee Library  
UW-Center - Sheboygan Library  
Mead Public Library  
UW-Stevens Point Library  
Superior Public Library  
UW-Superior Library



*"We cannot live only for ourselves.  
A thousand fibers connect us with  
our fellow people, and among those  
fibers, as sympathetic threads,  
our actions run as causes, and  
they come back to us as effects."*

—Herman Melville

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# Federal Agencies

## **Federal Emergency Management Agency (FEMA)**

Region V

175 W. Jackson Blvd.

Chicago, IL 60604

312/408-5500 or 800/358-9616; Fax: 800/358-9620

- Produces flood insurance rate and flood boundary maps

## **National Biological Survey**

National Fisheries Research Center

P.O. Box 818

LaCrosse, WI 54601

608/783-6451; Fax: 608/783-6066

## **National Park Service**

Apostle Islands National Lakeshore

National Park Service

Rt. 1, Box 4

Bayfield, WI 54814

715/779-3397

Home Page: <http://www.nps.gov/apis>

(On-line visitor center)

- Guided tours
- Educational programs
- Apostle Islands School for 6th graders, 2-week program
- Park library can be used on-site
- Resource management specialists provide information about the park

## **U.S. Army Corps of Engineers**

Department of the Army

St. Paul District, Corps of Engineers

Army Corps of Engineers Centre

190 Fifth Street East

St. Paul, MN 55101-1638

612/290-5200; Fax: 612/290-5330

Public Affairs Office: 612/290-5201 or

612/290-5202

Regulatory Division: 612/290-5375

Home Page: <http://www.usace.army.mil>

- Regulates any work in the navigable waters of the United States (including the Great

Lakes and Mississippi River) as part of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act

- Offers expertise with wetland regulations
- Provides flood information

*North Central Division, Kewaunee Area, Fox River Sub-Office*

1008 Augustine St.

Kaukauna, WI 54130

920/766-3531; Fax: 920/766-3532

## **U.S. Environmental Protection Agency**

*EPA Region V*

77 W. Jackson

Chicago, IL 60604

312/353-2000

General Information: 800/621-8431

E-mail: [GOPHER.EPA.GOV](mailto:GOPHER.EPA.GOV) or dial-in access, 919/558-0335.

For E-mail help:

[INTERNET\\_SUPPORT@UNIXMAIL.](mailto:INTERNET_SUPPORT@UNIXMAIL.RTPNC.EPA.GOV)

[RTPNC.EPA.GOV](mailto:RTPNC.EPA.GOV)

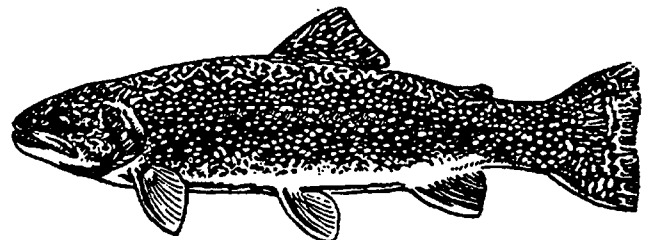
Home Page: <http://www.epa.gov>

(includes kids' page on groundwater and drinking water)

For more information on EPA computer databases, call customer support at 800/334-2405

EPA Provides:

- Water resources publications and information
- Newsletters and journals
- Policy and strategy documents
- Consumer information
- EPA standards, rules, regulations and legislation



***Environmental Research Laboratory - Duluth***

6201 Congdon Blvd.  
Duluth, MN 55804  
218/720-5745

- Conducts Great Lakes and aquatic toxicology research
- Delineates maps for Lake Superior watershed

***Great Lakes National Program Office***

312/353-2117

To order the following publications contact,  
312/886-7474

- "Great Lakes Atlas"
- "Great Lakes, Great Minds"

***National Wetlands Hotline***

800/832-7828

- Publications and wetlands information

***Water Resources Center***

WRC Center (RC4100)

401 M Street SW

Washington, D.C. 20460

(202) 260-7786; Fax: 202/260-0386

E-mail: WATERPUBS@EPAMAIL.GOV

***Watershed and Nonpoint Source Programs***

312/353-2308

Education Coordinator: 312/353-4483

- Publications, educational programs, curriculum on wetlands, watersheds and nonpoint source pollution controls
- Enviro-scape models (watershed, groundwater, and wetlands) available for lend

***Wetlands Office***

312/886-6115

- Wetlands information, regulations, and grants

**U.S. Fish and Wildlife Service  
(USFWS)**

Home Page: <http://www.citation.com/hpages/fws.html>

- A federal government agency of the Department of Interior, the USFWS's mission is to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of people.

**Regional Office**

U.S. Fish and Wildlife Service  
Henry Whipple Building  
1 Federal Dr.

Ft. Snelling, MN 55111-4056

- Contact your nearest USFWS office for more local information

**Field Office**

**Green Bay Field Office**

1015 Challenger Ct.

Green Bay, WI 54311-8331

920/465-7440

**National Fish and Wildlife Refuges  
(NWR), Wildlife Management Districts  
(WMD), and Fish Hatcheries**

**Genoa National Fish Hatchery**

Route 1

Genoa, WI 54632

608/689-2605; Fax: 608/689-2644

**Horicon National Wildlife Refuge (NWR)**

W4279 Headquarters Road

Mayville, WI 53050

920/387-2658; Fax: 920/387-2873

Contact the following offices through Horicon:

- Fox River NWR
- Gravel Island NWR
- Green Bay NWR
- Leopold WMD

**LaCrosse Fishery Resource Office**

555 Lester Avenue

Onalaska, WI 54650

608/783-8431; Fax: 708/783-8450

**Minnesota Valley NWR (Mississippi River)**

3815 E. 80th St.

Bloomington, MN 55425

612/854-5900; Fax: 612/725-3279

**Necedah National Wildlife Refuge**

W7996 20th Street W

Necedah, WI 54646

608/565-2251; Fax: 608/565-3160



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**St. Croix Wildlife Management District**

146 W. Second Street  
New Richmond, WI 54017  
715/246-7784; Fax: 715/246-7785

**Trempeleau National Wildlife Refuge**

Route 1 Box 1602  
Trempeleau, WI 54661  
608/539-2311; Fax: 608/539-2703

**Upper Mississippi River National Fish and Wildlife Refuge**

LaCrosse District  
Rm. 226, Post Office Bldg.  
425 State St.  
LaCrosse, WI 54601  
608/784-3910; Fax: 608/782-2722  
Home Page: [http://www.emtc.nbs.gov/umr\\_refuge.html](http://www.emtc.nbs.gov/umr_refuge.html)

- Provides public benefits associated with fish, wildlife, and wild areas by preserving the upper Mississippi River floodplain ecosystem for the enjoyment and use of this and future generations

**U.S. Forest Service***Public Affairs Office*

Federal Building  
68 South Stevens St.  
Rhineland, WI 54501  
715/362-1300

Home Page: <http://www.fs.fed.us/intro>

- An agency of the U.S. Department of Agriculture, the Forest Service's mission is to achieve quality land management under the sustainable multiple-use management concept to meet the diverse needs of people.
- Contact the individual National Forest Ranger Districts for more local information:

**Chequamegon National Forest**

Forest Supervisor  
Chequamegon-Nicolet National Forests  
1170 Fourth Avenue S  
Park Falls, WI 54552  
715/762-2461; Fax: 715/762-5179

*District Rangers:*

Glidden Ranger District  
P.O. Box 126  
Glidden, WI 54527  
715/264-2511; Fax: 715/264-3307

Hayward Ranger District  
P.O. Box 896  
Hayward, WI 54843  
715/634-4821; Fax: 715/634-3769

Medford Ranger District  
850 N. Eighth, Hwy 13  
Medford, WI 54551  
715/748-4875; Fax: 715/748-5675

Park Falls Ranger District  
1170 Fourth Avenue S  
Park Falls, WI 54552  
715/762-5701; Fax: 715/762-05179

Washburn Ranger District  
P.O. Box 578  
Glidden, WI 54527  
715/373-2667; Fax: 715/373-2878

**Nicolet National Forest**

Forest Supervisor  
Chequamegon-Nicolet National Forests  
Federal Building  
68 S. Stevens Street  
Rhineland, WI 54501  
715/362-1383; Fax: 715/362-1359

*District Rangers:*

Eagle River Ranger District  
P.O. Box 1809  
Eagle River, WI 54521  
715/479-1308; Fax: 715/479-6407

Florence Ranger District  
HC 1, Box 83  
Florence, WI 54121  
715/528-4464; Fax: 715/528-5172

Lakewood Ranger District  
15085 State Rd. 32  
Lakewood, WI 54138  
715/276-6333; Fax: 715/276-3594

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Laona Ranger District  
Route 1, Box 11B  
Laona, WI 54541  
715/674-4481; Fax: 715/674-2545

### **U.S. Geological Survey**

Wisconsin District  
8505 Research Way  
Middleton, WI 53562  
608/828-9901  
Wisconsin Home Page: <http://www.dwdm.dnr.wisconsin.gov>

Home Page: <http://water.usgs.gov>

- Provides understanding and definition of groundwater systems within the state
- Collects data and conducts studies regarding: groundwater quality and quantity; groundwater levels in observation wells; streamflow at gauging stations and other sites; stage and contents of lakes and reservoirs; and chemical, physical, and biological characteristics of surface waters

### *Environmental Management Technical Center*

575 Lester Ave.  
Onalaska, WI 54650  
608/783-7550

Home Page: <http://www.emtc.nbs.gov>

- This center for ecological monitoring and analysis manages the "Long Term Monitoring Program," the largest river-related inventory, monitoring, research, spatial analysis, and information sharing program in the United States.
- Home page offers spatial and technical data, aerial maps, and information about the Upper Mississippi River system.

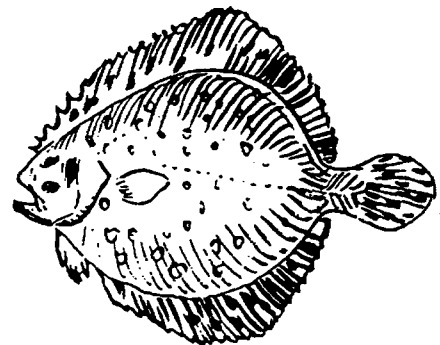
*"In all things of nature there is something of the marvelous."*

--Aristotle

### *Field Headquarters:*

<i>Madison</i>	<i>Merrill</i>
6606 Seybold Rd.	2011 E. Main St.
Madison, WI 53719	Merrill, WI 54452
608/274-3925	715/536-2200

*Rice Lake*  
313 West Knapp St.  
Rice Lake, WI 54868  
715/234-4015





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# National and International Organizations

Numerous educational and informational materials about water resources are also available from sources located outside of Wisconsin. Here are some of the many organizations to contact for water-related information and education materials. The National *Project WET Curriculum and Activity Guide* also has an excellent source of references at the end of each activity.

## **Adopt-A-Stream Foundation**

600 128th St., SE  
Everett, WA 98208  
206/316-8592

- Produces *Streamkeeper's Field Guide: Watershed Inventory and Stream Monitoring Methods*

## **America's Clean Water Foundation**

750 First Street, NE, Suite 911  
Washington, D.C. 20002  
202/898-0902; Fax: 202/898-0929

## **American Rivers**

1025 Vermont Ave., NW, Suite 720  
Washington, D.C. 20005  
202/347-9240; Fax: 202/347-9240  
E-mail: [amrivers@amrivers.org](mailto:amrivers@amrivers.org)  
Home Page: <http://igc.apc.org/amrivers>

- A national conservation organization dedicated to protecting and restoring America's river systems and to fostering a stewardship ethic
- Works to expand the number of rivers protected by the National Wild and Scenic Rivers System
- Offers public awareness programs

## **American Water Resources Association**

950 Herndon Parkway, Suite 300  
Herndon, VA 20170-5531  
703/904-1225; Fax: 703/904-1228  
E-mail: [awrahq@aol.com](mailto:awrahq@aol.com)  
Home Page: <http://www.uwin.siu.edu/~awra>

- Promotes understanding of water resources and related issues by providing a multidisciplinary forum for education, professional development, and information exchange
- Produces the *Journal of the American Water Resources Association*
- There are AWRA state sections and student chapters

## *AWRA Student Chapter*

College of Natural Resources  
UW-Stevens Point, WI 54481  
715/346-2372

- Contact your nearest university or college to see if there is an AWRA student chapter.

## **Clean Water Action Project**

1320 18th St., NW  
Suite 300  
Washington, D.C. 20036  
202/457-1286; Fax: 202/457-0287  
Home Page: <http://www.social.com/health/nhic/data/hr0300/hr0391.html>

- A national citizens' organization working for strong pollution controls and safe drinking water through: lobbying, public education, research, citizen action, clean water campaigns, and a member newsletter.



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### **Educating Young People About Water**

UW-Madison, Cooperative Extension Service  
School of Natural Resources  
Room 216 Agriculture Hall  
1450 Linden Drive  
Madison, WI 53706  
608/262-0142

Home Page: <http://www.uwex.edu/erc/ywc>

- Series of three guides to assist organizations in developing community-based water education programs
- Guides focus on the major components of developing, implementing, and evaluating successful water education programs
- Contact ERIC below to order resource guides

### **Eisenhower National Clearinghouse for Science**

800/621-5785

Home Page: <http://www.enc.org>

- Offers teachers information about publications, CD-ROMs, and professional development activities

### **Environmental Careers Organization**

Great Lakes Office  
Publications

50 Public Square, Suite 628  
Cleveland, OH 44113-2203  
216/861-4545

### **ERIC Clearinghouse for Science, Mathematics, and Environmental Education**

1929 Kenny Rd.  
Columbus, OH 43210-0462

800/276-0462; Fax: 614/292-0263

Home Page: <http://www.ericse.org>

- Clearinghouse that collects and processes all the science, mathematics, and environmental education materials to add to the ERIC database
- Offers products, information searches, workshops, and services to educators

### **Freshwater Foundation**

Springhill Center  
725 County Road #6  
Wayzata, MN 55391  
612/449-0092

Home Page: <http://www.mtn.org:80/freshwater>

- This organization is dedicated to helping people protect and manage our freshwater resources
- Produces publications related to freshwater resource issues

### **Give Water A Hand**

UWEX Environmental Resources Center  
216 Agriculture Hall  
1450 Linden Drive  
Madison, WI 53706  
800/WAT-ER20

Home Page: <http://www.uwex.edu/erc/ywc>

- This national program provides direction to youth groups who want to be involved in water issues in their communities. Youth design their own project based on water investigations in their community.
- Provides self-directed guides for youth and leaders

### **GREEN (Global Rivers Environmental Education Network) and Cross Cultural Watershed Program**

721 East Huron Avenue  
Ann Arbor, MI 48104  
313/761-8142; Fax: 313/761-4951

Home Page: <http://www.igc.apc.org/green>

- Provides an action-oriented approach with an interdisciplinary watershed education model
- Supports a global network that promotes watershed sustainability
- Provides resources to schools and communities that wish to study their watershed

### **International Joint Commission Information Services**

IJC Great Lakes Regional Office  
100 Ouellette Avenue, 8th floor  
Windsor, Ontario N9A 6T3  
519/256-7821

- Publishes *Directory of Great Lakes Education Material*

### **Izaak Walton League of America (Save Our Streams)**

1401 Wilson Boulevard, Level B  
Arlington, Virginia 22209  
703/528-1818 or 301/548-0150, ext. 219  
800/IKE-LINE for general information and local chapters

800/BUG-IWLA for Save Our Streams program  
Home Page: <http://www.friendspartners.org/ol...ds/ccsi/csusa/enviro/izaakwal.html>

- Founded in 1922 to conserve, maintain, protect, and restore the soils, forest, water, and other natural resources of the U.S. and other lands to promote opportunities for the education and enjoyment of the public.
- "Save Our Streams" offers a variety of publications and videos to assist in implementing stream monitoring, wetland conservation, and stream restoration projects.
- For state chapter, see *State Water-Related Organizations* section.

### Jason Project

UW-Milwaukee  
161 W. Wisconsin Ave., Suite 6000  
Milwaukee, WI 53203  
414/227-3365

Home Page: <http://www.jasonproject.org>

- International satellite communications program focused on different water ecosystems and water quality monitoring. There are five sites in Wisconsin.
- Aquatic field study program that connects internationally with other sites where the user has the ability to input on-line data

### National Project WET

201 Culbertson Hall  
Montana State University  
Bozeman, MT 59717-0057  
406/994-5392

### National Science Teachers Association (NSTA)

1840 Wilson Blvd.  
Arlington, VA 22201-3000  
703/243-7100 or 800/722-NSTA  
Home Page: <http://www.nsta.org>

- Offers professional development workshops
- Publishes five journals, a newspaper, books, *Dragonfly* children's magazine, and many more

### National Water Information Center

United States Geological Survey  
427 National Center  
Reston, Virginia 20192  
800/426-9000

E-mail: [h2oinfo@usgs.gov](mailto:h2oinfo@usgs.gov)

- Distributes water resources information requests, data, literature, abstracts, and publications to government agencies, academia, the private sector, and the general public

### The National Wildlife Federation

8925 Leesburg Pike  
Vienna, VA 22184  
703/790-4000

Home Page: <http://www.nwf.org>

Offers:

- Wetland laws information
- Wetland *Naturescope*
- Teacher Training Workshops
- "National Wildlife Week" kits
- and much more!

### North American Association for Environmental Education (NAAEE)

P.O. Box 400  
Troy, OH 45373

Phone or Fax: 937/676-2514

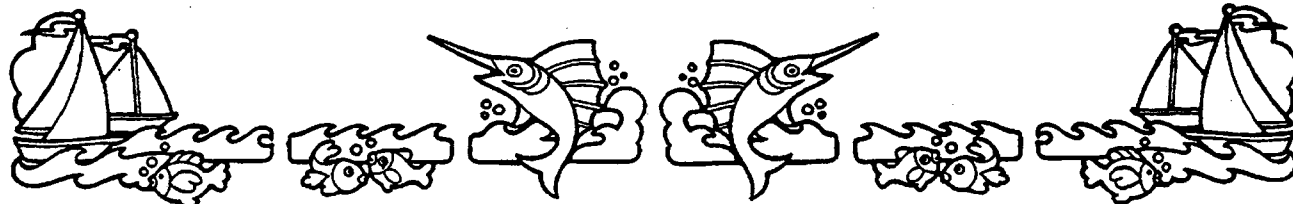
- The largest international environmental education organization that hosts an annual conference and offers members a newsletter, educational resources, job listings, and an extensive professional network.

### North American Lake Management Society (NALMS)

North American Lake Management Society  
P.O. Box 5443  
Madison, WI 53705-5443  
608/233-2836

Home Page: <http://www.nalms.org>

Kids and Lakes Home Page: <http://www.nalms.org/kidslks/kidslks.htm>



- Provides technical assistance, workshops, conferences, and educational publications related to lakes
- *Lake Line* magazine covers the activities of lake management organizations around the country and world

#### *Electronic Bulletin Board*

E-mail VENNIEJ@DNR.STATE.WI.US or contact:  
James Vennie, WR/2  
WDNR Bureau of Water Resources Management  
P.O. Box 7921  
Madison, WI 53707  
608/266-2212

- Intended for international use by NALMS members and others interested in lake management

#### **River Watch Network**

153 State Street  
Montpelier, VT 05602  
802/223-3840; Fax: 802/223-6227  
Home Page: <http://www.riverwatch.org>

- Offers workshops, organizational, and technical support and consultation, publications, and other tools that help individuals, groups, and organizations monitor and protect rivers
- Facilitates and trains groups to match their communities' needs and concerns with their river projects

#### **Save Our Streams**

See Izaak Walton League of America

#### **Trout Unlimited**

800/398-7897  
Home Page: <http://www.tu.org/trout/index.html>

- Dedicated to the conservation, protection, and restoration of North America's trout and salmon fisheries in their watersheds
- Coordinates a volunteer network
- Lobbies for policy issues supporting their mission

#### **U.S. Water News, Inc.**

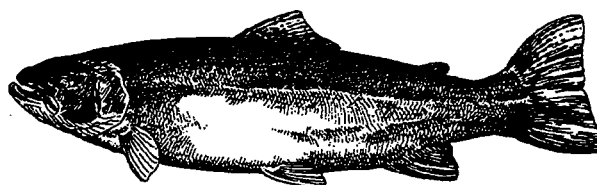
Circulation Department  
230 Main Street  
Halstead, KS 67056  
800/251-0046; Fax: 316/835-2223  
E-mail: [usww@aol.com](mailto:usww@aol.com)  
Home Page: <http://www.uswaternews.com>

- This monthly publication provides information on all aspects of national water policy. Sections include: water supply, water quality, policy (legislation, litigation/water rights), conservation, and climate.

#### **Water Environment Federation**

601 Wythe St.  
Alexandria, VA 22314-1994  
800/666-0206 or 703/684-2452  
Home Page: <http://www.wef.org>

- International non-profit educational and technical organization of water experts
- Members include environmental, civil and chemical engineers; biologists; chemists; government officials; treatment plant managers and operators; laboratory technicians; researchers; professors; students; and equipment manufacturers.



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# Computer Networking



Now you can learn about water quality and resource management issues through your computer! The Internet and World Wide Web provide a wealth of information and access to an international library of organizations and resources of all kinds! "On-line" computer networks provide an opportunity to share data and project ideas with other people who are studying waterways throughout the world.

**Note:** There are separate listings of Home Pages for specific organizations listed in both the "Organizations" and "Resources" sections that are not found below.

## Wisconsin Sites

### Lakes-l

WDNR Bureau of Water Resources Management,  
WR/2, P.O. Box 7921  
Madison, WI 53707  
608/266-2212

- A lake information network designed to discuss lake management issues and share research and publication information

To subscribe:

- Send an e-mail message to: [majordomo@badger.state.wi.us](mailto:majordomo@badger.state.wi.us)
- In the body of the message, write the following: `subscribe lakes l` or `help`
- You will receive a confirmation and welcome message that will give further details about this list
- To distribute a message to all subscribers, send it to: [lakesl@badger.state.wi.us](mailto:lakesl@badger.state.wi.us)

### Lakes-Student-l

WDNR Bureau of Water Resources Management  
WR/2, P.O. Box 7921  
Madison, WI 53707  
608/266-2212

- A network for students and youth to correspond about lakes issues

- You can subscribe as you would for Lakes-l: [majordomo@badger.state.wi.us](mailto:majordomo@badger.state.wi.us) and subscribe `lakes-student-l`
- Owner for both can be contacted by E-mail: [LAKEBB@DNR.STATE.WI.US](mailto:LAKEBB@DNR.STATE.WI.US)

### NPSINFO (Nonpoint Source Pollution Issues)

Send requests to:

[LISTSERVER@UNIXMAIL.RTPNC.EPA.GOV](mailto:LISTSERVER@UNIXMAIL.RTPNC.EPA.GOV)

To join send message to: `SUBSCRIBE NPSINFO`

To leave send message to: `UNSUBSCRIBE NPSINFO`

Home Page: [http://www.library.wisc.edu/libraries/water\\_resources/page.htm](http://www.library.wisc.edu/libraries/water_resources/page.htm)

- Provides a forum for open discussion of nonpoint source pollution issues

### UW-Extension Water Resource Program Home Page

Home Page: [http://clean\\_water.uwex.edu](http://clean_water.uwex.edu)

- You can find descriptions of programs (including Project WET), newsletter articles, publications, fact sheets, and an on-line database of UW-Extension faculty and staff working on water-related topics.

### WISCINFO GOPHER

WISCINFO/Library Catalogs (Electronic Library); World Wide WebBrowser:

<gopher://gopher.adp.wisc.edu>:

`70/11/browse/.METAWRRHL/.WRRHL02`

- A search engine for UW-Madison Campus Libraries and the Water Resources Reference Services
- Posts six months of recent acquisitions

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### **WI-Lakes Bulletin Board Systems**

608/266-2212

- The Wisconsin Department of Natural Resources operates this electronic bulletin board system that focuses on lake management efforts in Wisconsin. You will find newsletters, computer programs, lake monitoring work sheets, and lake monitoring data.
- Contact for information about joining

### **Wiscnet**

wysiwyg://99/http://www.wiscnet.net

- Wiscnet is a non-profit association created to provide access to national and international data network resources and data communications for Wisconsin organizations. The data network is connected to the Internet at UW-Madison and UW-Milwaukee. There is a membership fee.

### **Wisconsin Center for Environmental Education (WCEE)**

<http://www.uwsp.edu/acad/wcee>

- Provides information on WCEE resources and programs

### **WIWR-list (Wisconsin Water Resources Internet Discussion Group)**

UW-Extension Water Quality Education Specialist

Phillips Hall, Rm. 149

UW-Eau Claire

Eau Claire, WI 54702

715/836-5513; Fax: 715/836-2380

Send requests to: [LISTPROC@UWEX.EDU](mailto:LISTPROC@UWEX.EDU)

To join send message to: [SUBSCRIBE WIWR-LIST<YOUR NAME>](mailto:SUBSCRIBE WIWR-LIST<YOUR NAME>)

To leave send message to: [UNSUBSCRIBE WIWR-LIST](mailto:UNSUBSCRIBE WIWR-LIST)

- Organized to discuss issues concerning Wisconsin's surface and groundwater resources.

### **National/International Sites**

#### **Center for Global and Regional Environmental Research**

<http://www.cgrer.uiowa.edu>

- Provides other web linkages

### **Econet**

18 De Boom Street

San Francisco, California 94107

415/442-0220

<http://www.igc.apc.org/econet>

- This computer network can help you tap into international on-line conferences to learn about environmental education activities around the world (there is a small fee for this service).

### **EE Link**

<http://www.nceet.snre.umich.edu>

- National Consortium for EE and Training (NCEET) information

### **Eisenhower National Clearinghouse for Mathematics and Science Education**

<http://www.enc.org>

- User can perform curriculum searches
- Provides other linkages

### **Environmental News Network**

<http://www.enn.com>

### **GREEN (Global Rivers Environmental Education Network)**

and Cross Cultural Watershed Program

<http://www.igc.apc.org/green>

- Provides an action-oriented approach with an interdisciplinary watershed education model
- Supports a global network that promotes watershed sustainability
- Provides resources to schools and communities that wish to study their watershed

### **National Water Quality Database**

E-mail: [CATHY\\_BURWELL@ACN.PURDUE.EDU](mailto:CATHY_BURWELL@ACN.PURDUE.EDU)

- Includes educational resources pertaining to water quality supplies or environmental issues (publications, fact sheets, bulletins, videos, slide shows, computer software, etc.)
- Can be accessed by network methods such as Telnet, Gopher, Almanac, and World Wide Web

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**North American Lake Management Society  
(NALMS)**

<http://www.nalms.org>

Kids and Lakes Home Page: <http://www.nalms.org/kidslks/kidslks.htm>

*Electronic Bulletin Board*

E-mail [VENNIJ@DNR.STATE.WI.US](mailto:VENNIJ@DNR.STATE.WI.US)

or contact:

James Vennie, WR/2

WDNR Bureau of Water Resources Management

P.O. Box 7921

Madison, WI 53707

608/266-2212

- Intended for international use by NALMS members and others interested in lakes management



**Waterlinks**

<http://www.mnwatershed.org/wtrlink.htm>

- Links the user with other web sites related to water

Other Home Pages are listed for specific organizations in the "Resources" and "Organizations" sections



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# Great Lakes Organizations

## Great Lakes Commission

Argus II Building  
400 Fourth St.  
Ann Arbor, MI 48103  
313/665-9135; Fax: 313/665-4370  
E-mail: glc@great-lakes.net

- An agency of the eight Great Lakes states

## Great Lakes Environmental Education Project

East Michigan Environmental Action Council  
21220 West 14 mile Road  
Bloomfield Township, MI 48301  
810/258-5188; Fax: 810/258-5189

- Provides educational materials

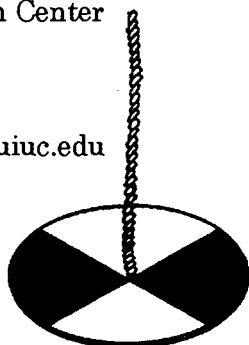
## Great Lakes Indian Fish and Wildlife Commission (GLIFWC)

P.O. Box 9  
Odanah, WI 54861  
715/682-4427 or 6619; Fax: 715/682-9294

- GLIFWC is an inter-tribal natural resource management organization that assists its eleven member tribes in the implementation and management of off-reservation hunting, fishing, and gathering rights in treaty-ceded territories.
- Public education
- *Masinaigan* quarterly newspaper
- *A Guide to Understanding Chippewa Treaty Rights, Bishigendan Aki: Respect the Earth* booklet of cooperative projects

## Great Lakes Regional Pollution Prevention Roundtable

Waste Management Research Center  
1 E. Hazelwood Dr.  
Champaign, IL 61820  
217/333-8948  
E-mail: lcase@wmrc.hazard.uiuc.edu



## International Joint Commission Great Lakes Regional Office

P.O. Box 32869  
Detroit, MI 48232-2869  
313/226-2170  
E-mail: bratzelm@ijc.wincom.net  
Home Page: <http://www.ijc.org>

- Canada and the United States cooperate through this Commission to manage the lakes and rives along their common border to protect them for today's and future generations.

### • *Great Lakes Environmental Directory*

To order contact:  
National Environmental Directory  
8850 O'Brien Rd.  
Missoula, MT 59801  
406/543-3359

## Lake Michigan Federation

59 East Van Buren Street, Suite 2215  
Chicago, IL 60605  
312/939-0838

- Promotes citizen action to protect water quality, shoreline, and biodiversity of Lake Michigan for future generations through research, education, advocacy, and stewardship programs.

## Michigan Sea Grant College Program

Cooperative Extension Service  
Michigan State University  
334 Natural Resources Building  
East Lansing, MI 48824-1222  
517/336-1628; Fax: 517/336-1028

- Publishes *The Life of the Lakes: The Great Lakes*

## Minnesota Sea Grant

*Publications*  
2305 E. Fifth St.  
Duluth, MN 55812  
218/726-6191; Fax: 218/726-6556  
E-mail: seagr@d.umn.edu

- Publishes *The Glossary of the Great Lakes*



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**Northern Great Lakes Center (will be completed in May 1998)**

Contact: Steve Hoecker  
Chequamegon National Forest  
Box 1170, Fourth Ave. South  
Park Falls, WI 54552

715/762-2461; Fax: 715/762-5179

- This center has three main functions: trip planning and visitor information, historical interpretation and living history programs, and environmental education programs focusing on sustainable systems.
- Exhibits of the Northern Great Lakes Region (including water quality and aquatic exotics)
- Five-story observation tower
- 180 acres with trails and ponds
- Classrooms
- Historical archives

**Ohio Sea Grant College Program**

Ohio State University  
1314 Kinnear Rd.

Columbus, OH 43212-1194  
612/292-8949; Fax: 614/292-4364

- Produces OEAGLS (Oceanic Education Activities for Great Lakes Schools) and OEAGLETS

**U.S. EPA, Region V**

**Great Lakes National Program Office**

77 West Jackson, 10th floor  
Chicago, IL 60604

312/886-4040; Fax: 312/353-2018

Home Page: <http://www.epa.gov/glnpo>

To order the following publications  
contact: 312/886-7474

- *Great Lakes Atlas*
- *Great Lakes, Great Minds*
- Fact sheets describing Great Lakes issues
- A five-year strategy report for protecting the Great Lakes
- Provides funding for projects to protect the Great Lakes ecosystem

**University of Wisconsin-Sea Grant Institute**

*Communications Office*

1800 University Avenue  
University of Wisconsin  
Madison, WI 53706

608/263-3259; Fax: 608/263-2063

Home Page: <http://h2o.seagrant.wisc.edu>

- See description in *State Organizations* section

*Great Lakes Research Facility*

Education Specialist

600 E. Greenfield  
Milwaukee, WI 53204-2944

414/227-3291; Fax: 414/382-1705

E-mail: [jflubner@seagrant.wisc.edu](mailto:jflubner@seagrant.wisc.edu)

*UW-Superior Sea Grant Advisory Services*

Sunquist 143

Superior, WI 54880

715/394-8472

*Water Quality Specialist*

UW-Center, Manitowoc County

705 Viebahn St., Rm. E105

Manitowoc, WI 54220-6699

920/683-4697; Fax: 920/683-4776

E-mail: [kfermani@seagrant.wisc.edu](mailto:kfermani@seagrant.wisc.edu)

- See description in *State Organizations* section

**Great Lakes Home Pages**

**Great Lake Information Network**

<http://www.great-lakes.net>

**Great Lakes Regional Environmental Information System**

<http://epawww.ciesin.org/gltreis/GLREIS-home.html>

- A regional directory and data access system of Great Lakes information and research

**Great Lakes National Program Office and Information Management Resource**

<http://www.epa.gov/glnpo>

**Lake Michigan Forum**

<http://www.epa.gov/lmf>

- Provides public input to U.S. EPA on the Lake Michigan Lakewide Management Plan (LaMP) through a forum of diverse stakeholders

## Part 2

# Organizations listed by Watershed

A **watershed** is defined as the area of land that drains into a specific body of water. So, for example, the Lake Michigan watershed includes all of the land whose surface water (streams, rivers, stormwater runoff, etc.) flows into Lake Michigan.

Please refer to the map below to locate in which watershed you live.



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# **Mississippi River Area of Mississippi River Watershed**

## **DNR Geographic Management Unit (GMU) Offices**

See Map of DNR Regional & GMU Offices in  
Part 3 of this "Organizations" section

### **DNR West Central Regional Office**

P.O. Box 4001  
1300 Clairemont Ave.  
Eau Claire, WI 54702  
715/839-3700

- Contact regional offices for information about water resources management, water supply, water regulation and zoning, wastewater management, fisheries management, and other water-related topics

### **DNR Western Boundary Rivers Unit**

State Office Bldg., Rm. 104  
3550 Mormon Coulee Rd.  
LaCrosse, WI 54601  
608/785-9000

- Mississippi River Specialists can provide expertise on a variety of river issues

### **Environmental Management Technical Center**

575 Lester Ave.  
Onalaska, WI 54650  
608/783-7550  
Home Page: <http://www.emtc.nbs.gov>

- This center for ecological monitoring and analysis manages the "Long Term Monitoring Program," the largest river-related inventory, monitoring, research, spatial analysis, and information sharing program in the United States.
- Home page offers spatial and technical data, aerial maps, and information about the Upper Mississippi River system

### **Hamline University-Center for Global Environmental Education**

1536 Hewitt Ave.  
St. Paul, MN 55104-1284  
612/523-2855

Home Page: <http://cgee.hamline.edu>

- Provides *Rivers of Life* interdisciplinary program for K-12 students

### **Land Conservation Departments**

See list of county offices at the end of this  
"Organizations" section

### **Local Libraries**

- May have maps and other Mississippi River resources to lend

### **Local Nature Centers**

To find out what nature centers are near you, contact your local UW-Extension Cooperative Extension county office, local school district, or you can order the *Directory to Wisconsin's Environmental Education and Nature Centers* from:

DNR Bureau of Communication and Education  
Box 7921  
Madison, WI 53707-7921  
608/266-6790

Ask for Publication #PUBL-HVW-085-92 Rev

### **Local State and County Park Staff**

See local phone book

### **Minnesota DNR Division of Water**

500 Lafayette Road  
St. Paul, MN 55155-4046  
612/296-0888

### **The Minnesota Project**

1885 University Ave., W.  
Suite 315  
St. Paul, MN 55104  
612/645-6159

- Produces *Protecting the Mississippi River: A Directory of People and Organizations*

# Mississippi River Watershed

## Mississippi River Watershed

### Subwatersheds

Black-Buffalo-Trempealeau  
 Grant-Platte-Sugar-Pecatonica  
 Illinois-Fox  
 La Crosse-Bad Axe

Lower Chippewa  
 Lower Rock  
 Lower Wisconsin  
 St. Croix

Upper Chippewa  
 Upper Rock  
 Upper Wisconsin

## Mississippi River Watershed Acreage

24,810,591



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### **Local Fish Hatcheries**

Contact your DNR Region or local Tribal Office to find the nearest fish hatchery

### **Local Historic Sites**

Contact your county or local Historical Society (the State Historical Society can provide a list of local offices)

### **Local Industries and Power Plants**

See your local phone book

- Contact for possible field trips

### **Local Nature Centers**

Contact to find out what nature centers are near you. Contact your local UW-Extension Cooperative Extension county office, local school district, or you can order the *Directory to Wisconsin's Environmental Education and Nature Centers* from:

DNR Bureau of Communication and Education  
Box 7921

Madison, WI 53707-7921

608/266-6790

Ask for Publication #PUBL-HVW-085-92 Rev

### **Madeline Island Historical Museum**

P.O. Box 9

LaPointe, WI 54850

715/747-2415

- Apostle Islands and Lake Superior region history

### **Northern Great Lakes Center (opening in May 1998)**

See listing in the *Lake Superior Watershed* section above

### **UW-Superior**

See listing in the *Lake Superior Watershed* section above



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**Red Cliff Band of Lake Superior Chippewa**

*Tribal Administration*

P.O. Box 529

Bayfield, WI 54814

715/779-3700; Fax: 715/779-3704

- Creates wellhead protection plans
- Develops water quality standards
- Developing watershed approach to natural resources planning and management

**Sigurd Olson Environmental Institute**

Northland College

1411 Ellis Ave.

Ashland, WI 54806

715/682-1223

Home Page: <http://bobb.northland.edu/soei>

- The Institute works with federal and state agencies, local governments, business leaders, public interest groups, and local citizens on regional issues such as water quality, protection of wildlife and their habitats, land-use and zoning issues, and sustainable economic development.
- Programs work toward a sustainable future in the Lake Superior region as an outreach arm of Northland College

**St. Croix National Scenic Riverway**

National Park Service, Division of Interpretation

P.O. Box 708

St. Croix, WI 54024

715/483-3284

- Contact the Visitor Center for information regarding the St. Croix River

**U.S. EPA Environmental Research Lab - Duluth**

Scientific and Community Outreach Program

6201 Congdon Boulevard

Duluth, MN 55804

218/720-5745

- Conducts Great Lakes research
- Delineates Lake Superior watersheds

**University of Wisconsin-Superior**

*Lake Superior Research Institute*

1800 Grand Avenue

Superior, WI 54880

715/394-8315

**Sea Grant Advisory Services**

Sunquist 143

Superior, WI 54880

715/394-8472

**UW-Extension**

Biology Department

UW-Superior

Superior, WI 54880

715/394-8410

## **Field Trip Contacts**

**Apostle Islands National Lakeshore**

National Park Service

Rt. 1, Box 4

Bayfield, WI 54814

715/779-3397

Home Page: <http://www.nps.gov/apis>

(On-line visitor center)

- Guided tours
- Educational programs
- Apostle Islands School for 6th graders, 2-week program
- Park library can be used on-site
- Resource management specialists provide information about the park

**Cable Natural History Museum**

P.O. Box 416

Cable, WI 54821

715/798-3890

- The museum provides exhibitions, public programs, field trips, workshops, and training for people of all ages
- The site offers seven miles of interpretive trails
- Offers water-related programs for children, teens, and adults including macroinvertebrate studies, fishing trips, canoeing, and loon surveys
- Offers "Citizen Naturalist Kits" with water activities, books, and videos

**Lake Superior Center**

See listing in the *Lake Superior Watershed* section above

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# Lake Superior Watershed

## Bad River Band of Lake Superior Chippewa

*Natural Resources Department*

P.O. Box 39  
Odanah, WI 54861  
715/682-7123

## DNR Northern Region (West)

Box 309  
Spooner, WI 54801  
715/635-2101

- Contact regional offices for information about water resources management, water supply, water regulation and zoning, wastewater management, fisheries management, and other water-related topics

## Lac Courte Oreilles Band of Lake Superior Chippewa

*Conservation Department*

*Environmental Engineer*

Route 2, Box 2700  
Hayward, WI 54843  
715/865-2329; Fax: 715/865-3516

- Conducts lake studies
- Coordinates groundwater remediation
- Develops wellhead protection plans

## Lac du Flambeau Band of Lake Superior Chippewa

*Tribal Natural Resource Department*

P.O. Box 67  
Lac du Flambeau, WI 54538  
715/588-3303; Fax: 715/588-3207  
Water Resources Specialist: 715/588-3303, ext. 316

- Fisheries Management
- Fish culture program
- Conservation law enforcement
- Environmental Protection Program includes environmental education outreach, environmental assessments, and underground storage tank management

## Lake Superior Center

353 Harbor Drive  
Duluth, MN 55802  
218/720-3033; Fax: 218/720-3407  
E-mail: lakesuperior@igc.org

- Newsletter
- Lake Superior aquatic education program

## LoonWatch Program

Northland College  
1411 Ellis Ave.  
Ashland, WI 54806  
715/682-1223

Home Page: <http://bobb.northland.edu/soei/LOON.HTML>

- This loon conservation program provides volunteer training for Loon Rangers who protect loons and their habitat; monitor loon populations and lake quality; and educate lake users and residents.

## Northern Great Lakes Center (opening in May 1998)

Contact: Steve Hoecker  
Chequamegon National Forest  
Box 1170, Fourth Ave. South  
Park Falls, WI 54552  
715/762-2461; Fax: 715/762-5179

- This new center has three main functions: trip planning and visitor information; historical interpretation and living history programs; and environmental education programs focusing on sustainable systems.

The center includes:

- Exhibits of the Northern Great Lakes Region (including water quality and aquatic exotics)
- Five-story observation tower
- 180 acres with trails and ponds
- Classrooms
- Historical archives

## Northwest Regional Planning Commission

1400 S. River St.  
Spooner, WI 54801  
715/635-2197; Fax: 715/635-7262

- Serves these counties: Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn

# Lake Superior Watershed

## Lake Superior Watershed

See *Great Lakes Organizations* section for more information

## Lake Superior Watershed Acreage

1,968,351

Subwatershed  
Lake Superior





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**Milwaukee Public Museum**

800 W. Wells  
Milwaukee, WI 53233  
414/278-2713

- Offers school groups guided tours about Wisconsin Native Americans, rainforests, woodlands, Africa, Arctic, etc.
- Organizes a Speakers' Directory
- Offers teacher in-services
- Produces curriculum packets that include slides, script, pre-visit, and post-visit activities and handouts

**Neville Public Museum**

210 Museum Pl.  
Green Bay, WI 54303  
920/448-4460

- Provides "Edge of the Inland Sea" exhibit and *Ecosystems of the Green Bay Watershed* unit that includes environmental history
- Produces video series about water use, runoff, agriculture, and water quality issues about the Green Bay watershed and its history

**Nicolet National Forest***Florence Ranger District*

HC 1, Box 83  
Florence, WI 54121  
715/528-4464; Fax: 715/528-5172

**Old World Wisconsin**

S103, W37890 Hwy. 67  
Eagle, WI 53119  
414/594-6300

**Outdoor Skills Center**

See listing in the *Lake Michigan Watershed* section above

**Riveredge Nature Center**

See listing in the *Lake Michigan Watershed* section above

**Schlitz Audubon Center**

1111 E. Brown Deer Rd.  
Milwaukee, WI 53217  
414/351-4200

- Staffed school and general public programs
- Educator workshops

- *Living Lightly* curricula

**Trees for Tomorrow Natural Resources Education Center**

P.O. Box 609  
Eagle River, WI 54521  
715/479-6456

- Staffed school and general public programs
- Educator workshops

**UWEX Cooperative Extension County Offices**

Water Educators and Agents

See listing in the *Lake Michigan Watershed* section above

**Water Education Resource Centers (WERC)**

See listing in the *Lake Michigan Watershed* section above

**Wisconsin Maritime Museum**

75 Maritime Drive  
Manitowoc, WI 54220  
920/684-0218; Fax: 920/684-0219

- Tours of museum and submarine
- Outreach programs (shipwrecks and timber)
- Library can be used on-site by appointment

**Wisconsin Public Service***Education Coordinator*

Green Bay, WI  
920/433-1050

- May offer school presentations, field trips, and energy conservation publications

**Wolf River Watershed Alliance**

2610 Log Cabin  
White Lake, WI 54491

- An environmental organization concerned with the protection of the Wolf River

**Zoological Society-Education at Milwaukee County Zoo**

10005 W. Bluemound Rd.  
Milwaukee, WI 53226  
414/256-5421

- Environmental education service that provides Zoo outreach programs and teacher resources on a great variety of topics related to animals and the environment

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**Heritage Hill State Park**

2640 S. Webster Ave.  
Green Bay, WI 54301  
920/448-5150

- Offers 2nd and 4th grade "Discovery Tours"
- Interpretation is provided for self-guided tours of 21 buildings (most buildings have interpreters)
- Exhibits represent four different periods of time from the "La Baye" 1672-1825, "Small Town" and "Fort Howard" time periods up to the 1905 "Belgium Farm"

**Lac Lawrann Nature Conservancy**

c/o West Bend Park, Recreation, and Forestry Dept.  
115 S. Main St.  
West Bend, WI 53095  
414/335-5080

Offers:

- Nature center
- Hiking trails
- General public and school programs
- Educator workshops

**Land Conservation Department County Office**

See list of county offices in Part 3 of this "Organizations" section

- May offer field trips to local farms

**Local Energy/Power Plant**

See local phone book

**Local Fish Hatcheries**

Contact your DNR Region or local Tribal Office to find the nearest fish hatchery

**Local Historic Sites**

Contact your county or local Historical Society (the State Historical Society can provide a list of local offices)

**Local Industries and Power Plants**

See your local phone book

- Contact for possible field trips

**Local Nature Centers**

Contact to find out what nature centers are near you, contact your UW-Extension Cooperative Extension county office, local school district, or you can order the *Directory to Wisconsin's*

*Environmental Education and Nature Centers* from:

DNR Bureau of Communication and Education  
P.O. Box 7921

Madison, WI 53707-7921

608/266-6790

Ask for Publication #PUBL-HVW-085-92 Rev

**Local Wastewater Treatment Plant and/or Sewerage Districts**

Contact the local UW-Extension Cooperative Extension county office

*Green Bay Metropolitan Sewerage District*

2231 N. Quincy

Green Bay, WI 54302-1248

920/432-4893; Fax: 920/432-4302

E-mail: gbmsd.org

- Provides tours of the facility for 6th grade and up in groups of 30 or fewer
- Tours of on-site Environmental Education Center (EEC) for all ages
- Speaker's Bureau available for presentations on wastewater treatment and pollution prevention
- Informational and Educational materials available
- Offers teacher workshops

*Milwaukee Metropolitan Sewerage District*

260 W. Seeboth St.

P.O. Box 3049

Milwaukee, WI 53201-3049

414/272-5100

- Provides tours
- Produces educational materials

**Local Water Purification Plants**

Contact the local UW-Extension Cooperative Extension county office or see your local yellow pages

**Milwaukee Maritime Center**

500 N. Harbor Dr.

Milwaukee, WI 53202

414/276-7700

- Museum
- Educational program on Great Lakes issues

## UWEX Cooperative Extension County Offices

See list of county offices at the end of the *Organizations* section

### UW Sea Grant

*Water Quality Specialist*

UW-Center, Manitowoc County

705 Viebahn St., Rm. E105

Manitowoc, WI 54220-6699

920/683-4697; Fax: 920/683-4776

E-mail: kfermani@seagrants.wisc.edu

### Voyageur: Northeast Wisconsin's Historical Review

P.O. Box 8085

Green Bay, WI 54308-8085

920/465-2446; Fax: 920/465-2890

E-mail: voyageur@gbms01.uwgb.edu

- Non-profit magazine about the history and pre-history of a 17 county region of northeast Wisconsin

### Water Education Resource Centers (WERC)

*May Environmental Park (Maywood)*

3615 Mueller Rd.

Sheboygan, WI 53083

414/459-3906

### *Milwaukee River Watershed*

Riveredge Nature Center

Box 26

Newburg, WI 53060

414/375-2715

### *Waukesha Area*

Retzer Nature Center

W284 S1530 Route DT

Waukesha, WI 53188

414/896-8007



## Field Trip Contacts

### American Indian Center

3415 E. Pierce

Milwaukee, WI 53215

414/384-8208 or 278-6800

- Represents all Wisconsin tribes

### Audubon Society, Fox River Valley Chapter

Palisades Drive

Appleton, WI 54915

### Door County Maritime Museum

Sturgeon Bay, WI 54235

920/743-5958

### DNR Regional Offices

see above addresses

### Fox and Wolf Rivers Environmental History Project

P.O. Box 1161

Green Bay, WI 54305-1161

800/FOX-WOLF

- Offers contacts for environmental history related topics regarding the Fox and Wolf River watersheds
- Produces *Of Time and the River* teachers guide, video and music

### Fox/Wolf Basin Alliance

Bruce Johnson

P.O. Box 1861

Appleton, WI 54913

- Provides research and contacts for private and non-profit groups

### Havenwoods Environmental Awareness Center

Department of Natural Resources

6141 North Hopkins Street

Milwaukee, WI 53209

414/527-0232

Offers:

- Staffed school programs
- General public programs
- Educator workshops
- Interpretive trails

Treaty Rights: [treaty@mail.wiscnet.net](mailto:treaty@mail.wiscnet.net)

Home Pages:

Mining Impacts: <http://www.menominee.com/nominating>

Treaty Rights: <http://www.menominee.com/treaty>

### **Mole Lake-Sokaogon Band of Lake Superior Chippewa**

*Mole Lake Tribal Center*

Natural Resources Department

Water Resources Specialist

715/478-7604

### **Oneida Nation**

*Oneida Nation Planning Department*

Little Bear Development Center

920/869-1600

Conducts:

- Duck Creek Priority Watershed Project
- Watershed restoration projects
- Prairie and wetland restoration and reforestation projects

### **Outdoor Skills Center**

P.O. Box 84

Plymouth, WI 53073

414/893-5210

- Produces *Project WULP: Wetland Understanding Leading to Protection* activity guide
- Offers school and public programs

### **Riveredge Nature Center**

4458 West Hawthorne Drive, P.O. Box 26

Newburg, WI 53060

414/375-2715

- Offers staffed school programs, general public programs, & educator workshops
- Coordinates "Testing the Waters" program, Wisconsin's largest river monitoring program
- Hosts a Water Education Resource Center

### **Schlitz Audubon Center**

See below in "Field Trip Contacts"

### **Southeastern Wisconsin Regional Planning Commission**

916 N. East Ave.

P.O. Box 1607

Waukesha, WI 53187-1607

414/547-6721; Fax: 414/547-1103

- Serves the following counties: Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha

### **Stockbridge-Munsee Tribe**

*Environmental Office*

13831 Co. Hwy. A

Bowler, WI 54416

715/793-4363; Fax: 715/793-4370

- Develops and implements groundwater wellhead protection plan
- Monitors the water quality of the Red River

### **U.S. Environmental Protection Agency (EPA), Region V**

Great Lakes National Program Office

77. W. Jackson St.

Chicago, IL 60604

800/621-8431

Home Page: <http://www.epa.gov/glnpo>

### **U.S. Fish and Wildlife Service Green Bay Field Office**

1015 Challenger Ct.

Green Bay, WI 54311-8331

920/465-7440

### **U.S. Forest Service**

See *Federal Agencies* in "Organizations" section

### **UW-Extension Water Educators**

*Milwaukee County and Southeast Area*

State Fair Youth Center

640 South 84th St.

Milwaukee, WI 53214-1438

414/290-2430 & 2431

*Northeast Area*

Water Educator

University of Wisconsin-Green Bay,

CES 317

Green Bay, WI 54302

920/465-2240; Fax: 920/465-2376

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# Lake Michigan Watershed

- See the prior "Organizations" section listings for further information about organizations listed below.
- See *Great Lakes Organizations* above for additional information.

## Bay Lake Regional Planning Commission

Suite 211, Old Fort Square  
211 N. Broadway  
Green Bay, WI 54303  
920/448-2820; Fax: 920/448-2823

- Provides technical assistance to coastal communities, develops Sewer Service Area Plans, reviews permit requests, and develops water regulations and zoning ordinances for communities
- Serves the following counties: Brown, Door, Florence, Kewaunee, Manitowoc, Marinette, Oconto, and Sheboygan

## Clean Bay Backers

Remedial Action Plan Specialist  
Wisconsin DNR  
P.O. Box 10448  
1125 N. Military Ave.  
Green Bay, WI 54307-0448  
920/492-5825

- Clean Bay Backer Education Package

## DNR Regional Offices

- Contact regional offices for information about water resources management, water supply, water regulation and zoning, wastewater management, fisheries management, and other water-related topics

### Lake Michigan Region

1125 N. Military Avenue  
Green Bay, WI 54307  
920/492-5800

### Southeast Region

2300 N. Martin Luther King, Jr. Dr.  
Box 12436  
Milwaukee, WI 53212  
414/263-8500

## East Central Wisconsin Regional Planning Commission

132 Main St.  
Menasha, WI 54952  
920/751-4770; Fax: 920/751-4771

- Serves the following counties: Calumet, Fond du Lac, Green Lake, Marquette, Outagamie, Shawano, Waupaca, Waushara, and Winnebago

## Forest County Potawatomi

Tribal Center  
P.O. Box 340  
Crandon, WI 54520  
715/478-2903; Fax: 715/478-7225

## Lake Michigan Federation

59 East Van Buren Street, Suite 2215  
Chicago, IL 60605  
312/939-0838

- Promotes citizen action to protect water quality, shoreline, and biodiversity of Lake Michigan for future generations through research, education, advocacy, and stewardship programs

## Land Conservation Department County Offices

See list of county offices in Part 3 of this "Organizations section"

## Menominee Nation

*Menominee Tribal Environmental Services Department*

P.O. Box 670  
Keshena, WI 54135  
715/799-4937

Home Page: <http://www.menominee.com>

- Technical environmental department of Menominee Nation dealing with environmental issues including surface and groundwater, waste, mining issues, and more

## Menominee Nation Treaty Rights and Mining Impacts Office

P.O. Box 910  
Keshena, WI 54135  
715/799-5620; Fax: 715/799-5692

E-mail addresses:

Mining Impacts: [nomining@mail.wiscnet.net](mailto:nomining@mail.wiscnet.net)

# Lake Michigan Watershed

## Lake Michigan Watershed

Lake Shore  
Lower Fox  
Milwaukee River

Root-Pike Rivers  
Sheboygan River

Upper Fox River  
Upper Green Bay  
Wolf River

## Lake Michigan Watershed Acreage

9,100,991



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### Minnesota Valley National Wildlife Refuge

3815 E. 80th St.

Bloomington, MN 55425

612/854-5900; Fax: 612/725-3279

Offers:

- School group field trips, scout programs, and preschool programs focusing on natural resource management
- "Water Quality Trekking Packs," a 7th-12th grade water quality testing curriculum and testing equipment
- Resource library with videos, books, and trunks

### Minnesota-Wisconsin Boundary Area Commission

619 Second St.

Hudson, WI 54016

715/386-9444

- The commission conducts studies, develops recommendations, and coordinates planning for protection, use, and development in the public interest of the lands, river valleys, and waters that form the boundary between Minnesota and Wisconsin, principally the St. Croix and Mississippi Rivers.

### Mississippi Headwaters RIVER WATCH

218/547-7263

Home Page:

<http://www.stolaf.edu/other/snap/rivwatch.html>

- Youth involvement program to monitor and protect the Mississippi River

### Mississippi River Basin Alliance

P.O. Box 3878

St. Louis, MO 63122

314/822-4114

Home Page: <http://www.mrba.org/mrba>

- A coalition of environmental justice and traditional conservation groups along the Mississippi River basin organized to protect and preserve the Mississippi River basin
- Acts as a resource and communications vehicle to citizens and organizations (includes a web page for members)
- Produces directory of alliance members, quarterly newsletter, and annual conference

### Mississippi River Museum

P.O. Box 266

Third St. Ice Harbor

Dubuque, Iowa 52004-0266

800/226-3369 or 319/557-9545;

Fax: 319/583-1241

- Museum and Woodward Riverboat Museum
- Interactive film, historical Dubuque area, lead mine exhibit, and much more!

### Mississippi River Regional Planning Commission

1701 Main St.

LaCrosse, WI 54601

608/785-9396; Fax: 608/785-9394

### Science Museum of Minnesota

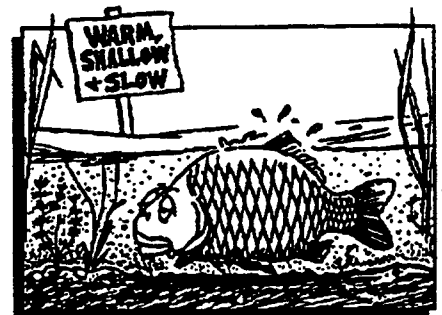
30 E. 10th St.

St. Paul, MN 55101

612/221-9488

800/221-9444, ext.4748 ("Museum on the Move" program)

- *Three Rivers exhibit* and related publications (see below)
- "Museum on the Move" Department includes:
  - ◊ Outreach assembly programs including: *Three Rivers*, a program about the St. Croix, Minnesota, and Mississippi Rivers, and the *Water Residency* program where students take an in-depth exploration of water, its cycles, and properties
  - ◊ Water trunk for rent which includes a 3-D water cycle, groundwater model, and water testing equipment, videos, and books
  - ◊ Teacher education and activity packets
  - ◊ "Watch Your Waste Game," an interactive computer program about household hazardous wastes



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**Southern Illinois University-Edwardsville**  
P.O. Box 2222  
Edwardsville, IL 62026  
618/692-3788

Home Page: <http://www.siu.edu/OSME/river>

- Provides "The Rivers Project"
- Lends zebra mussel trunk and curriculum
- Provides the "Middle School Groundwater Project" (model and curriculum)

**St. Croix Band of Lake Superior Chippewa**  
*St. Croix Tribal Center*

P.O. Box 287  
Hertel, WI 54845  
715/349-2195; Fax: 715/349-5768 or 2499

*Natural Resources Department, Ext. 141*

- Raises and stocks walleye in public waters
- Conducts walleye surveys of populations in public waters

**St. Croix National Scenic Riverway**  
*Division of Interpretation*

P.O. Box 708  
St. Croix Falls, WI 54024  
715/483-3284

- Produces "Rivers Are Alive" program

**Trees for Tomorrow**

611 Sheridan St.  
P.O. Box 609  
Eagle River, WI 54521  
715/479-6456

- Offers day and overnight programs to schools and general public
- Provides educator workshops

**Upper Mississippi River Basin Association**

408 St. Peter St.  
415 Hamm Building  
St. Paul, MN 55102  
612/224-2880

**Upper Mississippi River Conservation Committee (UMRCC)**

4469 48th Avenue Court  
Rock Island, IL 61201  
309/793-5800; Fax: 309/793-5804

- An organization of resource professionals from Minnesota, Wisconsin, Iowa, Illinois,

and Missouri working towards securing the wildlife and recreational uses of the river with navigation and other public uses.

**Upper Mississippi River National Fish and Wildlife Refuge**

Headquarters  
51 E. Fourth St.  
Winona, MN 55987  
507/454-7351

or  
555 Lester Ave.  
Onalaska, WI 54650  
608/483-8405

Home Page: [http://www.emtc.nbs.gov/umr\\_refuge.html](http://www.emtc.nbs.gov/umr_refuge.html)

- Educational trunks (Prairie, Wetland, Endangered Species) are available to borrow
- Provides some tours
- Produces videos and publications
- Produces "Refuge Explorer" activity guide

**U.S. Geological Survey**

Wisconsin District  
6417 Normandy Lane  
Madison, WI 53719  
608/274-3535

Home Page: <http://www.dwdimdn.er.usgs.gov>  
• Home page for Upper Mississippi River watershed

**UW-Extension Cooperative Extension County Agents**

See list of county offices in Part 3 of this "Organizations" section

## ***Field Trip Contacts***

**Army Corps of Engineers**

*Blackhawk Park*  
1114 S. Oak St.  
LeCrescent, MN 55947  
507/895-6341

- Lock and dam tours: call ahead; facilities are listed in the phone book in "Government Section" for Alma, Trempeleau, Genoa, Linksville, and Fountain City (WI) including:
  - ◊ Lock and Dam #7, 507/895-2170



Other parks to visit:

- ◊ Eau Galle Park, 715/778-5562
- ◊ Blackhawk Park and Spring Valley Park (some outreach and school programs)  
DeSoto, WI. 608/648-3314

### **Effigy Mounds National Monument**

151 Hwy. 76  
Harpers Ferry, Iowa 52146  
319/873-3491

- Interpretive school programs designed according to visiting schools' interests
- Produces education handbook that includes activities about the park's natural history

### **Fort Folles Avoine**

St. Croix Ojibwe and Burnett County Historical Society. 715/866-8890

### **Genoa National Fish Hatchery**

Route 1  
Genoa, WI 54632  
608/689-2605; Fax: 608/689-2644

### **LaCrosse Fishery Resource Office**

555 Lester Avenue  
Onalaska, WI 54650  
608/783-8431; Fax: 708-783-8450

### **Land Conservation Departments**

See list of county offices in Part 3 of this "Organizations" section

### **Local Fish Hatcheries**

Contact your DNR Region or local Tribal Office to find the nearest fish hatchery

### **Local Historic Sites**

Contact your county or local Historical Society (the State Historical Society can provide a list of local offices)

### **Local Nature Centers**

See listing in *Mississippi River Area and Western Area of Mississippi River Watershed* above

### **Local Power Plants**

See your local phone book

- Contact for possible field trips

### **Local State and County Park Staff**

See local phone book

### **Minnesota Valley National Wildlife Refuge**

US Fish and Wildlife Service  
3815 E. 80th St.  
Bloomington, MN 55425  
612/854-5900; Fax: 612/725-3279

### **Mississippi Valley Archaeological Center**

1725 State St.  
UW-Lacrosse  
LaCrosse, WI 54601  
608/785-8454

- Offers teacher in-services
- Provides youth programs
- Provides school presentations

### **Trempeleau National Wildlife Refuge**

W28488 Refuge Rd., Rt. 1 Box 1602  
Trempeleau, WI 54661  
608/539-2311; Fax: 608/539-2703

- Offers school field trip programs
- K-8 Wetlands Discovery Trunk available to borrow (includes video, books, and activities)

### **Upper Mississippi River National Fish and Wildlife Refuge**

LaCrosse District  
Rm. 226, Post Office Bldg.  
425 State St.  
LaCrosse, WI 54601  
608/784-3910; Fax: 608/782-2722

Home Page: [http://www.emtc.nbs.gov/umr\\_refuge.html](http://www.emtc.nbs.gov/umr_refuge.html)

- Provides public benefits associated with fish, wildlife, and wild areas by preserving the upper Mississippi River floodplain ecosystem for the enjoyment and use of this and future generations.

### **Villa Louis**

P.O. Box 65  
Prairie du Chien, WI 53821  
608/326-2721

- School programs and site visits to this historic site



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**Water Education Resource Center (WERC)**

*Eau Claire Area*  
Beaver Creek Reserve  
Route 2, Box 94  
Fall Creek, WI 54742  
715/877-2212

**Wyalusing State Park**

13345 County Hwy. C  
Bagley, WI 53801  
608/996-2261

- Produces an activity guide for use within the park
- No instructional programs are available, but park staff will assist in finding instructors for summer youth programs and limited fall and spring school programs

## ***Western Area of Mississippi River Watershed***

**Cooperative Educational Service Agency  
(CESA) 10 and 11**

725 W. Park Ave.  
Chippewa Falls, WI 54792  
715/720-2034

Home Page with water-related links:

[http://www.cesa10.k12.wi.us/ETS/  
SMT/index.html](http://www.cesa10.k12.wi.us/ETS/SMT/index.html)

- Teacher in-services
- Hands-on & multimedia resources to lend

**County Planning and Zoning and Public  
Utilities Departments**

See local phone book under county name

**DNR Regional Offices**

*Northern Region (West)*  
Box 309  
Spooner, WI 54801  
715/635-2101

***West Central Region***

Box 4001  
Eau Claire, WI 54702  
715/839-3700

- Contact regional offices for information about water resources management, water supply, water regulation and zoning, wastewater management, fisheries management, municipal water supply, municipal wastewater treatment facility, and other water-related topics .

**Engineering Consulting Firms**

- Contact for questions about groundwater issues and related technical information

**Northwest Regional Planning Commission**

1400 S. River St.

Spooner, WI 54801

715/635-2197; Fax: 715/635-7262

- Serves these counties: Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn

**St. Croix Wildlife Management District**

146 W. Second Street

New Richmond, WI 54017

715/246-7784; Fax: 715/246-7785

**U.S. Geological Survey Field Office**

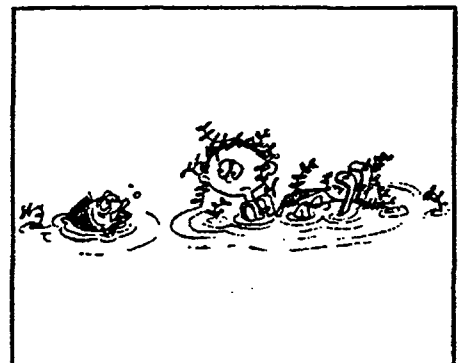
Rice Lake

313 West Knapp St.

Rice Lake, WI 54868

715/234-4015

Wisconsin Home Page: [http://www.dwdm.dn.er.  
usgs.gov](http://www.dwdm.dn.er.usgs.gov)



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**West Central Regional Planning  
Commission**

800 Wisconsin St., Mail Box 9  
Eau Claire, WI 54703-3606  
715/836-2918

- Serves these counties: Barron, Chippewa, Clark, Dunn, Eau Claire, Polk, and St. Croix

## **Field Trip Contacts**

### **Chippewa Valley Museum**

P.O. Box 1204  
Carson Park Dr.  
Eau Claire, WI 54703  
715/834-7871

### **Land Conservation Department**

See list of county offices in Part 3 of this  
"Organizations" section

### **Local Industries and Power Plants**

See local phone book

- Contact for field trips

### **Local Landfill**

See local phone book

### **Priority Watershed Projects**

See list of county offices in Part 3 of this  
"Organizations" section

### **Recycling Coordinator for County**

See local white pages under county listings

### **University Staff**

- For water-related questions at UW-Eau Claire and UW-River Falls, contact: Departments of Biology, Water Chemistry, Hydrogeology, Thermogeology, Agronomy, Agriculture Resource Management, etc.

### **UWEX Water Educators**

#### *Western Region*

University of Wisconsin-Eau Claire  
Room 149, Phillips Hall  
Eau Claire, WI 54702  
715/836-5513; Fax: 715/836-2380

### **Water Education Resource Center (WERC)**

*Eau Claire Area*  
Beaver Creek Reserve  
Route 2, Box 94  
Fall Creek, WI 54742  
715/877-2212

## **Southern Area of Mississippi River Watershed**

### **Community Conservation Associates**

RD 1, Box 96  
Gays Mills, WI 54631  
608/735-4717  
E-mail: ccc@mwt.net

- A watershed community stewardship program. Provides community-based river monitoring program for schools and community groups.
- Stimulates community development through community-based conservation projects
- International work

### **County Health Department**

See local phone book under county name

- Contact for questions regarding local water contamination concerns

### **Dane County Extension**

Natural Resource Agent  
1 Fen Oak Ct.  
Madison, WI 53704-8810  
608/224-3718; Fax: 608/224-3745  
E-mail: habecker@co.dane.wi.us

- Dane County Water Watchers program provides a variety of activities and background information about water quality through a series of four guidebooks, "Waterwatchers Guide for Dane County."

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**Dane County Lakes and Watershed Commission**

210 Martin Luther King, Jr. Blvd.  
City/County Bldg., Rm. 421  
Madison, WI 53709  
608/266-2626; Fax: 608/266-2643

- The Commission's purpose is to address through education, outreach programs, and policies, water resource problems in Dane County
- Speakers' Bureau available
- Offers videos and resource library
- Provides limited school outreach programs
- Offers community programs such as "Take a Stake in the Lakes"

**Dane County Regional Planning Commission**

217 S. Hamilton, Suite 403  
Madison, WI 53703-3238  
608/266-4137; Fax: 608/266-9117

- Serves Dane County

**DNR Central Region Office**

3911 Fish Hatchery Road  
Fitchburg, WI 53711  
608/275-3266

- Contact regional offices for information about water resources management, water supply, water regulation and zoning, wastewater management, fisheries management, and other water-related topics

**Drinking Water Treatment Facilities**

See local phone book

**Edgewood College**

855 Woodrow St.  
Madison, WI 53711  
608/257-4861

- Coordinates Heron Institute summer session of water-related courses for teachers
- Publishes *Yahara Watershed Journal* newsletter of the Yahara Watershed Network

**Engineering Companies**

See local phone book

**Ho-Chunk Nation**

*Environmental Services Department*  
P.O. Box 636  
Black River Falls, WI 54615  
715/284-7830; Fax: 715/284-9592

- Develops and implements groundwater wellhead protection plans
- Manages underground storage tanks

**Local Businesses**

See local phone book

- Contact for information regarding pollution prevention and water conservation programs

**Local Developers**

See local phone book

- Contact for questions about construction site erosion control in terms of stormwater and water quality management

**Local Landfills**

See local phone book

- Contact for information about the technologies they use related to water quality protection

**Local Sheriff's Department**

See local phone book

- Contact for questions related to: lake use issues and conflicts, local speakers on specific issues, water safety programs, boater safety information, and exotic species information.

**Madison Children's Museum/Wisconsin Children's Center**

100 State St.  
Madison, WI 53703  
608/256-6445

- *Leap into Lakes* exhibit and the related curriculum guide are about lakes, fresh-water, and water quality. The exhibit explores Madison's lakes, the Great Lakes and the lakes of the world.
- School group visits
- *Check out the Lakes* trunk is available for loan. The trunk contains educational materials such as books, curriculum guides, posters, and videos. Suggested for grades 4-6, but may be adapted to older or younger ages. To rent, contact Volunteer Coordinator.

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**Madison Metropolitan Sewerage District**

1610 Moorland Rd.  
Madison, WI 53713  
608/222-1201

- Tours of sewage treatment facility
- Publications

**Madison Storytellers' Guild**

Contact Susan Gilchrist  
608/249-5030, weekends or evenings

**Natural Resources Conservation Service**

See list of county offices in Part 3 of this  
"Organizations" section

**Priority Watershed Project Managers**

See list of county offices in Part 3 of this  
"Organizations" section

**School Grounds Staff**

See local phone book

- Contact for information about water quality and grounds management at school sites

**Southwestern Wisconsin Regional Planning Commission**

426 Karrmann Library  
Platteville, WI 53818  
608/342-1214; Fax: 608/342-1220

- Serves the following counties: Grant, Green, Iowa, Lafayette, and Richland

**U.S. Geological Survey****Madison Field Office**

6606 Seybold Rd.  
Madison, WI 53719  
608/274-3925

Wisconsin Home Page:

<http://www.dwdm.dn.er.usgs.gov>

**UW-Extension Cooperative Extension****Southern Area**

Water Educator  
216 Agriculture Hall, ERC  
1450 Linden Drive  
Madison, WI 53706  
608/265-3257

- See description in *Statewide Water-Related Organizations* section

**Water Education Resource Centers (WERC)****Grant County Area**

Grant County Land Conservation Department  
Lancaster, WI 53813  
608/723-6377

- Equipment loan only

**Madison Area**

Dane County UW-Extension  
1 Fen Oak Ct.

Madison, WI 53704-8810  
608/224-3718; Fax: 608/224-3745  
E-mail: [habecker@co.dane.wi.us](mailto:habecker@co.dane.wi.us)

## Field Trip Contacts

**Aldo Leopold Foundation and Leopold Memorial Reserve**

E12919 Levee Rd.  
Baraboo, WI 53913  
608/355-0279; Fax: 608/356-7309

or

**Sand County Foundation**

for Leopold Memorial Reserve information  
608/242-5319

- Tours of the original Leopold family farm and shack on a limited basis. The reserve includes examples of ecological restoration dating back to the mid-1930s.
- Provides limited classroom presentations on Aldo Leopold, the "Land Ethic," ecological restoration, and phenology (study of the seasons).

**County Health Department**

See local white pages under county listings

**County Planning and Zoning Departments**

See local white pages under county listings

**County, State, and Federal Parks**

See local white pages under county listings

**Dane County Lakes and Watershed Commission**

See listing above in *Southern Area of Mississippi River Watershed* section

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**Dane County UW-Extension**

See listing above in *Southern Area of Mississippi River Watershed* section

**Horicon Marsh and Marshland Nature Center**

See *Federal Agencies* in Part 1 of this "Organizations" section

**Land Conservation Department**

See list of county offices in Part 3 of this "Organizations" section

- Priority watershed or water quality staff

**Local Fish Hatcheries**

Contact your DNR Region or local Tribal Office to find the nearest fish hatchery

**Local Historic Sites**

Contact your county or local Historical Society (the State Historical Society can provide a list of local offices)

**Local Industries and Power Plants**

See your local phone book

- Contact for possible field trips

**Local Sheriff's Department**

See local phone book

- Contact for information on lake use issues and conflicts
- May provide local speakers on water and boating safety, exotic species, and local water-related issues

**Madison Children's Museum**

See listing above in *Southern Area of Mississippi River Watershed* section

**Mining Museum**

405 E. Main, Box 252  
Platteville, WI 53818  
608/348-3301

- Offers guided tours of an 1845 lead mine
- Displays models of different mining techniques and exhibits of mining equipment and 19th century life
- Offers mine locomotive rides

**Outdoor Skills Center**

P.O. Box 84  
Plymouth, WI 53703  
920/893-5210

- Publishes *Project WULP: Wetland Understanding Leading to Protection*
- Offers school and public education programs

**Public Works Department: Water Supply, Wastewater Treatment**

See local phone book

**State Historical Society Museum**

30 N. Carroll St.  
Madison, WI 53703  
608/264-6555

**Town Engineers**

See local phone book

**UW-Extension Cooperative Extension County Offices**

See list of county offices in Part 3 of this "Organizations" section

**UW-Madison Arboretum**

1207 Seminole Hwy.  
Madison, WI 53711-3726  
608/262-2748

- Offers field trips and summer school programs
- Coordinates "Prairie Restoration for Schools" program

**Wisconsin Power and Light Land Resources and Stewardship**

222 W. Washington Ave.

P.O. Box 192  
Madison, WI 53701-0192  
608/252-3237; Fax: 608/252-5702

- Stewardship properties available for field trips, research and restoration projects
- Aquatic ecosystems on Merrimac property include: vernal ponds, permanent ponds, wetlands (open and sedge meadow), trout streams, and sloughs

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# North and Central Area of Mississippi River Watershed

## Central Wisconsin Groundwater Center CNR

UW-Stevens Point  
Stevens Point, WI 54481  
346-4276

E-mail: [cmecheni@uwsp.edu](mailto:cmecheni@uwsp.edu)

- See description in *State Government Organizations* section for further information

## County Cooperative Extension Office

See list of county offices in Part 3 of this  
“Organizations” section

- Community, Natural Resource and Economic Development Agent or 4-H Agent

## County Health and Human Services

See local phone book under county name

## County Planning and Zoning

See local phone book under county name

## Environmental Task Force Lab

College of Natural Resources  
UW-Stevens Point  
Stevens Point, WI 54481  
715/346-3209

- Provides technical expertise on ground-water concerns and water testing
- See UW-Stevens Point in *Statewide Government Organizations* section for more information

## Land Conservation Department

See list of county offices in Part 3 of this  
“Organizations” section

## Local Businesses

See local phone book

## Local Nature Centers

To find out what nature centers are near you, contact your local UW-Extension Cooperative Extension county office, local school district, or

you can order the *Directory to Wisconsin's Environmental Education and Nature Centers* from:

DNR Bureau of Communication and Education  
Box 7921

Madison, WI 53707-7921

608/266-6790

Ask for Publication #PUBL-HVW-085-92 Rev

## Natural Resources Conservation Service

See list of county offices in Part 3 of this  
“Organizations” section

## North Central Regional Planning Commission

407 Grant St.

Wausau, WI 54403-4783

715/845-4208; Fax: 715/843-1267

- Serves the following counties: Adams, Forest, Juneau, Langlade, Lincoln, Marathon, Oneida, Portage, Vilas, and Wood

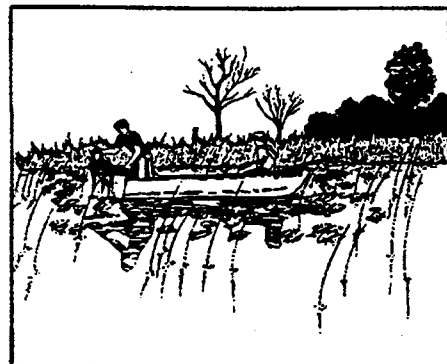
## Stevens Point-Whiting-Plover Wellhead Protection Project

817 Whiting Avenue

Stevens Point, WI 54481

Education Coordinator 715/345-5978

- Offers presentations
- Coordinates field trips with the local Cooperative Educational Service Agencies (CESAs) to learning sites at farms, water treatment plants, nitrate removal systems, the Hancock research station, and more!
- Offers workshops
- Produces a newsletter
- Maintains alternative landscaping displays for groundwater protection in Stevens Point on the Green Circle Trail



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**Trout Lake Environmental Station**

10810 County Hwy. N  
Boulder Junction, WI 54512  
715/356-9494

- Technical expertise and research publications related to lakes

**U.S. Forest Service-Chequamegon National Forest**

1170 Fourth Avenue South  
Park Falls, WI 54552  
715/762-2461; Fax: 715/762-5179

*District Rangers:**Glidden Ranger District*

P.O. Box 126  
Glidden, WI 54527  
715/264-2511; Fax: 715/264-3307

*Hayward Ranger District*

P.O. Box 896  
Hayward, WI 54843  
715/634-4821; Fax: 715/634-3769

*Medford Ranger District*

850 N Eighth, Hwy 13  
Medford, WI 54551  
715/748-4875; Fax: 715/748-5675

*Park Falls Ranger District*

1170 Fourth Avenue S  
Park Falls, WI 54552  
715/762-5701; Fax: 715/762-05179

*Washburn Ranger District*

P.O. Box 578  
Glidden, WI 54527  
715/373-2667; Fax: 715/373-2878

**U.S. Forest Service-Nicolet National Forest**

Federal Building  
68 S. Stevens Street  
Rhineland, WI 54501  
715/362-1383; Fax: 715/362-1359

*District Rangers:**Eagle River Ranger District*

P.O. Box 1809  
Eagle River, WI 54521  
715/479-1308; Fax: 715/479-6407

*Florence Ranger District*

HC 1, Box 83  
Florence, WI 54121  
715/528-4464; Fax: 715/528-5172

*Lakewood Ranger District*

15085 State Rd. 32  
Lakewood, WI 54138  
715/276-6333; Fax: 715/276-3594

*Laona Ranger District*

Route 1, Box 11B  
Laona, WI 54541  
715/674-4481; Fax: 715/674-2545

**U.S. Geological Survey***Merrill Field Office*

2011 E. Main St.  
Merrill, WI 54452

715/536-2200

Wisconsin Home Page:

<http://www.dwdimdn.er.usgs.gov>

- See description in *Federal Agencies* section for further information

**Water Education Resource Center (WERC)***Stevens Point Area*

Central Wisconsin Environmental Station  
10186 County Rd. MM  
Amherst Junction, WI 54407  
715/824-2428

**Wisconsin Center for Environmental Education (WCEE)**

College of Natural Resources

UW-Stevens Point

Stevens Point, WI 54481

715/346-4973

Home Page: <http://www.uwsp.edu/acad/wcee>

- Lending library, curriculum materials
- Educator workshops
- Summer Master's program for teachers
- See complete description in Part 1 of *Organizations* section

**Wisconsin Rural Water Association**

350 Water Way

Plover, WI 54467

715/344-7778

E-mail: [wrwa@coredcs.com](mailto:wrwa@coredcs.com)

Home Page: <http://www.nrwa.org>



- Assists small municipalities with wellhead protection and public water supply protection issues
- Technical assistance to water and wastewater treatment operators

#### **Wisconsin Valley Improvement Authority**

2301 N. Third St.  
Wausau, WI 54403  
715/848-2976

- Regulates the water flow of the Wisconsin River from Lac Vieux Desert to the Eau Pleine Reservoir through dam and reservoir control

## **Field Trip Contacts**

#### **Central Wisconsin Groundwater Center**

See listing above in the *North and Central Area of Mississippi River Watershed* section

#### **Horicon National Wildlife Refuge (NWR)**

W4279 Headquarters Road  
Mayville, WI 53050  
920/387-2658; Fax: 920/387-2873

Contact the following offices through Horicon:

- Fox River NWR
- Gravel Island NWR
- Green Bay NWR
- Leopold WMD

#### **Land Conservation Department**

See list of county offices in Part 3 of this "Organizations" section

#### **Local Fish Hatcheries**

Contact your DNR Region or local Tribal Office to find the nearest fish hatchery

#### **Local Historic Sites**

Contact your county or local Historical Society (the State Historical Society can provide a list of local offices)

#### **Local Nature Centers**

See listing above in the *North and Central Area of Mississippi River Watershed* section

#### **Local Power Plants**

See your local phone book  
• Contact for possible field trips

#### **Necedah National Wildlife Refuge**

W7996 20th Street, W.  
Necedah, WI 54646  
608/565-2251; Fax: 608/565-3160

#### **Stevens Point-Whiting-Plover Wellhead Protection Project**

See listing above in the *North and Central Area of Mississippi River Watershed* section

#### **UW-Extension County Cooperative Extension Office**

See list of county offices in Part 3 of this "Organizations" section

#### **Wisconsin Conservation Hall of Fame**

Schmeckle Reserve and Visitor Center  
UW- Stevens Point  
Stevens Point, WI 54481  
715/346-4992

- See description in *Statewide Water-Related Organizations* section for more information

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*Part 3*

# County, Regional, and Watershed Offices

## County Offices

### **Environmental Health Department**

See local white pages under county name

- Inspects septic systems
- Planning and zoning
- Technical assistance
- Public wastewater treatment
- Solid waste management

### **Health and Social Services**

See local white pages under county name

- Human health concerns from contaminated water or disease

### **Planning and Zoning**

See local white pages under county name

- Planning and zoning
- Wellhead protection ordinance
- Soil and water conservation

### **Public Works Department**

See local white pages under county name

- Public water supply
- Groundwater management planning
- Wellhead protection ordinances
- Public wastewater treatment
- Solid waste management

## Land Conservation Department County Offices

- Establish standards for manure storage pits
- Groundwater management planning
- Education programs
- Wellhead protection ordinances
- Soil and water conservation
- Technical assistance

*Contact the county water conservationists and/or Watershed Project Managers for assistance*

### **Adams County**

PO Box 287, Courthouse, 402 Main St.  
Friendship 53934  
608/339-4268

### **Ashland County**

2012 W 3rd St., PO Box 267,  
Ashland 54806  
715/682-7187

### **Barron County**

Courthouse Ag. Building  
Barron 54812  
715/537-6315  
Yellow River Watershed Project  
715/537-6317

### **Bayfield County**

2012 W 3rd St., PO Box 267  
Ashland 54806  
715/682-7187

### **Brown County**

Ag. & Ext., Service Center, 1150 Bellevue St  
Green Bay 54302  
920/391-4620

### **Buffalo County**

County Courthouse  
Alma 54610  
608/685-6260

### **Burnett County**

7410 County Road K, #109  
Siren 54872  
715/349-2185

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**Calumet County**  
Courthouse, 206 Court St.  
Chilton 53014  
920/849-1444

**Chippewa County**  
711 N Bridge St., Rm. 011  
Chippewa Falls 54729  
715/726-7920  
Watershed Manager  
715/726-7922

**Clark County**  
Agriculture Svc. Center, Courthouse. Rm. 106,  
Neillsville 54456  
715/743-5102 (Ext. 302)  
Watershed Project Manager  
715/743-5103

**Columbia County**  
Columbia County Ag. Center, Box 485  
Portage 53901  
608/742-9670

**Crawford County**  
111 W. Dunn St.  
Prairie Du Chien 53821  
608/326-0270

**Dane County**  
57 Fairgrounds Dr.  
Madison 53713-1413  
608/266-4270

**Dodge County**  
127 E. Oak St.  
Juneau 53039  
920/386-3660

**Door County**  
421 Nebraska St.  
Sturgeon Bay 54235  
920/746-2214

**Douglas County**  
2012 W. 3rd St., PO Box 267  
Ashland 54806  
715/682-7187

**Dunn County**  
Ag. Center, Suite C, 390 Red Cedar St.  
Menomonie 54751-2386  
715/232-1496

**Eau Claire**  
Agriculture & Resource Center  
227 1st Street West  
Altoona 54720  
715/839-6226

**Florence County**  
HC 1, Box 82a  
Florence 54121  
715/528-5580

**Fond Du Lac County**  
W 6529 Forest Ave.  
Fond Du Lac 54937-9403  
920/923-5562

**Forest County**  
C/O: UW-Extension Office, Courthouse  
Crandon 54520  
715/478-2212

**Grant County**  
150 West Alona Ln., Ste #1  
Lancaster 53813  
608/723-6377

**Green County**  
2841 6th St., Ag. Bldg.  
Monroe 53566  
608/328-9525

**Green Lake County**  
492 Hill St., Courthouse, PO Box 3188  
Green Lake 54941-3188  
920 or 414/294-4051

**Iowa County**  
Ag. Center Bldg.  
Dodgeville 53533  
608/935-2663

**Iron County**  
2012 W. 3rd St., PO Box 267  
Ashland 54806  
715/682-7187

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**Jackson County**

307 Main Street  
Black River Falls 54615  
715/284-0256

**Jefferson County**

Courthouse, 320 S. Main St.  
Jefferson 53549  
414/674-7110  
Watershed Proj. Mgr.  
232 Main St., PO Box 22,  
Cambridge 53523

**Juneau County**

Courthouse Annex  
Mauston 53948  
608/847-6607

**Kenosha County**

Kenosha County Center, PO Box 520  
Bristol 53104-0520  
414/857-6560

**Kewaunee County**

925 Marquette Drive  
Kewaunee 54216  
920/388-0787

**La Crosse County**

Courthouse, 400 North 4th St., Rm. B05  
LaCrosse 54601-3200  
608/785-9867

**Lafayette County**

626 Main St., Suite B  
Darlington 53530-1397  
Priority Watershed Manager/Technician  
608/776-4084

**Langlade County**

720 Ackley St., Room 3  
Antigo 54409-2405  
715/623-4889

**Lincoln County**

1106 E 8th St.  
Merrill 54452  
715/536-0363

**Manitowoc County**

1701 Michigan Avenue  
Manitowoc 54220  
920/683-4183

**Marathon County**

Courthouse, 500 Forest St.  
Wausau 54403  
715/847-5213

**Marinette County**

1926 Hall Ave, PO Box 320  
Marinette 54143  
Water Resource Spec.  
715/732-7780

**Marquette County**

480 Underwood Ave  
Montello 53949  
608/297-9175

**Menominee County**

Courthouse, PO Box 27  
Keshena 54135-0279  
715/799-3311

**Milwaukee County**

Milwaukee Co. Courthouse  
901 N 9th St., Rm. 203  
Milwaukee 53233  
414/278-5020

**Monroe County**

820 Industrial Drive, Suite 3  
Sparta 54656  
608/269-4929

**Oconto County**

111 Arbutus Ave., PO Box 46  
Oconto 54153  
920/834-5688

**Oneida County**

3375 Airport Rd.  
Rhineland 54501  
715/369-6166

**Outagamie County**

3365 W. Brewster St.  
Appleton 54914  
920/832-5073

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**Ozaukee County**

121 W Main St.  
Port Washington 53074  
Metro Area Callers: 414/238-8270  
414/284-8270

**Pepin County**

740 7th Ave. W., PO Box 39  
Durand 54736  
715/672-8665

**Pierce County**

Box 67, 412 W Kinne St.  
Ellsworth 54011  
715/273-3534

**Polk County**

215 Main St., Box 460  
Balsam Lake 54810  
Balsam Branch Watershed Project  
715/485-3725

**Portage County**

County-City Building  
1516 Church St.  
Stevens Point 54481  
Tomorrow/Waupaca River  
715/346-1334

**Price County**

County Normal Bldg.  
Phillips 54555  
715/339-2550

**Racine County**

14200 Washington Avenue  
Sturtevant 53177  
414/886-8479

**Richland County**

1850 Bohmann Drive, Suite E  
Richland Center 53581  
608/647-2100

**Rock County**

440 N. U.S. Hwy. 14  
Janesville 53546  
608/755-2187

**Rusk County**

311 E. Miner Ave.,  
Ladysmith 54848  
Soft Maple-Hay Cr.  
Watershed Project Manager  
715/532-2162

**St. Croix County**

1060 10th Ave., PO Box 85  
Baldwin 54002  
715/684-2894

**Sauk County**

515 Oak St. Courthouse  
Baraboo 53913  
608/355-3245

**Sawyer County**

311 E. Miner Ave.  
Ladysmith 54848  
715/532-2162

**Shawano County**

311 N. Main St.  
Shawano 54166  
715/526-9239

**Sheboygan County**

650 Forest Avenue  
Sheboygan Falls 53085  
920/459-4360

**Taylor County**

Co. USDA Svc. Ctr., 925 Donald St., Rm.102  
Medford 54451  
715/748-2299

**Trempealeau County**

Courthouse Annex  
Whitehall 54773  
715/538-2311

**Vernon County**

834 N. Main St.  
Viroqua 54665  
608/637-8323

**Vilas County**

3375 Airport Rd.  
Rhineland 54501  
715/369-6166

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**Walworth County**

Crths. Annex, W3929 Cty. Nn  
Elkhorn 53121  
414/723-2698

**Washburn County**

206 Vine St.  
Spooner 54801  
715/635-2451

**Washington County**

333 E. Washington St., Suite 3200  
West Bend 53095  
414/335-4800

**Waukesha County**

Waukesha Co. Administration Center, Rm. 229  
1320 Pewaukee Road,  
Waukesha 53188  
414/548-7767

**Waupaca County**

811 Harding, Courthouse  
Waupaca 54981  
715/258-6245

**Waushara County**

209 S. St. Marie St.  
Wautoma 54982  
920 or 414/787-4631

**Winnebago County**

500 East County Road Y  
Oshkosh 54901  
920/424-0044

**Wood County**

Courthouse, 400 Market St., Box 8095  
Wisconsin Rapids 54495  
715/421-8475  
Upper Yellow River Watershed  
715/421-8582

# Natural Resources and Conservation Service (NRCS) County Field Offices

- As part of the U.S. Department of Agriculture, the NRCS works with farmers and landowners to develop land and water conservation management practices.

COUNTY	SERVED BY	TELEPHONE #
Adams	Mauston FO	608/847-6607
Ashland	Ashland FO	715/682-4161
Barron	Barron FO	715/537-6316
Bayfield	Ashland FO	715/682-4161
Brown	Green Bay FO	920/391-4622/4623
Buffalo	Alma FO	608/685-6280
Burnett	Siren FO	715/349-2185
Calumet	Chilton FO	920/849-1444
Chippewa	Chippewa Falls FO	715/720-9083
Clark	Neillsville FO	715/743-6210
Columbia	Portage FO	608/742-2757
Crawford	Prairie du Chien FO	608/326-0270
Dane	Madison FO	608/224-3750
Dodge	Juneau FOP	920/386-4486
Door	Kewaunee FO	920/388-0740
Douglas	Ashland FO	715/682-4161
Dunn	Menomonie FO	715/232-1132
Eau Claire	Altoona FO	715/839-4786
Florence	Rhinelanders FO	715/369-6166
Fond du Lac	Fond du Lac	920/923-5562
Forest	Rhinelanders FO	715/369-6166
Grant	Lancaster FO	608/723-6377
Green	Monroe FO	608/328-9522
Green Lake	Green Lake FO	414/294-6140*
Iowa	Dodgeville FO	608/935-2663
Iron	Ashland FO	715/682-4161
Jackson	Black River Falls FO	715/284-0256
Jefferson	Jefferson FO	414/674-6102-6103
Juneau	Mauston FO	608/847-6607
Kenosha	Union Grove FO	414/878-1243
Kewaunee	Kewaunee FO	920/388-0740
La Crosse	La Crosse FO	608/785-9741
Lafayette	Darlington FO	608/776-4084
Langlade	Merrill FO	715/536-6003
Lincoln	Merrill FO	715/536-6003
Marathon	Wausau FO	715/847-5254
Manitowoc	Manitowoc FO	920/683-4183
Marinette	Marinette FO	715/735-5680
Marquette	Portage FO	608/742-2757
Menominee	Shawano FO	715/526-9239
Milwaukee	Waukesha FO	414/547-3754
Monroe	Sparta FO	608/269-4929
Oconto	Oconto FO	920/834-5688
Oneida	Rhinelanders FO	715/369-6166
Outagamie	Appleton FO	920/832-5073
Ozaukee	Port Washington FO	414/284-8273
Pepin	Durand FO	715/672-8665

Pierce	Ellsworth FO	715/273-3531/6763
Polk	Balsam Lake FO	715/485-3340
Portage	Stevens Point FO	715/346-1334
Price	Medford FO	715/748-2299
Racine	Union Grove FO	414/878-1243
Richland	Richland Center FO	608/647-2678
Rock	Janesville FO	608/755-2187
Rusk	Ladysmith FO	715/532-7629
St. Croix	Baldwin FO	715/684-2894
Sawyer	Ladysmith FO	715/532-7629
Sauk	Baraboo FO	608/356-3861
Shawano	Shawano FO	715/524-8520
Sheboygan	Sheboygan Falls FO	414/467-5751*
Taylor	Medford FO	715/748-2299
Trempeleau	Whitehall FO	715/538-4379
Vernon	Viroqua FO	608/637-8321
Vilas	Rhineland FO	715/369-6166
Walworth	Elkhorn FO	414/723-2698
Washburn	Spooner FO	715/635-2451
Washington	West Bend FO	414/335-4800
Waukesha	Waukesha FO	414/547-3754
Waupaca	Waupaca FO	715/258-8380
Waushara	Wautoma FO	920/787-3828
Winnebago	Oshkosh FO	920/424-0044
Wood	Wisconsin Rapids FO	715/421-5473

\*Because of the area code reorganization, these (414) area codes may now be (920)

## Priority Watershed Educators

- Most of these individuals are located in county Land Conservation Departments and conduct a variety of outreach programs.

EDUCATOR	WATERSHED	PHONE #
Sandy Swoboda	Lower Rib River	715/847-5213
Sarah Draak	Tomorrow/Waupaca River	715/258-6245
Mike Gardner	Whittlesey Creek	715/682-7187
Paul Hlina	Upper St. Croix	715/378-4292
Dean Kaatz	Lower Rib River, Yellow River, Spring Brook, Lower Big Eau Pleine	715/847-5213
Denise Labott	Upper Fox River, Muskego/Wind Lakes	920/548-7767
Ken Lassa	Lower Big Eau Pleine, Upper Yellow River, parts of Lower Rib River, Springbrook	715/847-5213
Peter Manley	Upper Yellow River	715/421-8440
Dann Wright	Neenah Creek	608/297-9175
Shane Wucherpennig	Upper Yellow River	715/421-8475
Mark Bal	Milwaukee River, Fond du Lac, Winnebago West	414/923-5562*
Trisha Fischer	Pensaukee River	414/834-5688*
Brad Robole	Arrowhead/Rat River/Daggetts Creek, Fond du Lac, Pine Willow	414/424-0044*
Tony Smith	Branch River, Pigeon River	414/683-4183*
Andy Wallenger	Red River, Sturgeon Bay, Brown, Poor	920/388-3570
Steve Zander	Lake Noquebay, Middle Peshtigo/Thunder River	715/732-7780
Chri• Ertman	E.W. Branch Milwaukee River, North Branch Milwaukee River, Pigeon River	414/467-5746*



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Gerald Hebard	Honey Sugar, Muskego/Wind Lakes, Camp Center, Lake Cook	414/878-1243*
Jayne Jenks	Upper Fox River, Menomonee River, Muskego/Wind Lake	920/548-7767
Sue Millin	Milwaukee	414/335/4800
Merrie Schamberger	Cedar Creek, Milwaukee River, Menomonee River Sauk Creek	414/238-8270*
Steve Bertjens	Lower Grant River	608/723-6377
Danielle Dresden	Yahara, Monona	608/266-2626
Karl Hakanson	Narrows Creek, Baraboo River, Dell Creek	608/355-3245
Kathy Knapp	Hillsboro Lake, Middle Kickapoo River	608/637/8323
Ron Kroner	Lake Ripley, Rock River	414/674-7121*
Mary Maida	Rock Lake	414/674-7121*
Nancy Paul	Beaver Dam River	414/386-3660*
Lisa Trumbele	Lower East Branch Pecatonica River	608/776-4084
Cheryl Bursik	Balsam Branch, Osceola Creek, Horse Creek	715/485-3725
Jane Jensen	Duncan Creek	715/726-7922
Mark Kinney	South Fork - Hay River	715/232-1496
Peter Kling	St. Croix Lakes Cluster	715/684-2894
Rodney Littlefield	Duncan Creek	715/726-7955
Emily Moore	Duncan Creek	715/832-7109
Daun Mudis	Beaver Creek, Middle and Upper Trempealeau	715/538-2311
Jim Reimer	Yellow River	715/537-6315
Bryce Richardson	Lake Tomah	608-269-4929
Jean Schomisch	Loves Creek	715/839-6226
Steve Stark	Upper Trempealeau River, Beaver Creek	715/284-0256
Jim Sraskowski	Waumandee Creek; Buffalo County, part of Middle Trempealeau	608/685-6260
Paul Cook	Big Wood Lake	715/349-2185

\*These (414) area codes may be changing to (920)



## Priority Watershed Projects in Wisconsin: 1995 - 1996

Year Selected- Map Number	Large-scale Priority Watershed Project	County(ies)
79-1	Galena River ♦	Grant, Lafayette
79-2	Elk Creek ♦	Trempealeau
79-3	Hay River ♦	Barron, Dunn
79-4	Lower Manitowoc River ♦	Manitowoc, Brown
79-5	Root River ♦	Racine, Milwaukee, Waukesha
80-1	Onion River ♦	Sheboygan, Ozaukee
80-2	Sixmile-Pheasant Branch Creek ♦†	Dane
80-3	Big Green Lake ♦	Green Lake, Fond du Lac
80-4	Upper Willow River ♦	Polk, St. Croix
81-1	Upper West Branch Pecatonica River ♦	Iowa, Lafayette
81-2	Lower Black River ♦	La Crosse, Trempealeau
82-1	Kewaunee River ♦	Kewaunee, Brown
82-2	Turtle Creek ♦	Walworth, Rock
83-1	Oconomowoc River	Waukesha, Washington, Jefferson
83-2	Little River	Oconto, Marinette
83-3	Crossman Creek/Little Baraboo River	Sauk, Juneau, Richland
83-4	Lower Eau Claire River ♦	Eau Claire
84-1	Beaver Creek	Trempealeau, Jackson
84-2	Upper Big Eau Pleine River	Marathon, Taylor, Clark
84-3	Sevenmile-Silver Creeks	Manitowoc, Sheboygan
84-4	Upper Door Peninsula	Door
84-5	East & West Branch Milwaukee River	Fond du Lac, Washington, Sheboygan, Dodge, Ozaukee
84-6	North Branch Milwaukee River	Sheboygan, Washington, Ozaukee, Fond du Lac
84-7	Milwaukee River South	Ozaukee, Milwaukee
84-8	Cedar Creek	Washington, Ozaukee
84-9	Menomonee River	Milwaukee, Waukesha, Ozaukee, Washington
85-1	Black Earth Creek	Dane
85-2	Sheboygan River	Sheboygan, Fond du Lac, Manitowoc, Calumet
85-3	Waumandee Creek	Buffalo
86-1	East River	Brown, Calumet
86-2	Yahara River - Lake Monona	Dane
86-3	Lower Grant River	Grant
89-1	Yellow River	Barron
89-2	Lake Winnebago East	Calumet, Fond du Lac
89-3	Upper Fox River (Ill.)	Waukesha
89-4	Narrows Creek - Baraboo River	Sauk
89-5	Middle Trempealeau River	Trempealeau, Buffalo
89-6	Middle Kickapoo River	Vernon, Monroe, Richland
89-7	Lower East Branch Pecatonica River	Green, Lafayette
90-1	Arrowhead River & Daggets Creek	Winnebago, Outagamie, Waupaca
90-2	Kinnickinnic River (Milwaukee Basin)	Milwaukee
90-3	Beaverdam River	Dodge, Columbia, Green Lake
90-4	Lower Big Eau Pleine River	Marathon

90-5	Upper Yellow River	Wood, Marathon, Clark
90-6	Duncan Creek	Chippewa, Eau Claire
91-1	Upper Trempealeau River	Jackson, Trempealeau
91-2	Neanah Creek	Adams, Marquette, Columbia
92-1	Balsam Branch	Polk
92-2	Red River - Little Sturgeon Bay	Door, Brown, Kewaunee
93-1	South Fork Hay River	Dunn, Polk, Barron, St. Croix
93-2	Branch River	Manitowoc, Brown
93-3	Soft Maple/Hay Creek	Rusk
93-4	Tomorrow/Waupaca River	Portage, Waupaca, Waushara
94-1	Duck Creek	Outagamie, Brown
94-2	Apple/Ashwaubenon Creeks	Outagamie, Brown
94-3	Dell Creek	Sauk, Juneau
94-4	Pensaukee River	Shawano, Oconto
94-5	Spring Brook	Langlade, Marathon
94-6	Sugar/Honey Creeks	Walworth, Racine
95-1	Pigeon River	Manitowoc, Sheboygan
95-2	Middle Peshtigo/Thunder Rivers	Marinette, Oconto
95-3	Fond du Lac River	Fond du Lac, Winnebago
95-4	Lower Rib River	Marathon
95-5	Kinnickinnic River (St. Croix Basin)	St. Croix, Pierce
95-6	Lower Little Wolf	Waupaca
95-7	Pine & Willow Rivers	Waushara, Winnebago

Year Selected- Map Number	Small-scale Priority Watershed Project	County(ies)
SS-1	Bass Lake ♦	Marinette
SS-90-1	Dunlap Creek	Dane
SS-90-2	Loves Creek	Eau Claire
SS-90-3	Port Edwards - Groundwater Prototype	Wood
SS-91-1	Whittlesey Creek	Bayfield
SS-91-2	Spring Creek	Rock
SS-94-1	Osceola Creek	Polk

Year Selected- Map Number	Priority Lake Project	County(ies)
PL-90-1	Minocqua Lake	Oneida
PL-90-2	Lake Tomah	Monroe
PL-91-1	Little Muskego, Big Muskego, Wind Lakes	Waukesha, Racine, Milwaukee
PL-92-1	Lake Noquebay	Marinette
PL-92-2	Lake Ripley	Jefferson
PL-93-1	Camp/Center Lakes	Kenosha
PL-93-2	Lake Mendota	Dane, Columbia
PL-93-3	Hillsboro	Vernon
PL-94-1	St. Croix County Lakes Cluster	St. Croix
PL-94-2	Upper St. Croix/Eau Claire River	Douglas
PL-95-1	Big Wood Lake	Burnett, Polk
PL-95-2	Rock Lake	Jefferson
PL-95-3	Horse Creek	Polk, St. Croix

♦ Project completed

† Sixmile-Pheasant Branch is being redone as part of the Lake Mendota project (PL-93-2).

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# Regional Planning Commissions

- The Wisconsin Regional Planning Commissions are designated as area-wide or metropolitan planning agencies for the U.S. Department of Housing and Urban Development for purposes of housing and land use planning.

## **Bay Lake Regional Planning Commission**

Suite 211, Old Fort Square

211 N. Broadway

Green Bay, WI 54303

920/448-2820; Fax: 920/448-2823

- Provides technical assistance to coastal communities, develops Sewer Service Area Plans, reviews permit requests, and develops water regulations and zoning ordinances for communities.
- Serves the following counties: Brown, Door, Florence, Kewaunee, Manitowoc, Marinette, Oconto, and Sheboygan

## **East Central Wisconsin Regional Planning Commission**

132 Main St.

Menasha, WI 54952

920/751-4770; Fax: 920/751-4771

- Serves the following counties: Calumet, Fond du Lac, Green Lake, Marquette, Outagamie, Shawano, Waupaca, Waushara, and Winnebago

## **Mississippi River Regional Planning Commission**

1701 Main St.

LaCrosse, WI 54601

608/785-9396; Fax: 608/785-9394

- Serves the following counties: Buffalo, Crawford, Jackson, LaCrosse, Monroe, Pepin, Pierce, Trempealeau, and Vernon.

## **North Central Regional Planning Commission**

407 Grant St.

Wausau, WI 54403-4783

715/845-4208; Fax: 715/843-1267

- Serves the following counties: Adams, Forest, Juneau, Langlade, Lincoln, Marathon, Oneida, Portage, Vilas, and Wood

## **Northwest Regional Planning Commission**

1400 S. River St.

Spooner, WI 54801

715/635-2197; Fax: 715/635-7262

- Serves these counties: Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer, Taylor, and Washburn

## **Southeastern Wisconsin Regional Planning Commission**

916 N. East Ave.

P.O. Box 1607

Waukesha, WI 53187-1607

414/547-6721; Fax: 414/547-1103

- Serves the following counties: Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha

## **Southwestern Wisconsin Regional Planning Commission**

426 Karrmann Library

Platteville, WI 53818

608/342-1214; Fax: 608/342-1220

- Serves the following counties: Grant, Green, Iowa, Lafayette, and Richland

## **West Central Regional Planning Commission**

800 Wisconsin St., Mail Box 9

Eau Claire, WI 54703-3606

715/836-2918

- Serves these counties: Barron, Chippewa, Clark, Dunn, Eau Claire, Polk, and St. Croix

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# University of Wisconsin- Extension Cooperative Extension District & County Offices

- Educational and informational assistance to citizens on a broad variety of topics related to water quality protection
- Refer to District Map below

## Central District

105 Delzell Hall  
UW-Stevens Point  
Stevens Point, WI 54481-3897  
715/346-2760; Fax: 715/346-4260

## Northeast District

IS-1138  
UW-Green Bay  
Green Bay, WI 54301-7001  
920/465-2147; Fax: 920/465-2032

*Urban Water Quality Educator, CES 317*  
920/465-2240; Fax: 920/465-2376

## Northern District

702 Front St.  
Spooner, WI 54801  
715/635-9190; Fax: 715/635-9172

## Southeast District

161 W. Wisconsin Ave., Suite 6000  
Milwaukee, WI 53203-2602  
414/227-3175; Fax: 414/227-3165

*Area and Urban Water Quality Educators*  
State Fair Youth Center  
640 South 84th St.  
Milwaukee, WI 53214-1438  
414/290-2430 & 2431; Fax: 414/290-2424

## Southern District

505 Extension Bldg.  
432 North Lake St.  
Madison, WI 53706-1498  
608/263-2781; Fax: 608/262-9166

## *Area Water Quality Educator*

Environmental Resources Center  
216 Agriculture Hall, 1450 Linden Dr.  
Madison, WI 53706  
608/265-3257; Fax: 608/262-2031

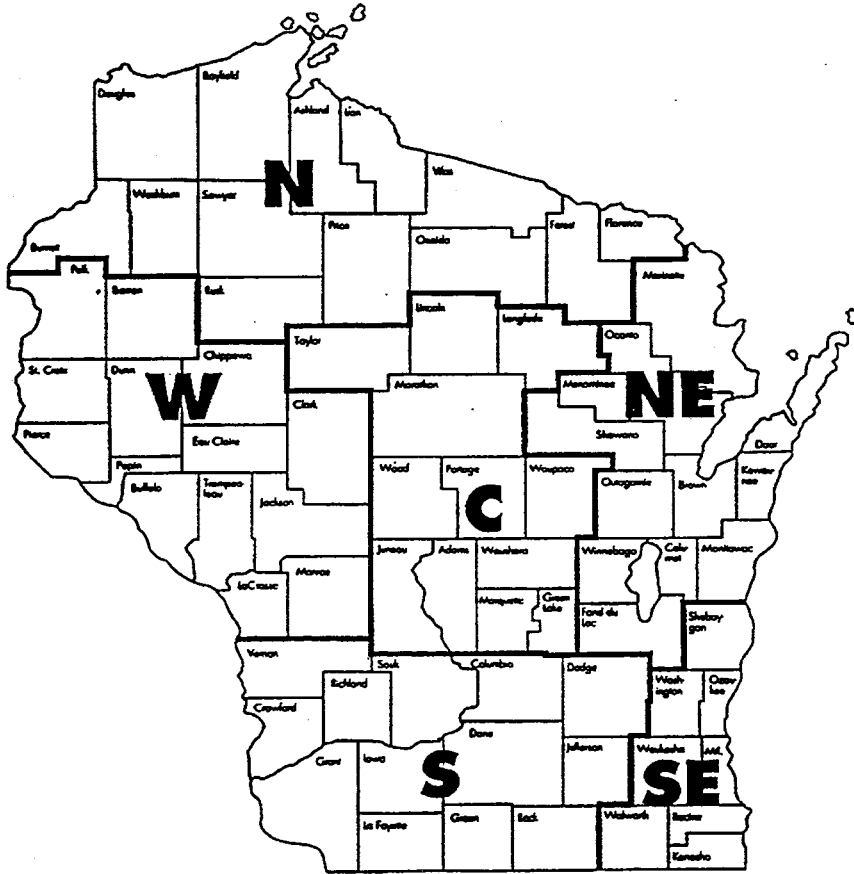
## Western District

Rm. 104, 400 Hewett St.  
Neillsville, WI 54456  
715/743-5420; Fax: 715/743-5422

## *Area Water Quality Educator*

Phillips Hall, Rm. 149  
UW-Eau Claire  
Eau Claire, WI 54702  
715/836-5513; Fax: 715/836-2380

## Cooperative Extension Districts



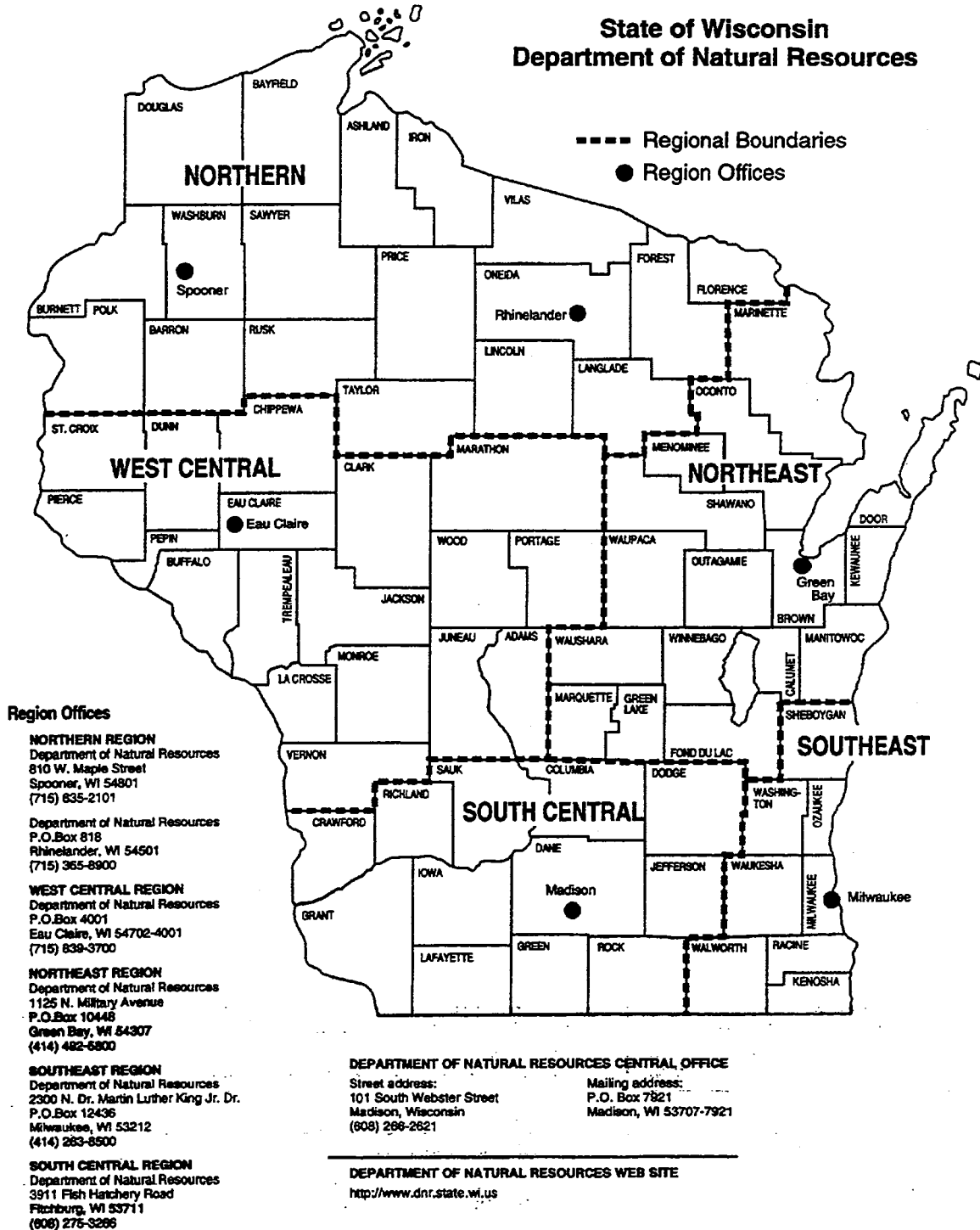
# University of Wisconsin-Extension Cooperative Extension County Offices

COUNTY	TELEPHONE #	ADDRESS
Adams	608/339-4237	Box 489, Adams, 53910
Ashland	715/682-7017	Rm. 107 Courthouse, Ashland, 54806
Barron	715/537-6250	Courthouse, Barron, 54812
Bayfield	715/373-6104	117 E. 5th St., Washburn, 54891
Brown	920/391-4610	1150 Bellevue, Green Bay, 54302
Buffalo	608/685-6256	Box 276, Alma, 54610
Burnett	715/349-2151	7410 Co. K, Siren, 54872
Calumet	920/849-1450	Courthouse, Chilton, 53014
Chippewa	715/726-7950	711 N. Bridge, Chippewa Falls, 54729
Clark	715/743-5121	Box 68 Courthouse, Neillsville, 54456
Columbia	608/742-9680	Box 567 Co. Ag. Center, Portage, 53901
Crawford	608/326-0223	111 W Dunn, Prairie Du Chien, 53821
Dane	608/266-4271	57 Fairgrounds Dr., Madison, 53713
Dodge	920/386-3790	Cty. Office Bldg., Juneau, 53039
Door	920/743-5511	Box 670 Courthouse, Sturgeon Bay, 54235
Douglas	715/394-0363	Rm. 107 Courthouse, Superior, 54880

Dunn	715/232-1636	Ag. Center, 390 Red Cedar St., Menomonie, 54751
Eau Claire	715/839-4712	227 1st St. W, Altoona, 54720
Florence	715/528-4480	Hc1 Box 82a, Florence, 54121
Fond Du Lac	920/929-3170	400 Campus Dr., Fond Du Lac, 54935
Forest	715/478-2212	Courthouse, 200 E Madison, Crandon, 54520
Grant	608/723-2125	Box 31, 916 E Elm, Lancaster, 53813
Green	608/328-9440	N3150b, Hwy. 81, Monroe, 53566
Green Lake	*414/294-4032	492 Hill St., Courthouse, Green Lake, 54941
Iowa	608/935-3354	216 N Iowa St., Dodgeville, 53533
Iron	715/561-2695	Courthouse, 300 Taconite St., Hurley, 54534
Jackson	715/284-4257	227 S. 11th St., Black River Falls, 54615
Jefferson	414/674-7295	Courthouse, 320 S. Main, Jefferson, 53549
Juneau	608/847-9329	Courthouse, 200 E. State St., Mauston, 53948
Kenosha	414/857-6466	Box 550, 19600 E 8th St., Bristol 53104
Kewaunee	920/388-4410	Courthouse, 613 Dodge St., Kewaunee, 54216
La Crosse	608/785-9593	300 N 4th St., Lacrosse, 54601
Lafayette	608/776-4820	Ag. Center, 627 Washington, Darlington, 53530
Langlade	715/627-6236	Box 460, 1575 Neva Rd., Antigo, 54409
Lincoln	715/536-0304	Box 917, 1106 E 8th St., Merrill, 54452
Manitowoc	920/683-4167	1701 Michigan, Manitowoc, 54220
Marathon	715/847-5433	Courthouse, 500 Forest, Wausau, 54403
Marinette	715/732-7510	Box 320 Courthouse, 1926 Hall Ave., Marinette, 54143
Marquette	608/297-9153	Box 338 Co. Service Center, Montello, 53949
Menominee	715/779-4654	Box 729 Courthouse, Keshena, 54135
Milwaukee	414/290-2400	State Fair Youth Ctr., 640 S. 84th St., Milwaukee, 53214
Monroe	608/269-8722	Box 309 Courthouse, 112 S Court St., Sparta, 54656
Oconto	920/834-6845	300 Washington, Courthouse, Oconto, 54153
Oneida	715/369-6160	Box 1208 Airport, Rhinelander, 54501
Outagamie	920/832-5119	3365 W Brewster St., Appleton, 54911
Ozaukee	414/284-8288	Box 994 Courthouse, Pt Washington, 53074
Pepin	715/672-5214	Box 39 Cty. Gov. Ctr., 740 7th Ave. W, Durand, 54736
Pierce	715/273-3531x243	Box 69 Pierce Office Bldg, 412 W Kinne, Ellsworth, 54011
Polk	715/485-3136	Box 160 Ag. Center, 215 Main St., Balsam Lake, 54810
Portage	715/346-1316	County City. Bldg., 1516 Church St., Stevens Point, 54481
Price	715/339-2555	Normal Bldg. Rm. 240, 104 S. Eyder, Phillips, 54555
Racine	414/886-8460	14200 Washington, Sturtevant, 53177
Richland	608/647-6148	1100 Hwy. 14 W, Richland Center, 53581
Rock	608/757-5696	Courthouse, 51 S Main, Janesville, 53545
Rusk	715/532-2151	Courthouse, 311 Miner Ave. E, Ladysmith, 54848
St Croix	715/684-3301	Box 6 Ag. Center, Baldwin, 54002
Sauk	608/355-3250	505 Broadway, Baraboo, 53913
Sawyer	715/634-4839	Box 351 Courthouse, Hayward, 54843
Shawano	715/526-6136	Courthouse, 311 N Main, Shawano, 54166
Sheboygan	920/467-5740	650 Forest Ave., Sheboygan Falls, 53085
Taylor	715/748-3327	925 Donald St., Medford, 54451
Trempealeau	715/538-2311	Box 67 Courthouse, Whitehall, 54773
Vernon	608/637-2165	Box 392, Viroqua, 54665
Vilas	715/479-3648	Box 369 Courthouse, Eagle River, 54521
Walworth	414/741-3190	W3929 Cty. Rd. Nn, Elkhorn, 53121
Washburn	715/635-3192	850 W Beaverbrook Ave., Spooner, 54801
Washington	414/335-4480	333 E Washington, West Bend, 53095
Waukesha	414/548-7770	1320 Pewaukee Rd., Waukesha, 53186
Waupaca	715/258-6230	Courthouse, 811 Harding St., Waupaca, 54981
Waushara	920/787-4631x220	Box 487 Courthouse, Wautoma, 54982
Winnebago	920/424-0050	500 E Cty. Rd. Y, Oshkosh, 54901
Wood	715/421-8440	Box 8095 Courthouse, Wi. Rapids, 54495

\*These (414) area code • may be changing to (920)

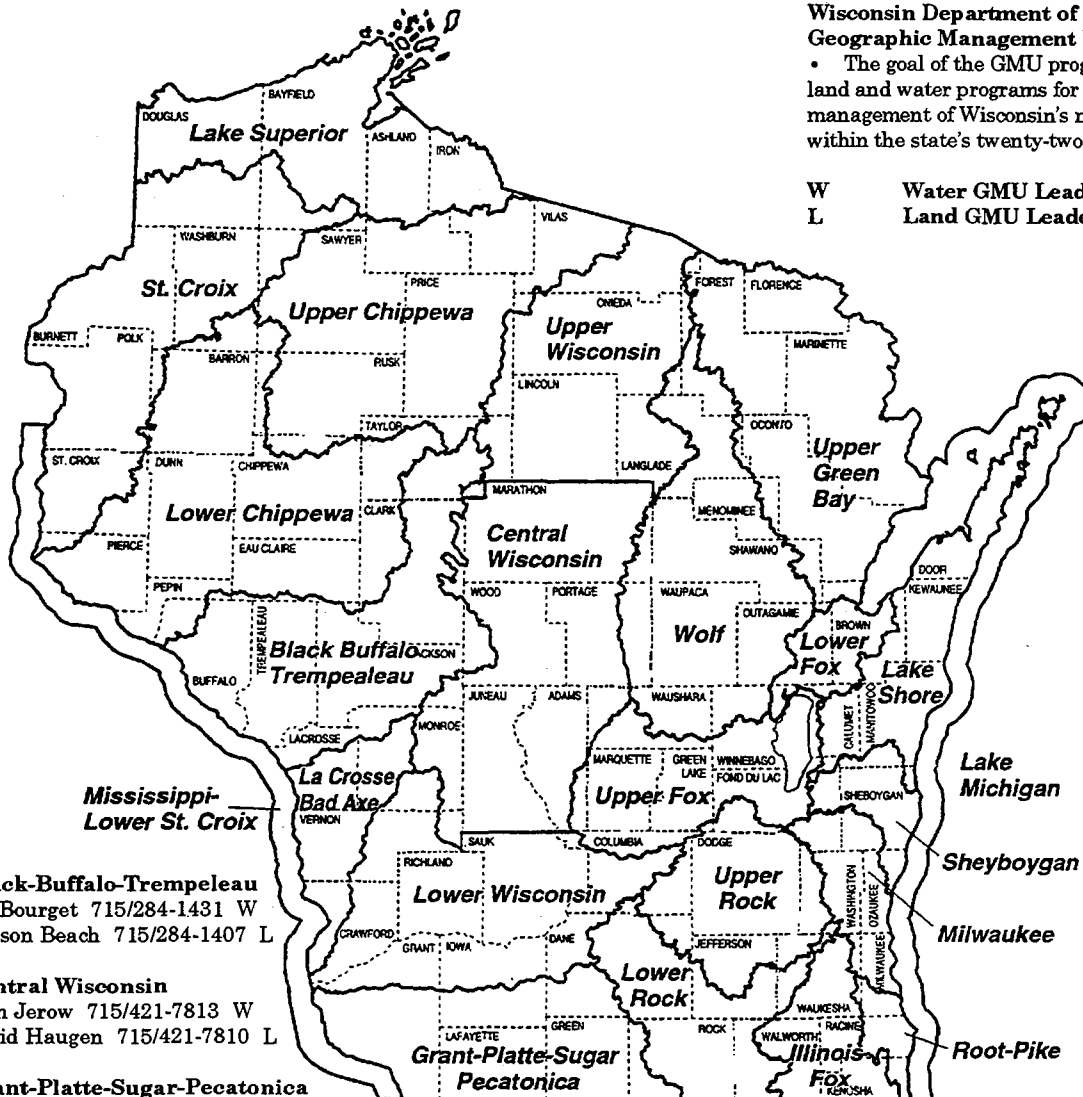
# Wisconsin Department of Natural Resources Regional & Geographic Management Unit (GMU) Offices





Wisconsin Department of Natural Resources  
 Geographic Management Unit (GMU) Offices  
 • The goal of the GMU programs is to integrate land and water programs for successful management of Wisconsin's natural resources within the state's twenty-two major water basins.

W Water GMU Leaders  
 L Land GMU Leaders



**Black-Buffalo-Trempealeau**  
 Ed Bourget 715/284-1431 W  
 Allison Beach 715/284-1407 L

**Central Wisconsin**  
 Tom Jerow 715/421-7813 W  
 Arvid Haugen 715/421-7810 L

**Grant-Platte-Sugar-Pecatonica**  
 Robert Hansis 608/275-3304 W  
 Carl Batha 608/275-3248 L

**Illinois-Fox**  
 Greg Pilarski 414/229-0866 W

**La Crosse-Bad Axe**  
 Craig Thompson 608/785-9014 W

**Lake Shore**  
 Ron Fassbender 920/746-2875 W  
 Arnie Lindauer 920/746-2867 L

**Lake Superior**  
 Ted Smith 715/635-4071 W  
 Bob Gothblad 715/635-4056 L

**Lower Chippewa**  
 John Paddock 715/839-3727 W  
 Bob Michelson 715/839-3736 L

**Lower Fox**  
 Robert Behrens 920/492-5872 W  
 Arnie Lindauer 920/746-2867 L

**Lower Rock**  
 Ken Johnson 608/275-3243 W  
 Susan Oshman 608/275-3250 L

**Lower Wisconsin**  
 Tom Bainbridge 608/275-3279 W

**Milwaukee**  
 Sharon Gayan 414/263-8707 W  
 Frank Trcka 414/263-8615 L

**Mississippi-Lower St. Croix**  
 Terry Moe 608/785-9004 W

**Root-Pike**  
 Mike Luba 414/263-8694 W

**Sheboygan**  
 Chip Krohn 414/229-0862 W  
 Frank Trcka 414/263-8615 L

**St. Croix**  
 John Gozdziński 715/635-4055 W  
 B. Moss 715/635-4154 L

**Upper Chippewa**  
 Bruce Swanson W  
 Connie Antonuk 715/762-4684 x122 L

**Upper Fox**  
 Rob McLennan 920 or 414/492-5906 W  
 Cheryl Rezabek 920 or 414/424-4003 L

**Upper Green Bay**  
 Doug Rossberg 715/582-5022 W  
 Joseph Haug 715/582-5025 L

**Upper Rock**  
 Jim Congdon 414/387-7872 W  
 Tim Galvin 414/387-7875 L

**Upper Wisconsin**  
 Tom Bashaw 715/365-8973 W

**Wolf**  
 Dan Helf 920 or 414/492-5841

# Recommended Wisconsin Resources for Project WET Activities

In this section, each Project WET activity is listed with suggested Wisconsin resources to help you localize these national activities. The resources listed below can be found in the *Resources* and *Organizations* sections. In the *Resources* section, you will find descriptions and ordering information for each publication. Organization descriptions and contacts are provided in the *Organizations* section. Ideas for local adaptations to the national activities are included in some cases. A few of the Project WET activities listed below do not have resources recommended for them because the subject matter is too general (e.g. osmosis, diffusion, density). For national references, check the 'Resource' section at the end of each activity in the *Project WET Curriculum and Activity Guide*.

The activities that follow are in the same order as can be found in the *Project WET Curriculum and Activity Guide*. The teaching strategies section precedes the activities that are organized by topic.

**Abbreviations:**

- CNRD            Community, Natural Resources and Economic Development county agents with UW-Extension Cooperative Extension
- DNR            Department of Natural Resources
- GMU            Geographic Management Unit of the DNR, there are twenty two GMU offices in the state
- EPA            Environmental Protection Agency
- UW-Extension    University of Wisconsin-Extension
- 4-H            Youth development county agents with UW-Extension Cooperative Extension

## **Project WET Activities**

### **Teaching Strategies**

Project WET Guide Page #

**Check It Out!**.....3  
*Explore a variety of performance assessment strategies*

- Resources:
- Wisconsin State Standards for Science and Social Studies
  - State performance tests for 4th, 8th, and 10th grades

- Organizations:
- Wisconsin Department of Public Instruction

**Idea Pools**.....7  
*Become familiar with pre-assessment strategies*

**Let's Work Together**.....9  
*Use cooperative learning strategies*

**Water Actions**.....12  
*Propose, analyze, and implement action strategies*

- Resources:
- Save Wisconsin's Water: *Making Every Drop Count*
  - Testing the Waters program (Riveredge Nature Center)
  - *Water Activities to Encourage Responsibility*
  - *Waterwatchers Guide for Dane County*
  - See "Lakes," "Watersheds," and "Water Quality" in the *Resources* section for more information

- Organizations:
- Adopt-A-Lake
  - Adopt-A-Stream
  - Water Action Volunteers (WAV)

- Project WET Guide Page #
- Give Water A Hand
  - Global Rivers Environmental Education Network (GREEN)

**Water Log.....19**  
*Assess student learning through a journal or portfolio*

Resources (check your local library for these resources):

- *A Sand County Almanac* and *Round River* by Aldo Leopold
- *My Double Life* by Frances Hamerstrom
- *Reflections from the North Country, Singing Wilderness*, and *Songs of the North* by Sigurd Olson
- *Those of the Forest* by Wallace Grange (written from the perspective of a snowshoe hare)
- Local writers

## Water has unique physical and chemical characteristics

**Adventures in Density.....25**  
*Experiment with density and explore examples of density in classic literature*

- Relate the activity to Wisconsin’s glacial geology and Ice Age history

Organizations:

- Wisconsin Geological and Natural History Survey

**H2O Olympics.....30**  
*Compete in a water olympics to investigate adhesion and cohesion*

- As “Making Connections,” or “Extension” activities, use local or statewide water-related winter sports (e.g. Badger State Winter Games in north central Wisconsin, Birkebeiner in Hayward, ice fishing, ice hockey, etc.)

**Hangin’ Together.....35**  
*Mimic hydrogen bonding in surface tension, ice formation, evaporation, and solutions*

Project WET Guide Page #

**Is There Water on Zork?.....43**  
*Test the properties of water*

**Molecules in Motion.....47**  
*Simulate molecular movement in water’s three states*

**Water Match.....50**  
*Match water picture cards and discover the three states of water*

**What’s the Solution?.....54**  
*Solve a crime while investigating the dissolving power of water*

## Water is essential for all life to exist

**Aqua Bodies.....63**  
*Estimate the amount of water in a person, a cactus, or a whale*

- In Part III have students choose plants or animals found in Wisconsin

Resources:

- Plant and animal fact sheets from DNR Bureau of Wildlife Management and Bureau of Fisheries Management and Habitat Protection can be used for information and photographs
- *Wisconsin Natural Resources* magazine
- See “Impact of Water Quality on Plant and Animal Communities” in the *Resources* section for more information

**Aqua Notes.....66**  
*Sing to discover how the human body uses water*

- Create your own songs about Wisconsin’s waterways or aquatic species
- Adapt environmental songwriter’s music to your region (i.e. Ken Lonquist, Billy B’s “Romp in the Swamp,” Ann Bailey’s “Excuse Me, Sir, That’s My Aquifer!”)

**Let’s Even Things Out.....72**  
*Demonstrate osmosis and diffusion*

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**The Life Box.....76**  
*Discover the elements essential to life*

**Life in the Fast Lane.....79**  
*Explore temporary wetlands*

Resources:

- Ephemeral ponds information. Contact your DNR Regional or GMU office

**No Bellyachers.....85**  
*Show how pathogens are transmitted by water by playing a game of tag*

Resources:

- *Cryptosporidium Species Oocyst and Giardia Species Oocyst*
- Fact sheet series (Department of Health and Family Services, Bureau of Public Health)
- See “Drinking Water Diseases” in *Resources* section for further information

Organizations:

- County Health and Human Services Department
- Division of Health and Family Services, Bureau of Public Health

**People of the Bog.....89**  
*Construct a classroom bog*

Resources:

- Wisconsin bogs information, contact your regional DNR office

**Poison Pump.....93**  
*Solve a mystery about a waterborne disease*

- Create victim cards which reflect Wisconsin waterborne diseases and scenarios

Resources:

- *Cryptosporidium Species Oocyst and Giardia Species Oocyst*
- Fact sheet series (Bureau of Public Health)
- See “Drinking Water Diseases” in *Resources* section for further information

Organizations:

- County Health and Human Services

**Project WET Guide Page #**

Department

- Division of Health and Family Services, Bureau of Public Health

**Salt Marsh Players.....99**  
*Role-play organisms adapted to life in a salt marsh*

**Super Sleuths.....107**  
*Search for others who share similar symptoms of a waterborne disease*

- Create case study and symptom cards which reflect Wisconsin waterborne diseases and scenarios

Resources:

- *Cryptosporidium Species Oocyst and Giardia Species Oocyst*
- Fact sheet series (Bureau of Public Health)
- See “Drinking Water Diseases” in *Resources* section for further information

Organizations:

- County Health and Human Services Department
- Division of Health and Family Services, Bureau of Public Health

**Thirsty Plants.....116**  
*Demonstrate transpiration and conduct a field study*

Organizations:

- Contact local xeriscape or native plant landscape companies for information
- UW-Extension
  - ◊ Home Page
  - ◊ Cooperative Extension county offices

**Water Address.....122**  
*Analyze clues to match organisms with water-related adaptations*

- Create water address cards for species found in your region (see “Water Address” activity adaptation in this *Supplement*)

Resources:

- *Aquatic Insects of Wisconsin*

- Plant and animal fact sheets from DNR Bureau of Wildlife Management and Bureau of Fisheries Management and Habitat Protection
- *Through the Looking Glass: A Field Guide to Aquatic Plants*
- *Wisconsin Fishing*
- See "Impact of Water Quality on Plant and Animal Communities" in *Resources* section for more information

**Organizations:**

- DNR Regional and GMU offices
- Local County, State or National Park/Forest
- U.S. Fish and Wildlife Service offices



4-H members present their Lake Tomah Watershed model at the 1996 Wisconsin Lakes Convention.

## Water connects all Earth systems

### **Branching Out! .....129** *Construct a watershed model*

**Resources:**

- Map of Priority Watershed Projects
- Maps: relief map of Wisconsin, hydrologic unit maps, and topographic maps of each county and sub-region of Wisconsin (Wisconsin Geological and Natural History Survey)
- Watershed in a Box (model)
- *What is a Watershed?*
- See "Watersheds" in *Resources* section for

more information

**Organizations:**

- DNR Regional and GMU offices
- Land Conservation Department (watershed specialists)
- Priority Watershed Projects for local watershed information and field trip opportunities
- UW-Extension (watershed educators, basin educators)
- Wisconsin Geological and Natural History Survey, Map and Publication Sales Office

### **Capture, Store, and Release.....133**

*Use a household sponge to demonstrate how wetlands get wet and how they contribute to a watershed*

**Resources:**

- *An Introduction to Wisconsin Wetlands*
- *Enviroscape Wetland Model*
- *Wetland Functional Values Inventory*
- *Wetlands, Wonderlands*
- See "Wetlands" in *Resources* section for more information.

**Organizations:**

- DNR
  - ◊ Bureau of Watershed Management, Lakes and Wetlands Section
  - ◊ Regional and GMU offices
- Wisconsin Wetlands Association

### **Get the Ground Water Picture.....136**

*Create an "earth window" to investigate ground-water systems*

**Resources:**

- Groundwater Investigation Kit
- *Groundwater Study Guide*
- Groundwater Flow Demonstration (model and guide)
- See "Groundwater" in *Resources* section for more information

**Organizations:**

- Central Wisconsin Groundwater Center
- DNR, Bureau of Drinking Water and Groundwater

- Project WET Guide Page #
- U.S. Geological Survey, Wisconsin District Office or Field Offices
  - Wisconsin Geological and Natural History Survey

**Geyser Guts.....144**  
*Demonstrate the workings of a geyser*

**The Great Stony Brook.....150**  
*Create layers of buried fossils and read a great stony book*

Resources:

- *Fossil Collecting in Wisconsin* (Wisconsin Geological and Natural History Survey )

**A House of Seasons.....155**  
*Create a collage that peeks through a "window" to reveal the role of water in each season*

- Use pictures from Wisconsin publications such as: Wisconsin Natural Resources magazine (DNR Bureau of Communication and Education), organization newsletters, etc. (see "Statewide Water-Related Organizations" in *Organizations* section for other sources)

**Imagine! .....157**  
*Imagine a water molecule on its water journey*

- Substitute local waterways for the activity's river, streams, lake, and reservoir
- Activity "Extension": Create your own water journey starting as a water vapor molecule that condenses to a raindrop then lands in a nearby creek then flows to the Mississippi River or one of the Great Lakes (depending on your watershed) then to another Great Lake or the Gulf of Mexico (from the Mississippi River) back to a rain cloud heading east, and so on (refer to state and U.S. maps).

**The Incredible Journey.....161**  
*Simulate the movement of water through Earth's systems*

- Change some stations to local waterways in your region

Project WET Guide Page #

**Just Passing Through .....166**  
*Mimic the movement of water down a slope*

These publications will help in discussing the difference that plants can make in controlling soil erosion:

- *Beneficial Landscape Practices*
- *Erosion Control for Home Builders*
- *Shoreline Plants and Landscaping*
- See "Stormwater Management" and "Residential Homeowners" in the *Resources* section for more information

Organizations:

- Land Conservation Department county offices
- UW-Extension Cooperative Extension county offices

**Old Water.....171**  
*Create a mural that relates events to the age of Earth, water, and life*

- In the activity "Extension" section on page 173 of "Old Water," highlight human water uses in Wisconsin over time. You could focus on the Wisconsin River, the Great Lakes, or a local lake or river

Resources:

- *Wisconsin: A History*
- *Wisconsin Blue Book*
- *Wisconsin River of History*
- See "Cultural and Historical Uses" in the *Resources* section for more information

Organizations:

- County or local historical society
- State Historical Society

**Piece it Together.....174**  
*Explore global climates and their influence on lifestyles*

- Focus on Wisconsin weather patterns and effects on present and past human and wildlife lifestyles (e.g. cold, lots of snow, frozen waterways, floods on Mississippi River, etc.). Explore how these weather-related changes affect travel, finding food, and types of shelter of past and present Wisconsin

residents.

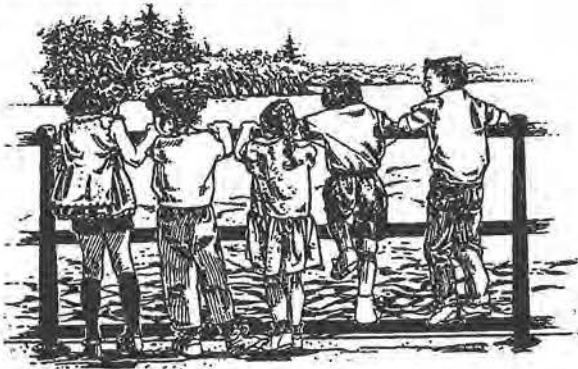
- Investigate Wisconsin cultures and their lifestyles related to the state's weather patterns (e.g. Chippewa, Menominee, German, Norwegian, Polish, etc.)

Resources:

- *Of Time and the River*
- *Voyageur: Northeast Wisconsin's Historical Review*
- *Wisconsin: A History*
- See "Cultural and Historical Uses" in the *Resources* section for more information

Organizations:

- County or local historical society
- State Historical Society



**Poetic Precipitation.....182**

*Simulate cloud formation and express feelings toward precipitation through poetry*

- Focus on snow (different forms of snow, how students feel about snow during fall months vs. winter months, etc.)

**Rainy-Day Hike.....186**

*Explore schoolyard topography and its effect on the watershed*

Resources:

- *Beneficial Landscape Practices*
- Envirocape Runoff Pollution Model
- *Rethinking Yard Care*
- Soil Erosion Boxes (model)
- *Stormwater Runoff*
- Topographic and hydrologic unit maps (Wisconsin Geological and Natural History Survey)

- See "Watersheds," "Stormwater Management," and "Residential Homeowners" in the *Resources* section for more information

Organizations:

- Land Conservation Department county offices (watershed specialists)
- UW-Extension (watershed educators, basin educators)
- Wisconsin Geological and Natural History Survey, Map and Publication Sales Office

**Stream Sense.....191**

*Develop sensory awareness of a stream*

Resources:

- *Getting to Know Your Streams*
- *Key to Macroinvertebrate Life in the River*
- Stream Investigation Kit
- *Through the Looking Glass: A Field Guide to Aquatic Plants*
- *Water Action Volunteers: Introductory, Hands-on Stream and River Projects for Wisconsin*
- See "Rivers and Streams" in the *Resources* section for more information

Organizations:

- The River Alliance of Wisconsin, contact for local river organizations
- UW-Extension Cooperative Extension county agents
- Water Action Volunteers (WAV), contact for local volunteer projects

**The Thunderstorm.....196**

*Simulate the sounds of a thunderstorm and create precipitation maps*

Create local precipitation maps by contacting:

- Local news station weather specialists
- State or local weather service

Activity Extension:

- Have students compare annual rainfall/snowfall in Wisconsin with other states such as Arizona, Washington, Alabama, Maine and Florida using national resources such as USA Today, the Internet, and the Farmers' Almanac.

**Water Models.....201**  
*Construct models of the water cycle and adapt them for different biomes*

- Adapt the model to Wisconsin or your region. For example, Great Lakes evaporation could become condensation on farm fields in eastern Wisconsin, etc.

## Resources:

- Hydrologic unit maps, topographic relief map of Wisconsin, and information on the hydrology of Wisconsin counties (Wisconsin Geological and Natural History Survey)

## Organizations:

- UW-Extension Cooperative Extension county offices
- Wisconsin Geological and Natural History Survey

**Wet Vacation.....206**  
*Plot data to determine weather patterns and design appealing travel brochures*

- Brochures from Department of Tourism or local Chamber of Commerce for various Wisconsin vacation spots
- Local news station weather specialists
- State or local weather service

**Wetland Soils in Living Color.....212**  
*Classify soil types using a simple color key*

## Resources:

- State and county soils map (Land Conservation Department county offices)
- Topographic maps, wetlands are marked with a symbol

## Organizations:

- DNR
  - ◊ Bureau of Watershed Management, Lakes and Wetlands Section
  - ◊ Regional and GMU offices
- Natural Resources Conservation Service field offices
- Wisconsin Geological and Natural History Survey Map and Publications Sales office
- Wisconsin Wetlands Association

**Water is a Natural Resource**

**A-maze-ing Water.....219**  
*Negotiate a maze to investigate nonpoint source pollution*

## Resources:

- *A Tale of One City*
- EnviroScape Runoff Pollution Model
- *Impacts of Stormwater Runoff on Urban Streams*
- *It All Adds Up*
- *Storm Sewers: The Rivers Beneath Our Feet*
- *Urban Runoff: How Polluted is it?*
- Urban Runoff Model

## Organizations:

- DNR Bureau of Watershed Management, Nonpoint Source Program
- Priority Watershed Projects
- UW-Extension (water educators and basin educators)
- See "Nonpoint Source Pollution" and "Urban Water Issues" in the *Resources* section for more information

**Color Me a Watershed.....223**  
*Interpret maps to analyze changes in a watershed*

- Design the activity for your own watershed (see "Color Me a Watershed" activity adaptation in this *Supplement*)

## Resources:

- Basin Water Quality Management Plan
- Hydrologic unit maps of 12 major water basins in the state (Wisconsin Geological and Natural History Survey)
- Priority Watershed Project Plans and Reports
- See "Watersheds" in the *Resources* section for more information

## Organizations:

- Land Conservation Department county offices
- UW-Extension Cooperative Extension county offices
- DNR Basin Office
- Priority Watershed Projects



Project WET Guide Page #

**Common Water.....232**  
*Demonstrate that water is a shared resource*

- Design the activity for your own community (see “Common Water” activity adaptation in this *Supplement*)
- Investigate water use in your area (refer to local newspapers, Chamber of Commerce, and community members)
- See “Water Uses” in the *Resources* section for more information



**A Drop in the Bucket.....238**  
*Calculate the availability of fresh water on Earth*

**Energetic Water.....242**  
*Design devices to make water do work*

Resources:

- Investigate dams in your region or on the Wisconsin River
- *Wisconsin River of History*
- See “Cultural and Historical Uses” in the *Resources* section for more resources

Organizations:

- County Public Works office
- DNR Regional and GMU offices

**Great Water Journeys.....246**  
*Use clues to track great water journeys of plants, people, and other animals on a map*

- Create cards for Wisconsin water journeys of Native Americans, explorers, and voyageurs (use a state map)
- See “Cultural and Historical Uses” in the *Resources* section for more information

Project WET Guide Page #

Organizations:

- County or local historical society
- Department of Tourism
- Local library

**Irrigation Interpretation.....254**  
*Model different irrigation systems*

Resources:

- *Best Management Practices for Wisconsin Farms*
- See “Agricultural Management Practices” in the *Resources* section for more information

Organizations:

- Center for Integrated Agricultural Systems
- Land Conservation Department county offices
- Natural Resources Conservation Service field offices
- UW-Extension Cooperative Extension county offices

**The Long Haul.....260**  
*Haul water to appreciate the amount of water used daily*

- Investigate local average daily water use
- Research historical water use and methods of transport
- See “Water Uses” in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department
- DNR Regional and GMU offices, water supply staff

**Nature Rules! .....262**  
*Write news stories based on natural, water-related disasters*

Resources:

- *Mississippi Blues*
- See “Mississippi River” in the *Resources* section for more information

## Organizations:

- Environmental Management Technical Center for Mississippi River information
- Local newspaper for natural disaster stories
- State or local historical society for photos or old articles
- U.S. Army Corps of Engineers for Mississippi River flood information
- U.S. Geological Survey for streamflow and flood information

**Sum of the Parts.....267***Demonstrate nonpoint source pollution*

- Design the activity for a local waterway (see "Sum of the Parts" activity adaptation in this *Supplement*)
- Investigate local land uses by using plat maps, aerial photos, and local maps
- Activity Extension: develop a watershed management plan for your watershed
  - *Waterwatchers Guide for Dane County*
  - *A Tale of One City*

## Resources:

- *Brown Water, Green Weeds*
- *Coon's Creek Contribution* (video)
- EnviroScape Runoff Pollution Model
- *It All Adds Up*
- *Keeping Current* and *Fields and Streets* newsletters
- See "Nonpoint Source Pollution," "Stormwater Management," "Watersheds," and "Residential Homeowners" in the *Resources* section for more information

## Organizations:

- Contact county Planning and Zoning office for county land use plans
- DNR Bureau of Watershed Management, Nonpoint Source Program
- Priority Watershed Projects
- UW-Extension (water educators and basin educators)

**Water Meter.....271***Construct a water meter and keep track of personal water use*

## Resources:

- *Save Wisconsin's Water*
- *Water Activities to Encourage Responsibility*
- See "Lifestyle and Water Conservation" in the *Resources* section for more information

## Organizations:

- County public works or utilities office
- DNR Regional and GMU offices
- UW-Extension
  - ◊ Cooperative Extension county offices (4-H and CNRD agents)
  - ◊ Environmental Resources Center

**Water Works.....274***Create a web of water users*

## Resources:

- For a list of local businesses, contact local Chamber of Commerce
- For a list of local industries, contact Wisconsin Manufacturers and Commerce
- See "Water Uses" in the *Resources* section for more information

## Organizations:

- DNR Regional and GMU offices
- UW-Extension Cooperative Extension county offices (4-H and CNRD agents)

**Where Are the Frogs? .....279***Run a simulation and experiment to understand the effects of acid rain*

## Resources:

- *A Status Report of Acid Rain Research in Wisconsin*
- Acid Rain in Wisconsin (fact sheet series):
  - ◊ *Acid Precipitation's Impact on Materials, Visibility and Human Health*
  - ◊ *Acid Rain: Impact on Aquatic Organisms Other Than Fish*
  - ◊ *Acid Rain: Potential Effects of Acidic Deposition on Forest Soil Biology*
  - ◊ *Can Acid Rain Damage Lakes in Wisconsin?*
  - ◊ *Forest Impacts: Acid Rain, Air Pollutants and Other Stress Factors*
  - ◊ *Wisconsin Fisheries and Acid Rain*
  - ◊ *Wisconsin's Sensitivity to Acid Rain*

Project WET Guide Page #

- ◊ 1000 Friends of Frogs web site:  
cgee.hamline.edu./frogs./index.html
- See "Acid Deposition" in the *Resources* section for more information

**Organizations:**

- DNR Regional and GMU offices
- Internet site: <http://www>.
- UW-Madison Center for Limnology
- Wisconsin Acid Deposition Council



**A group of students investigate aquatic macroinvertebrates at the 1996 Wisconsin Lakes Convention.**

## Water Resources are Managed

**After Math.....289**  
*Assess economic effects of water-related disasters*

**Resources:**

- *Mississippi Blues*
- See "Mississippi River" in the *Resources* section for more information

**Organizations:**

- Environmental Management Technical Center for Mississippi River information
- Local newspaper for natural disaster stories
- State or local historical society for photos or old articles

Project WET Guide Page #

- U.S. Army Corps of Engineers for Mississippi River flood information
- U.S. Geological Survey for streamflow and flood information

**Back to the Future.....293**  
*Analyze streamflow data to predict floods and water shortages*

**Resources:**

- See "Rivers and Streams" and "Stormwater Management" in the *Resources* section for more information

**Organizations:**

- Federal Emergency Management Agency (FEMA)
- U.S. Army Corps of Engineers
- U.S. Geological Survey for streamflow data and records
- Wisconsin Geological and Natural History Survey

**The CEO.....300**  
*Become the Chief Executive Officer (CEO) and learn about business/corporate water management challenges*

**Resources:**

- A Speaker's Bureau on Business and the Environment
- Industrial Waste Reduction Information Clearinghouse
- Pollution Prevention case studies and fact sheets
- *The Waste Reduction Guide*
- See "Pollution Prevention" in the *Resources* section for more information

**Organizations:**

- Contact local water-related and water use industries
- County waste management and recycling offices
- DNR
  - ◊ Bureau of Cooperative Environmental Assistance
  - ◊ Regional and GMU offices
- Solid and Hazardous Waste Education Center
- Wisconsin Manufacturers and Commerce

**Dust Bowls and Failed Levees.....303**  
*Witness, through literature, the effects of drought and floods on human populations*

Resources:

- *Mississippi Blues*
- See "Historical Uses" and "Rivers and Streams" in the *Resources* section for more information

Organizations:

- Environmental Management Technical Center for Mississippi River flood information
- Local newspaper for natural disaster stories
- State or local historical society for photos or old articles

**Every Drop Counts.....307**  
*Identify and implement water conservation habits*

Resources:

- *A Tale of One City*
- *Practical Tips for Home and Yard Care*
- *Save Wisconsin's Water*
- *Water Activities to Encourage Responsibility*
- See "Lifestyle and Water Conservation" in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department
- DNR Regional and GMU offices
- UW-Extension
  - ◊ Cooperative Extension county offices (4-H and CNRD agents)
  - ◊ Environmental Resources Center

**A Grave Mistake.....311**  
*Analyze data to solve a groundwater mystery*

Resources:

- Groundwater fact sheets (Department of Health and Family Services, Bureau of Public Health)
- Groundwater Flow Demonstration (model and guide)
- *Groundwater Study Guide*
- *Wisconsin Groundwater* (video)
- See "Groundwater" in the *Resources* section for more information

Organizations:

- Central Wisconsin Groundwater Center  
Department of Health and Family Services,  
Bureau of Public Health
- DNR Bureau of Drinking Water and Groundwater
- Wisconsin Geological and Natural History Survey

**Humpty Dumpty.....316**  
*Simulate a restoration project by putting the pieces of an ecosystem back together*

Resources:

- *A Citizen's Streambank Restoration Handbook* (Izaak Walton League)
- *EPA Lake and Reservoir Restoration Guide*

Organizations:

- DNR Bureau of Watershed Management for restoration projects
- Local environmental consultants
- U.S. Fish and Wildlife Service restoration projects, Partners for Wildlife program

**Macroinvertebrate Mayhem.....322**  
*Illustrate, through a game of tag, how macroinvertebrate populations indicate water quality*

Resources:

- *Key to Life in the Pond*
- *Key to Life in the River*
- *Water Bugs* video



Students get ready to race as they role-play aquatic insects in the activity "Macroinvertebrate Mayhem."

Project WET Guide Page #

- See “Water Quality Monitoring” and “Impacts of Water Quality on Plant and Animal Communities” in the *Resources* section for more information

Organizations:

- Adopt-A-Lake
- Dane County Waterwatchers Series
- DNR Bureau of Watershed Management Testing the Waters Program (Riveredge Nature Center)
- Water Action Volunteers

**Money Down the Drain.....328**

*Observe and calculate water waste from a dripping faucet*

Resources:

- *Save Wisconsin's Water*
- *Water Activities to Encourage Responsibility*
- See “Lifestyle and Water Conservation” in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department for water cost information
- UW-Extension
  - ◊ Cooperative Extension county offices (CNRD or 4-H agents)
  - ◊ Environmental Resources Center

**The Price is Right.....333**

*Analyze costs for building a water development project*

Organizations:

- Contact local developer for budget information
- DNR Regional and GMU offices, contact DNR for budget and details of dam project

**The Pucker Effect.....338**

*Simulate groundwater testing to discover the source of contamination*

- Design the activity for your own community (see “The Pucker Effect” activity adaptation in this *Supplement*)

Project WET Guide Page #

- Use local examples of groundwater contamination or well contamination problems

Resources:

- Groundwater Fact Sheets (Department of Health and Family Services, Bureau of Public Health)
- Groundwater Flow Demonstration (model and guide)
- *Groundwater Study Guide*
- See “Groundwater” in the *Resources* section for more information

Organizations:

- Central Wisconsin Groundwater Center
- DNR Bureau of Drinking Water and Groundwater
- Wisconsin Geological and Natural History Survey maps

**Reaching Your Limits.....344**

*“Limbo” to learn basic water quality concepts and standards development*

Resources:

- Areawide Water Quality Management Plans Water Environment Federation Packet (video series)
- *The Water Source Book*
- *The Wisconsin Water Quality Assessment Report to Congress*
- See “Wastewater Treatment Issues” and “Water Quality: Risk Assessment and Reduction” in the *Resources* section for more information

Organizations:

- DNR
  - ◊ Bureau of Wastewater Management for treatment standards
  - ◊ Regional and GMU offices, water quality staff
- EPA Region V Office, Chicago
- Land Conservation Department county offices
- Local water treatment facility for information and field trip opportunities

**Sparkling Water.....348**  
*Develop strategies to clean wastewater*

Resources:

- Septic System and Tank Models
- Water Environment Federation Packet (video series)
- *The Water Source Book*
- See “Wastewater Treatment Issues” in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department and wastewater treatment facility for information and field trip opportunities
- DNR
  - ◊ Bureau of Wastewater Management for treatment standards
  - ◊ Regional and GMU offices, wastewater specialists
- EPA Region V Office, Chicago

**Super Bowl Surge.....353**  
*Develop a strategy to accommodate the demands on a wastewater treatment plant*

Resources:

- Local municipal water treatment facility visit
- See “Wastewater Treatment Issues” and “Stormwater Runoff” in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department and wastewater treatment facility for information and field trip opportunities
- DNR
  - ◊ Bureau of Wastewater Management for treatment standards
  - ◊ Regional and GMU offices, wastewater specialists
- EPA Region V Office, Chicago

**Wet-Work Shuffle.....360**  
*Sequence the water careers involved in getting water to and from the home*

- Adapt the activity to other water-related careers

Resources:

- American Water Resources Association Careers
- Marine Science Careers
- *Occupations Handbook*, Wisconsin Career Information System
- See “Careers” and “Wastewater Treatment Issues” in the *Resources* section for more information

Organizations:

- County or municipal public water works or utilities department for water treatment careers information
- DNR Bureaus of Drinking Water and Groundwater, Watershed Management, Fisheries Management and Habitat Protection, and Wildlife Management
- Water Environment Federation
- Wisconsin Wastewater Operators

**Water Resources Exist within Social Constructs**

**Choices and Preferences, Water Index.....367**  
*Develop a “water index” to rank water uses*

- Activity “Extension”:
  - ◊ Interview community businesses to understand how they use water
  - ◊ Interview community members to better understand differing values towards local water use
- See “Water Uses” in the *Resources* section for more information

Organizations:

- A Speakers Bureau on Business and the Environment, Wisconsin Manufacturers and Commerce
- Chamber of Commerce or local phone book for businesses
- Local newspapers for water use issues
- UW-Extension Cooperative Extension county offices
- Wisconsin Paper Council

**Cold Cash in the Icebox.....373**  
*Create a mini-insulator to prevent an ice cube from melting*

- State or local historical society for photos of ice harvesting and storage

**Dilemma Derby.....377**  
*Examine differing values in resolving water resource management dilemmas*

- Adapt the activity to your own community (see "Dilemma Derby" activity adaptation in this *Supplement*), create local water dilemma cards.
- Activity Extension: Invite local speakers to present their viewpoint on current issues and then later debate the issues in class.

Resources:

- Interview community members to better understand differing values regarding water-related issues.
- See "Water Resource Management" and "Water Uses" in the Resources section for more information

Organizations:

- Chamber of Commerce or local phone book for businesses
- Local newspapers for water use issues
- Local state/national forests or parks staff
- U.S. Fish and Wildlife Service offices
- U.S. Forest Service offices
- UW-Extension Cooperative Extension county offices

**Easy Street.....382**  
*Compare quantities of water used in the late 1800's and in the present*

Resources:

- *The Blue Book of Wisconsin*
- *Of Time and the River*
- *Voyageur: A Northeast Wisconsin Historical Review*
- *Wisconsin: A History*
- *Wisconsin River of History*
- See "Historical Uses" in the Resources section for more information

Organizations:

- State library government documents section for photos and information
- State or local historical society for documents and photos

**Hot Water.....388**  
*Debate water issues*

- Debate local water issues.
- Invite local speakers on current issues to present their viewpoint and then later debate the issues in class.
- Interview community members to better understand differing values.

Resources:

- Local newspaper, opinion/editorial articles

Organizations:

- DNR Regional and GMU offices
- UW-Extension Cooperative Extension county offices

**Pass the Jug.....392**  
*Simulate water rights policies with a "jug" of water*

Resources:

- *Champions of the Public Trust Doctrine* (video and study guide)
- DNR Laws
- *A Guide to Wisconsin Lake Management Law*
- *Wisconsin Water Law* by Adolph Canonburg
- *Wisconsin Water Law: A Guide to Water Rights and Regulations*
- See "Government and Citizen Issues" in the Resources section for more information



- Project WET Guide Page #
- Organizations:
- Local industries
  - UW-Extension Cooperative Extension county offices, contact about local water issues
  - DNR Regional or GMU offices for laws and local issues

**Perspectives.....397**  
*Identify values to solve water management issues*

- Interview community members to better understand differing values
- Invite local speakers on current issues to present their viewpoint and then later debate the issues in class

- Resources:
- Local newspapers, opinion/editorial articles
  - See “Water Resources Management” in the *Resources* section for more information

**Water: Read All About It! .....400**  
*Develop a Special Edition on water*

- Resources:
- *EE News*
  - Local newspapers
  - *Wisconsin Natural Resources Magazine* (DNR)

**Water Bill of Rights.....403**  
*Create a document to guarantee the right to clean and sustainable water resources*

- Resources:
- *Champions of the Public Trust Doctrine and Study Guide*
  - *Common Groundwork: A Practical Guide to Protecting Rural and Urban Land*
  - *Wisconsin Water Law* by Adolph Canonburg
  - *Wisconsin Water Law: A Guide to Water Rights and Regulations*
  - See “Government and Citizen Issues” in the *Resources* section for more information

- Organizations:
- DNR Regional and GMU offices for laws and local issues
  - UW-Extension Cooperative Extension county offices, contact about local water issues

Project WET Guide Page #

**Water Concentration.....407**  
*Play concentration and discover how water use practices evolve*

- Activity Extension: Interview community business owners, to understand how their water use practices evolved.

- Resources:
- Wisconsin: A History
  - Wisconsin River of History
  - See “Water Uses” and “Cultural and Historical Uses” in the *Resources* section for more information

- Organizations:
- A Speakers Bureau on Business and the Environment, Wisconsin Manufacturers and Commerce
  - Chamber of Commerce or local phone book for businesses
  - UW-Extension Cooperative Extension county offices

**Water Court.....413**  
*Participate in a mock court to settle water quality and quantity disputes*

- Research local or statewide water-related dilemmas through newspaper articles and interviews

- Resources:
- *Champions of the Public Trust Doctrine and Study Guide*
  - *Wisconsin Water Law* by Adolph Canonburg
  - *Wisconsin Water Law: A Guide to Water Rights and Regulations*
  - See “Government and Citizen Issues” in the *Resources* section for more information

- Organizations:
- DNR Regional and GMU offices for laws and local issues
  - UW-Extension Cooperative Extension county offices, contact about local water issues



**Water Crossings.....421**

*Simulate a water crossing and relate the historical significance of water ways*

- Interview community members to learn about the historical significance of local waterways

## Resources:

- Mark Twain's books about Huckleberry Finn
- *The Voyageur's Guide to the Lower Wisconsin River*
- *Wisconsin: A History*
- *Wisconsin River of History*
- See "Cultural and Historical Uses" in the Resources section for more information

## Organizations:

- Local, county, and state historical society

**What's Happening? .....425**

*Conduct a community water use survey*

## Resources:

- Adopt-A-Lake Packet (includes a "Community Survey")

## Organizations:

- Adopt-A-Lake
- Local community organizations
- UW-Extension Cooperative Extension county offices (4-H or CNRD agents)
- Water Action Volunteers (WAV)

**Whose Problem Is It? .....429**

*Analyze the scope and duration of water issues to determine personal and global significance*

- Investigate state issues such as: mining, Chippewa treaty rights, fishing regulations, water diversion/dam projects, acid rain effects, nonpoint source pollution (agricultural, residential, etc.), etc.

## Organizations:

- DNR Regional and GMU offices for laws and local issues
- Tribal Natural Resources offices
- UW-Extension Cooperative Extension county offices

**Water Resources Exist within Cultural Constructs****Raining Cats and Dogs.....435**

*Discover how water proverbs vary among cultures and climates*

- Investigate different Wisconsin cultures' water-related sayings

## Resources:

- *Native American Resource Guide for Libraries*
- See "Cultural and Historical Uses" in the Resources section for more information

## Organizations:

- Local, county, and state historical society
- Tribal offices
- UW-Madison, Linguistics Department

**The Rainstick.....442**

*Build an instrument that imitates the sound of rain*

**Water Celebration.....446**

*Organize a water celebration with activities from this guide*

## Resources:

- *Lake Fair*, Adopt-A-Lake publication to assist you in organizing a lake fair
- *Lake List*, for local organizations to provide assistance
- *Water Action Volunteers (WAV) Packet* for stream cleanup information
- *Water Celebration: A Handbook* (National Project WET)
- See "Lakes" and "Rivers and Streams" in the Resources section for more information

## Organizations:

- Give Water A Hand
- UW-Extension Cooperative Extension county offices
- Water Action Volunteers for support materials and information about local volunteers and organizations for assistance

**wAtER in moTion.....450**  
*Create artwork that simulates the movement and sound of water in nature*

- Investigate your community's artwork: fountains, sculptures, etc.

Resources:

- Art museums
- Frank Lloyd Wright's architecture, philosophy, and buildings at Taliesin in Spring Green (southwest Wisconsin)
- Local college/university art department
- School art department

**Water Messages in Stone.....454**  
*Replicate ancient rock art, creating symbols of water*

- Visit Wisconsin petroglyph sites, contact state or local historical society

Organizations:

- State Historical Society, Archaeology Department
- Wisconsin Geological and Natural History Survey
- Wisconsin Tribal offices

**Water Write.....457**  
*Explore feelings about and perceptions of water topics through writing exercises*



North Lakeland Elementary School students have fun while doing the "Sum of the Parts" activity on their local lake.

- Explore the literature of Wisconsin nature writers such as: Aldo Leopold, Sigurd Olson, Native American writers, Norbert Blei, Justin Isherwood, etc. (contact school English teacher, local library, college/university English department, or Tribal Offices for suggestions)

Organizations:

- Aldo Leopold Education Center (Leopold Education Project)

**Wish Book.....460**  
*Compare recreational uses of water in the late 1800's and the present*

Resources:

- *Champions of the Public Trust* (video and study guide)
- Old newspapers
- *Transactions* (Wisconsin Academy)
- *Voyageurs: A Northeast Wisconsin Historical Review*
- *Wisconsin Blue Book*
- Wisconsin History books
- See "Cultural and Historical Uses" in the *Resources* section for more information

Organizations:

- Department of Tourism, for tourism brochures
- Local and state historical society

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# Suggestions for 'Localizing' Project WET Activities

*These suggestions are based on interviews with ten Wisconsin teachers who localized Project WET activities. The interviewed teachers include: Randy Colton, Shelly Cook, Mark Elworthy, Kathy Guenther, Jody Henseler, Sharon Rychter, Jim Servais, Jeanine Meyer Staab, Janice Watras, and Karen Yost.*

## Steps to Adapt an Activity to Your Area

1. Choose an activity and topic of your interest.
2. Pick a topic that your kids will understand and be able to relate to in your region.
3. Investigate local issues and find a related Project WET activity.
4. Do a brief survey of local available information to ensure the feasibility of your adaptation.
5. Focus on a small geographic area, integrate the activity into your curriculum and then expand it later to a larger geographic region, all of Wisconsin, the Great Lakes, etc.
6. Be sure not to duplicate similar efforts in your region.
7. Be cautious about focusing on issues sensitive to certain students' background.
8. Contact experts.
9. Conduct in-depth research. Gather as many resources as possible, such as:
  - Environmental organizations such as Ducks Unlimited, Trout Unlimited, Audubon Society, etc.
  - Local industries
  - Community facilities (wastewater treatment centers, drinking water treatment centers, etc.)

## Materials

- books
- magazines
- local newspapers
- pamphlets
- Internet information

## Organizations

- DNR
- U.S. Forest Service
- U.S. Fish and Wildlife Service
- Local lake associations
- Other teachers
- UWEX County Extension and other offices

10. Check accuracy of information.
11. Make sure the vocabulary is not too technical for your students.
12. Share your ideas with other educators and students to get their feedback on your ideas. Give students the opportunity to design or add to the activity after they have been exposed to it (i.e. played the game a few times, etc.).

## Advice to Avoid Potential Obstacles

1. Check first with administration to see if its okay to adapt a specific activity.
2. Share the activity with other teachers in your team as well as teachers you think may not be open to the use of the activity.
3. Ask for feedback on the activity from your peers. Be careful that this process will not offend anyone.
4. Work with others to help reduce the workload.
5. Make sure your information sources are well known and respected.
6. Make sure you have all sides of an issue represented. Thoroughly research all aspects of the issue so you have all of the facts.
7. Keep it simple.
8. Give yourself plenty of time.
9. Have a good introduction and closure to the activity to emphasize the importance of the subject.
10. Remember that parents can also learn from your handouts so remain objective, be proactive and consider their concerns.

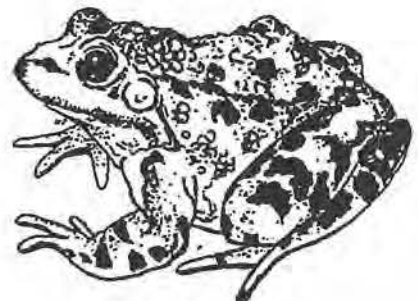
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## Suggested Resources for Wisconsinizing Activities

1. Wisconsin Natural Resources magazine
2. *Wisconsin Trails* magazine for water articles and pictures
3. Local newspapers
4. Lake associations
5. Project Learning Tree, Project WILD, Project WET
6. Adopt-A-Lake Program
7. Global Rivers Environmental Education Network (GREEN) publications (Water Quality Monitoring Guide, Stapp and Mitchell)
8. Internet
9. *Wisconsin Blue Book* (historical information)
10. Historical society and historians
11. Government documents in library
12. Interview community members for their perspectives on local issues and historical community changes
13. Businesses, be sure to represent them accurately and check information for bias
14. Environmental Management Technical Center in LaCrosse (for Mississippi River information)

*"The Frog does not  
Drink up  
The pond in which  
He lives."*

--Native American Proverb



# Color Me a Watershed



*Adapted to Wisconsin and Medford by: Jeanine Meyer Staab, Teacher, Medford Elementary School*

## Project WET Activity Adaptation Summary

This activity has been modified from the national Project WET activity, "Color Me a Watershed," found on page 223 of the national *Project WET Curriculum and Activity Guide* (*Project WET Guide*). The following adaptation is provided as an example of how to Wisconsinize "Color Me a Watershed" to the Black River Watershed and the town of Medford. We encourage you to modify this activity to your watershed to help make it more relevant to you and your students. Suggestions are provided to help you with this process.

This activity is most appropriate for middle and high school students. Students will:

- investigate the land use changes caused by settlement and population growth within their watershed;
- analyze the potential effects of those changes.

To complete the activity, you will need to follow the Procedures as written in the *Project WET Guide*.

## Additional Materials

(See the Materials section for "Color Me a Watershed" in the *Project WET Guide*, page 223, for the complete list of materials)

- Medford Centennial book and video
- Ecoregions of Wisconsin map (included in the *Medford Adaptation* of this activity)
- Transparency of local watershed (hydrologic unit maps or watershed maps from Wisconsin Geological and Natural History Survey)
- Maps A and B: transparencies of local aerial photos or maps from two time periods (at least 50 years apart); county maps available from county offices (e.g., Planning and Zoning, Land Conservation Department)
- Maps and photos of community (past and present)
- Wisconsin state maps
- Topographic maps from Wisconsin Geological and Natural History Survey
- Water-based markers

**Making Connections** (See the Making Connections section for "Color Me a Watershed" in the *Project WET Guide*, page 223)

## Background

Wherever you live in Wisconsin, you are in a watershed. Water from rainfall and snowmelt that doesn't evaporate or soak into the ground flows into streams, wetlands, rivers, or lakes. The land area from where the water

drains is called a watershed. Watersheds vary in size and composition. Perhaps towns, farms, forest, malls, or houses are in your watershed. The demographics within your watershed have probably changed over the years depending on the size of the population in your region. All of the people who live in your watershed potentially influence the water quality of nearby streams and lakes. Our actions (i.e. washing the car, fertilizing the lawn, building a house) often create excess pollutants, nutrients, and soil which can be carried by stormwater runoff into nearby lakes and streams.

Throughout Wisconsin, farms and businesses, local governments and community groups, small town residents and city dwellers are working through Priority Watershed Projects to prevent runoff pollution and improve the health of our waterways. These projects provide conservation planning, educational opportunities for all ages, and financial and technical assistance for both urban and rural land practices to protect water quality. Some watershed projects encompass several hundred square miles, while others include only a few square miles. There will be nearly 100 Priority Watershed Projects in the state by the year 2000.

The Priority Watershed Program is jointly sponsored by the Department of Natural



**Project WET-Wisconsin workshop participants investigate land use in the Moses Creek watershed (Stevens Point) by looking at aerial photos.**

Resources (DNR), University of Wisconsin-Extension (UWEX), and county and local governments. Contact the local DNR, UWEX offices, or the county Land Conservation Department for more information about local priority watershed projects and information about your local watershed.

### **Adapt this Activity to Your Watershed!**

This activity provides an excellent avenue for investigating your community's past and present land use and physical location in reference to the watershed. It also provides students with an opportunity to better understand their watershed and local community. Students can order the maps and interview local historians, community members, and water resources managers to learn more about the region's history.

You and your students can easily adapt this activity to your

watershed by doing any of the following steps:

- Order county hydrologic maps or topographic maps from the Wisconsin Geological and Natural History Survey
- Go to the local library to learn about the history of your area through local history books and old maps
- Contact your County Cooperative Extension offices to copy land use maps and photos
- Contact the county and/or regional Planning and Zoning office to purchase copies of aerial survey maps and historical photos or maps
- Contact the county Land Conservation Department or nearest Department of Natural Resources office for information on your watershed and to find out if there is a local Priority Watershed Project
- See "Watersheds" in the *Resources* Section of this

*Wisconsin Supplement to National Project WET* for more resources related to Wisconsin watersheds.

### **References**

*A Report to Department of Natural Resources Managers: Wisconsin's Biodiversity as a Management Issue.* May, 1995. Wisconsin Department of Natural Resources Publications. Wisconsin DNR, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/266-2621.

Land Conservation Department. Refer to the "Organizations" section of this *Wisconsin Supplement* for county offices.

Planning and Zoning Office. Refer to local phone book for county offices.

Wisconsin Department of Natural Resources. Bureau of Watershed Management. Wisconsin DNR, 101 S. Webster St., PO Box 7921, Madison, WI 53707. 608/267-7964.

Wisconsin Geological and Natural History Survey. Map and Publications Sales office (MAPS), 3817 Mineral Point Rd., Madison, WI 53705. 608/263-7389.

Wisconsin Tourism (Map). Available at any Driver's License Examiner Stations, Department of Tourism Visitor's Information Centers, Chambers of Commerce, or contact the Department of Tourism, PO Box 55, Dodgeville, WI 53533. 800/432-TRIP.

## Medford Adaptation to "Color Me a Watershed"

### Objectives

Students will:

- be able to identify where Medford is located on a map;
- be able to investigate the history of land use in the Black River watershed;
- investigate what sort of wildlife live in their ecoregion.

### Background

The Black River Watershed covers approximately 3,000 square miles in west central Wisconsin. The headwaters for the watershed are just north of Medford. The river traverses through scattered farmlands and forest river bottoms as it makes its way to the Mississippi River. The Black River joins the Mississippi River just north of Onalaska, having covered over 140 miles in distance. During the last 50 miles of its journey, the Black River cuts through the driftless area of Wisconsin. Major tributaries include the Polar River, the East Fork Black River, and Morrison Creek.

The Black River has experienced varying degrees of pollution over the years. At present, the river's water quality has improved due to sewage treatment facility upgrades, the relocation of two Medford dumps, the cleanup of the Toxics Salvage Yard, the closing of a tannery, among

other changes. The Black River still faces water quality challenges from Medford's surface water runoff that causes sedimentation and storm sewer runoff from street salt, oil, and trash.

### Procedure

(See the Procedures section for "Color Me a Watershed," page 224-227 in the national *Project WET Guide*, for further instructions)

Ask students to imagine Medford 100 years ago. What do they think the land and water around Medford looked like at that time? How has growth changed this area? Show them the [Medford Centennial](#) video available at the local library. Have students observe structures such as the old Ice House, Cigar Factory, Immigration House, and the Mill Pond.

Have students refer to the [Medford Centennial](#) book (especially the photos).



Jeanie Meyer Staab and two Medford Elementary School students mark the outline of the Black River watershed.

Through examining this book, students should discuss the following:

- Medford was once completely covered with white pine trees and 120 years ago, the town did not exist.
- Point out how the railroad and saw mill were built to access and process the area's prime timber as logging began to intensify around Medford.
- How did the logs get transported from the clear-cuts to the mill, and then to the lumber yards in Milwaukee, Chicago, and St. Louis?
- What stores were on Main Street?
- Was there a school in town?
- What else do they notice?

Students should observe how all of the timber in the region was gradually removed over the years. With no trees left to harvest, people began to move elsewhere. For example,

Perkinstown, a small town just 10 miles west of Medford, became a "ghost town" after the last tree was felled.

Have students look at the attached map (below) of the ecoregions of Wisconsin. Medford is right on the border of two major forest ecoregions in the state: Northern Lakes and Forests (NOLF) and the North Central Hardwood Forests (NCHF). How did this location affect the growth of the town? Help them to see how over the past 50 years, Medford has grown to be an industrial hub. Major industries such as Weathershield Manufacturing (windows), Hurd Windows, Inc., Phillips Plastics (manufactures plastic parts for automobiles), Marathon Cheese, and Tombstone Pizza Corporation came into existence.

**Options 1-3** (Refer to pages 225-226 of your *Project WET Guide*, you may choose to complete these options as well)

**Option 4** (Refer to Option 1, Numbers 1 & 2 on page 225 of your *Project WET Guide* for more detailed procedures)

1. Provide groups of three students with map overheads of the Black River watershed (trace the watershed onto aerial photos or topographic maps and photocopy them onto a transparency).
2. Give each group a transparency copy of an aerial photo or map of the same

area from at least 50 years ago (Map A).

3. Have students project the transparency on to the wall.
4. Place a piece of heavy plastic over the Map A image on the wall.
5. Ask the students to trace each of the land cover types on the plastic sheet with different washable marker colors. For example, blue = agriculture; green = forest; red = residential.
6. Instruct them to assign each land area with a different color and to use the same color scheme for both maps. They should make a key to the color types and what land cover they represent.
7. Do the same with Map B (current aerial photo or map transparency) using the other plastic sheet.
8. Have them mark the changes that they see occurring.
9. Overlay the 2 plastic sheets over the original map, you can observe changes over the years (number of years

depends on the difference in time between when each of the photos or maps were created).

Using watershed maps available through the Department of Natural Resources and the Wisconsin Geological and Natural History Survey, have students look at the highlighted Black River Watershed. Tell them to analyze where Medford is located. Using the Wisconsin state map, students can identify cities and towns in this watershed.

### Wrap-up

Discuss the following questions:

1. What happens to the amount of forested land as you go from Map A to Map B?
2. Which map has the most land devoted to human settlements?
3. Where are most of the human settlements located?



The class begins to trace the land cover types within the Black River watershed.



4. What are some of the industries that moved into Medford in the past 50 years?
5. What effect might these industries and settlements have on the Black River and its watershed?
6. Would you have handled development differently for this area?
7. The Black River was considered polluted in the 50's and 60's; what could have caused this pollution?
8. What is the quality of the Black River at the present time?
9. Where does the Black River flow?
10. What towns are close to where the watershed empties?
11. Name some major tributaries of the Black River?
12. Name some towns that are located in this watershed?
13. Approximately how big is this watershed (in miles)?
14. Where are the headwaters of the Black River?

### Assessment

Have students compare land area occupied by farms, towns, and natural areas in a watershed during different time periods.

### Extensions

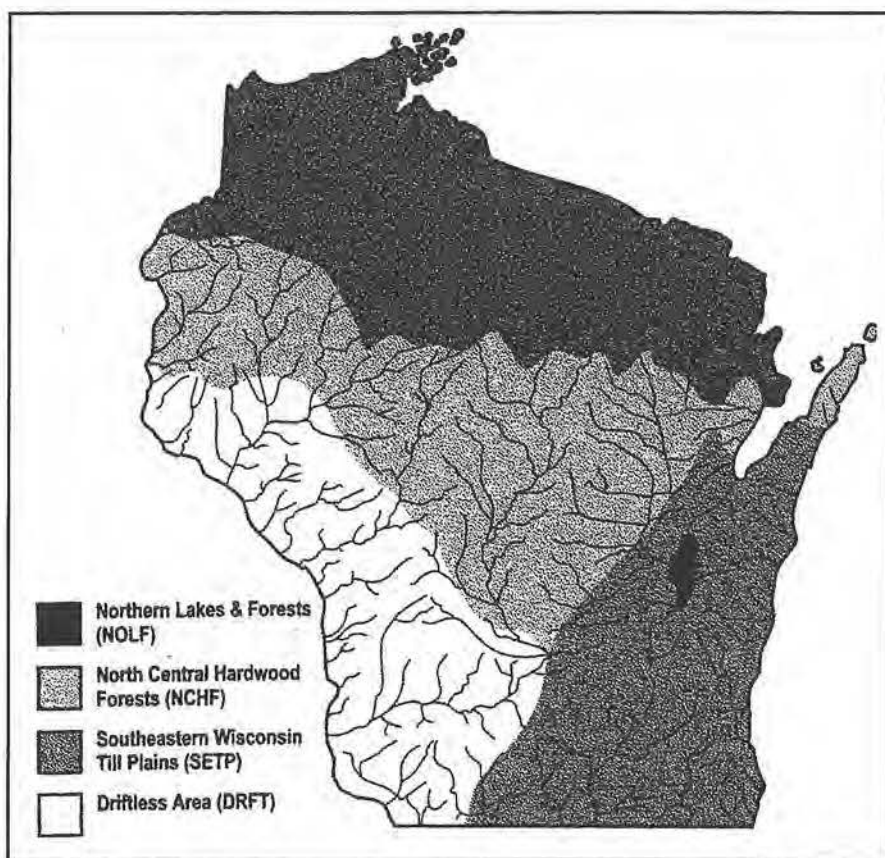
1. The students could complete another plastic map to show how development of the area might continue in the next 100 years.
2. Take the students on a hike along Medford's River Walk and invite the County Extension 4-H Agent and/or other water resource specialist to join the group

and help test the water quality in two diverse land use areas along the river:

- a. Upstream of the downtown area
- b. Center of town amidst industries, concrete and buildings

### Resources

(See above "Resources")



Ecoregions of Wisconsin,  
*A Report to Department of Natural Resources Managers: Wisconsin Biodiversity as a Management Issue, 1995*

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# Common Water

*Adapted to Wisconsin and Eau Claire by: Mark Elworthy, South Middle School, Eau Claire County*

## Project WET Activity Adaptation Summary

This activity has been modified from the national Project WET activity, "Common Water," found on page 232 of the national *Project WET Curriculum and Activity Guide (Project WET Guide)*. The following adaptation is provided as an example of how to Wisconsinize "Common Water" to the city of Eau Claire. We encourage you to modify this activity to your community to help make it more relevant to you and your students. Suggestions are provided to help you with this process!

This activity is most appropriate for middle school students. Students will:

- illustrate how multiple users of water resources can affect water quality and quantity;
- examine the complexities of providing water for all water users;
- better understand how water resources have been used in Wisconsin.

To complete the activity, you will need to follow the activity procedures as written in the *Project WET Guide*.

## Additional Materials

(See the Materials section for "Common Water" in the national *Project WET Guide*, page 232, for the complete list of materials)

- 18 large household sponges
- Linoleum floor area (and mop) or outside area to do activity because of spilled water.

## Making Connections

Before starting this activity, students should know that every living thing on Earth uses water and that water is a finite resource. They should also be aware of how their family members use water as well as its importance to industry and agriculture. Your students may have read in the news about problems with water quality and quantity. This activity helps students recognize that water users must consider each other's needs in order to share this finite resource.

## Background

In Wisconsin, there is abundant surface water with over 15,000 lakes, 40,000 miles of rivers and streams, and 5.3 million acres of wetlands. Wisconsin's groundwater could cover the state to a depth of 30 feet if it was all brought to the soil's surface!

Water has played a major role in developing Wisconsin's economy as well as the lifestyle



of state residents. Native Americans prospered through the bountiful supply of food available from the lakes, rivers, and wetlands of the state. Wisconsin's many waterways made trade and transportation possible. Lakes and rivers allowed early European settlers to travel through Wisconsin to trade and explore. Marquette and Joliet were the first Europeans to explore the Mississippi River as far south as the Arkansas River. The oldest Native American and later European settlements in the state are found along rivers including: Fort Howard which is now the city of Green Bay, Fort Winnebago is now Portage, and Fort Crawford is now Prairie du Chien.

Development occurred along lakes and rivers because of the constant supply of water. Lakes and rivers provided transportation, power, waste disposal areas, and plenty of water to support the lumber industry, farming, and many other businesses. Did your community develop because it was located where a dam could be built to power a saw, pulp, or paper mill? Who are the major water users in your area?

Some of the major water users in Wisconsin's past include: wheat farms, saw mills, lumber barges, lead mines, and general public use. Today, some of the major water users are the same,

others include: dairy farms, paper and pulp mills, power companies (dams), tourist and recreation businesses, and a variety of other industries.

Wisconsin's waters have shaped the state's past and will continue to shape our future. In return, we have had an impact on the quality and quantity of our waters. Pollution prevention measures and laws have dramatically improved the quality of not only Wisconsin's but the entire country's waterways.

### **Adapt this Activity to Your Watershed!**

This activity is an excellent avenue for the investigation of your community's past and present land use and physical location in reference to its watershed. This activity provides your students with an opportunity to get to know their watershed and local community better. Students can order maps, research the community's history, and interview historians (statewide and local), community members, and water resources personnel (e.g. priority watershed managers, county extension agents, etc.).

You and your students can easily adapt this activity to your watershed by doing any of the following steps:

- Order county hydrologic maps or topographic maps from the Wisconsin Geological and Natural History Survey
- Go to the local library to learn about the history of your area through books and

old maps

- Contact your county Cooperative Extension office for land use maps or photos
- Contact the county Planning and Zoning office for aerial survey maps and historical photos or maps. The Planning and Zoning office number can be found in the county listings of your local phone book
- Contact the county Land Conservation Department or nearest Department of Natural Resources office for information on your watershed and to find out if there is a local Priority Watershed Project
- See "Cultural and Historical Uses" in the *Resources* section of this *Wisconsin Supplement to National Project WET* for further information about Wisconsin water history



**"Common Water" users dip into the communal water source.**

## Wisconsin Version of "Common Water"

**Procedure** (See the Procedures section for "Common Water," page 233, in the national *Project WET Guide* for further instructions)

### Warm-up

Have students list major water user groups in their area of the state and how they use water. Your local Yellow Pages can be a source of ideas. Ask students to rank the water users on their list, from those who they think use the most water to those that use the least amount of water. Ask students if they know where their drinking water comes from.

### Pre-activity predictions

(Have the students answer the questions)

- When did Wisconsin begin to grow rapidly?  
Explain.
- How fast is the state's population currently growing?
- What is the biggest industrial draw on water supplies?

### Activity

- Fill the bucket to the brim with water. Tell students that the full bucket represents the amount of water stored in a reservoir, lake, or groundwater (depending on the community's water source) before the community was settled.
- Tell students they are going to simulate changes in a watershed over several time periods. Each 30-second

round represents a time period (see Round Scenarios). In each round, students represent different water users; they may want to make name tags to identify roles.

- For each round, students should place themselves an equal distance from the water source. When the round starts, students fill their sponges with water from the reservoir (bucket). To represent water consumption, have them squeeze water out of the sponges into individual containers. Students can refill their sponges as often as they like during the round.
- At the end of each round, note how much water remains in the bucket. Tell students to empty half of the water from their containers back into the

bucket. This represents used water that makes it back to the reservoir (i.e., percolated through soil, discharged from a water treatment facility, or runoff from the ground's surface). Students will notice that the water is colored. Inform them that this represents sewage and runoff from urban and rural areas.

- Record students' comments about the amount of water used and the amount of waste materials generated; compare after each round. To represent the water source eventually cleaning and replenishing itself over time, fill the bucket to the brim with clean water before each round.
- Students should write down the number of times they squeeze the sponge and calculate the amount of water used per round in milliliters



As the number of players increase in the last round, water users race to get enough water for their needs.

and percent of the total reservoir (amount used/initial amount of water). They should share their data with their neighbors, local industries, and the rest of the community so that they get a feel for the whole picture of water use in the state.

### Round Scenarios

\*Refer to the timeline below for more water-related Wisconsin history.

\*See the set of charts below to assign roles and sponge pieces to students.

#### Round One (1600-1850)

The variety of ecosystems found in Wisconsin provided rich and diverse habitats for wildlife which flourished in this pristine environment. As a result, an abundance of birds, aquatic species, prairie, and woodland species prospered in the state. These natural resources provided food sources to support the Menominee, Ojibwa, Santee Sioux and Winnebago tribes; while the vast network of waterways allowed transportation and trade routes. There were approximately 20,000 Native Americans when the early French traders arrived in the 1630's. The native peoples' low population combined with their sustainable use of natural resources caused minimal impact to the state's water resources.

The fur traders were active in what is now Wisconsin during

the early 1700's-1820's. The state's network of over 40,000 miles of rivers and streams allowed ideal transportation routes for the fur trade. Because the traders did not settle in one area, they had minimal impact on the waterways, although they did have a great impact on the beaver population, which nearly went extinct in the early 1800's. The beaver's decline had a great impact on the state's aquatic ecosystems.

Southwestern Wisconsin saw an increase in lead mining and decrease in the fur trade. The Mississippi River was used for transporting lead from Wisconsin to Illinois and other southern states. In the 1850's, Wisconsin attracted great numbers of lumberjacks and homesteaders from the East. The Wisconsin River and its larger tributaries were the major highways of

transportation for moving pine logs to the saw mills. Communities in Central and Northern Wisconsin were primarily made up of lumber camps and camp owners' mansions. The farms grew food for lumberjacks and other inhabitants. By the end of this round, there were 305,000 people in the state.

#### Round Two (1851-1920)

The Industrial Revolution of the early 1900's reached Wisconsin causing urban populations to increase. Power companies were built to supply the industries and residents with electricity. The farming of cash crops like wheat is still prominent although dairy farms are multiplying in number. Universities were opened around the state. The frontier was disappearing while railroads expanded. The population at the end of the round increased dramatically



The Wisconsin River became a highway to transport logs to the saw mills. Wisconsin Historical Society

to about 2,632,000, and as a result, water use increased greatly.

**Round Three (1921-1945)**

The Depression took place within this time. Population growth is stymied as the dust bowl days threaten family farms in the mid-thirties. Residents look for jobs in the cities to give them more stability. Industries expand rapidly for the war effort in the 1940's. Farming still plays a major part in the state's economy, but industry is the economic nucleus that is most profitable. Industries use a large amount of water and have started to dump their waste directly into the rivers. The population by 1945 was about 3,200,000.

**Round Four (1946-Present)**

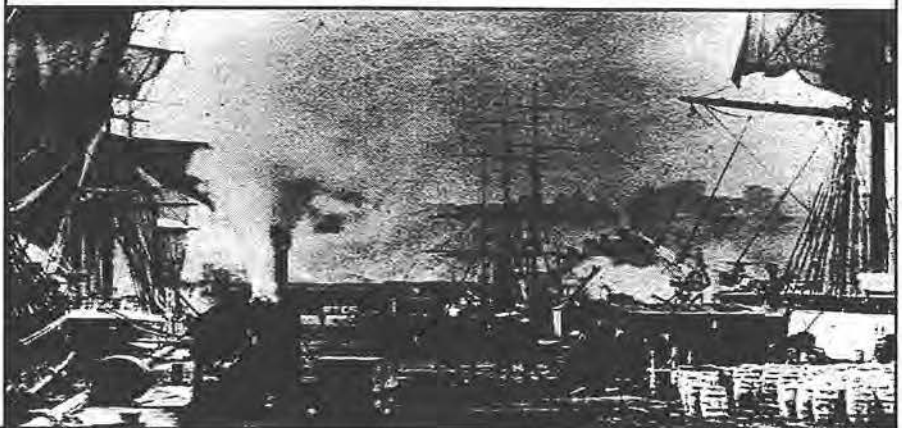
The service sector industries grow as the years pass. Irrigation has allowed farmers to become more industrialized and able to export products throughout the state, country, and world. Power companies have multiplied to meet consumer demand. The state continues to grow in population, number of businesses, and number of tourists. Water use has increased dramatically with the growth of farming,

**The Great Lakes shipping industry continues to be a major source of transportation for goods to and from the Great Lakes states, although the ships have changed dramatically!**

*Wisconsin State Historical Society*

**Time Line: The Development of Wisconsin and Resulting Increased Water Usage**

<u>Date</u>	<u>Round</u>	<u>Major Events</u>
1800 - 1850	1	<ul style="list-style-type: none"> <li>-Native Americans lost most of their Southeastern Wisconsin land</li> <li>-Homesteaders arrive (small family farms)</li> <li>-Lumber camps active</li> <li>-First lead mining in Southwestern Wisconsin and decrease in fur trade</li> <li>-1848 Wisconsin became a state</li> </ul>
1851 - 1920	2	<ul style="list-style-type: none"> <li>-State mostly agricultural (the major cash crop is wheat)</li> <li>-Railroads first built</li> <li>-Breweries in full force</li> <li>-Universities ("Normal Schools") built around the state (1866 Platteville)</li> <li>-Electricity in the larger cities</li> <li>-Dairy Farms (1864 first cheese factory, 1880-1890 Dairy became the primary agricultural industry)</li> <li>-Lumber industry continues</li> </ul>
1921 - 1945	3	<ul style="list-style-type: none"> <li>-Industries move to the state, primarily heavy machine manufacturing, paper products and dairy industries</li> <li>-Last virgin forests in north were cut</li> <li>-Brewing decreased because of prohibition</li> <li>-Electricity spreads to smaller towns</li> </ul>
1946 to Present	4	<ul style="list-style-type: none"> <li>-Irrigation increases to crops</li> <li>-Industries with the most employees:               <ul style="list-style-type: none"> <li>Industrial machinery and equipment</li> <li>Fabricated metal products</li> <li>Food and related businesses</li> <li>Printing and publishing</li> <li>Paper and related products</li> </ul> </li> <li>-Tourism emerged</li> <li>-Mining exploration and extraction in northern Wisconsin</li> </ul>



## Distribution of Sponges for Each Round

<u>Round</u>	<u>1/4 Sponge</u>	<u>1/3 Sponge</u>	<u>1/2 Sponge</u>	<u>1 Sponge</u>
<b>One</b> (1800-1850)	1-residents 2-family farms	2-lumber		
<b>Two</b> (1851-1920)	3-power company	1-residents 2-family farms 1-industry	1-residents 2-lumber 2-business farms	1-residents 1-industry
<b>Three</b> (1921-1945)	3-power company 1-college students	3-family farms 1-college	1-residents 2-industry 2-power company 2-business farms	2-residents 3-industry 1-WWII industry
<b>Four</b> (1946-present)		2-college students 2-industry 4-dairy farms	2-power company 2-industry 2-business farm 2-colleges	4-residents 3-industry 2-service/tourism 2-power company

### Key to players and their water use:

<i>Residents</i>	Wisconsin residents who use water in the home (plumbing, cooking, cleaning, bathing, etc.)
<i>Family Farms</i>	Farms which support a household (water needed for crops, animals, household needs, etc.)
<i>Industry</i>	Large businesses which use water for running the plant (processing vegetables, paper making, brewing beer, printing, etc.)
<i>College</i>	Colleges and students use water for cleaning, bathing, food preparation, teaching labs, etc.
<i>Power Company</i>	Utilities providing electricity through hydropower (river hydrology changes), coal and nuclear (highest % of Wisconsin's energy production), petroleum, and natural gas (natural gas use and hydropower energy use in Wisconsin are less than the national averages).
<i>Lumber</i>	Lumber industry uses water for transportation (rivers) and to support the logging camps (food, etc.).
<i>Business Farm</i>	For revenue, farms use water for irrigation (i.e. dairy, beef cattle, corn, potatoes, etc.)
<i>WWII Industry</i>	Heavy machinery manufacturers, fabricated metal products, etc.
<i>Service</i>	Businesses which accomplish a task for a consumer (car wash, supermarket, restaurants, etc.)

industry, and electricity needs. The population in 1990 was about 4,900,000.

### Wrap-up and Action

1. After completing the activity, have students write a summary of what they saw and perceived during the activity. Have them focus on the types of users, the amount of water used by the public and private sector. Ask the students the following questions:

- a. Were there any surprises as far as the amount consumed and

who did the consuming?

- b. What are some local waterways/water resources (i.e. lakes, rivers, streams) where you live?
  - c. What is the current status of your town's water usage?
2. In a discussion, address the following questions and statement:
- a. Where does your drinking water come from?
  - b. Would it be possible to get water from other sources? If so, where?
  - c. Do you think there will

ever be a shortage of water in the state?

How might this happen?

- d. "Water for all users":
  - Do students think this statement is possible?
  - What can communities do to ensure that everyone gets enough clean water?
  - Have the students draw a map or flow chart of how the users get, consume, and dispose of water.

## Extensions

In the K-2 option at the end of "Common Water" in the national *Project WET Guide*, rename the puppets with community members who use the water in your town or county. Prepare a brief speech to explain why the consumer needs the water. This could be organized into a mock community debate.

## Resources

Allen, Howard. 1992. *The Traveler's Guide to Native America: The Great Lakes Region*. Northwood Press, Inc. Minocqua, WI.

Nesbit, Robert C. and William F. Thompson. *Wisconsin: A History*. 1989. University of Wisconsin Press. Madison, WI.

Stark, William F. 1988. *Wisconsin River of History*. Stark: Wisconsin.

Steele, Robert. 1997. *A Land of Wealth: the People and Events that Shaped Wisconsin's Conservation History*. Unpublished. University of Wisconsin-Stevens Point.

*The Blue Book of Wisconsin* 1990. The State of Wisconsin, Department of Administration. Madison, WI.

## Eau Claire County Version of "Common Water"

### Procedure

#### Warm-up

Have students list major water user groups in their area of the state and how they use water. The Yellow Pages can be a source of ideas. Ask students to rank water users, from those who they think use the most water to those that use the least amount of water.

#### Pre-activity predictions

(Have the students answer the questions)

- When did Eau Claire county begin to grow rapidly? Explain.
- How fast is Eau Claire currently growing?
- What is the biggest industrial draw on water supplies?

#### Activity

- Fill the bucket to the brim with water. The full bucket represents the amount of water present before the community was settled. In Eau Claire, there is abundant surface water including: Lake Altoona, Half Moon Lake, the Chippewa River, the Eau Claire River, and several creeks. The amount of groundwater is also significant.

*Follow Procedures 2-5 as described above*

#### Round Scenarios

\* Refer to the timeline below

for more water-related Wisconsin history.

- \* See the next set of charts to assign roles and sponge pieces to students.

#### Round One (1800 to 1850)

Lumberjacks and homesteaders are attracted to the Eau Claire County region. The Chippewa and Eau Claire Rivers were major highways of transportation and the method used for transporting the pine logs to the saw mill. Communities were primarily made up of lumber camps and their owners. The farms grew food for lumberjacks and other inhabitants.

#### Round Two (1851 to 1920)

The Industrial Revolution of the early 1900's reached Eau Claire causing the urban population to increase. A power company was built to supply the industries and residents with electricity. The farming of cash crops is still prominent although dairy farms are multiplying in number. The population at the end of the round is thirty times from where it started at the beginning of the round. As a result, water use increased dramatically. The frontier is disappearing and life is still hard.

#### Round Three (1921 to 1945)

The Depression has occurred. Population growth is stymied as the dust bowl days threaten family farms in the mid-thirties. Residents look for jobs in the city to give them more stability. Eau Claire County



industries expand rapidly for the war effort in the 1940's. Farming still plays a major part in the economy of the county, but industry is the nucleus and the most profitable. These industries use a large amount of water and have started to dump their waste directly into the Chippewa River.

**Round Four (1946 to Present)**  
The service sector of Eau Claire grows as the years pass. Eau Claire has become a regional center for shopping, business, and education. Irrigation has allowed farmers to become more industrialized and able to export products out of the area. In fact, several

industries also send products out of the state and/or country. Power companies have multiplied to meet consumer demand. The county continues to grow in population and number of businesses. With this growth of farming, industry, and need for electricity, water use has again dramatically increased.

**Time Line: The Development of Eau Claire County and Resulting Increased Water Usage**

<u>Date</u>	<u>Round</u>	<u>Major Events</u>
1800 to 1850	1	-Native Americans -Homesteaders -Small family farms -Lumber camps
1851 to 1920	2	-Farming of Grains -Railroads - 1880 -Breweries - Eau Claire Teachers College -Electricity in the city of Eau Claire -Dairy Farms -Lumber Industry Continues
1921 to 1945	3	-National Pressure Cooker (Presto) - 1920's -Northern States Power gives lighting to Eau Claire County Farmers - 1942 -Rural Electric Association gives lighting to Dunn County Farmers - 1937 -Gillette Tire Company (Uniroyal) - 1920's
1946 to Present	4	-Irrigation to the crops to grow berries and vegetables -Nestle -Silver Spring Farms -Phillips Plastics -Phoenix Steel -American Materials



## Distribution of Sponges for Each Round

<u>Round</u>	<u>1/4 Sponge</u>	<u>1/3 Sponge</u>	<u>1/2 Sponge</u>	<u>1 Sponge</u>
One (1800-1850)	1-residents 2-family farms	2-lumber		
Two (1851-1920)	3-power company	1-residents 2-family farms 1-industry	1-residents 2-lumber 2-business farms	1-residents 1-industry
Three (1921-1945)	3-power company 1-college students	3-family farms 1-college	1-residents 2-industry 2-power company 2-business farms	2-residents 3-industry 1-WWII industry
Four (1946-present)		2-college students 2-industry 4-dairy farms	2-power company 2-industry 2-business farm 2-colleges	4-residents 3-industry 2-service/tourism 2-power company

## Key to players and their water use:

<i>Residents</i>	Wisconsin residents who use water in the home (plumbing, cooking, cleaning, bathing, etc.)
<i>Family Farms</i>	Farms which support a household (water needed for crops, animals, household needs, etc.)
<i>Industry</i>	Large businesses which use water for running the plant (processing vegetables, paper making, brewing beer, printing, etc.)
<i>College</i>	Colleges and students use water for cleaning, bathing, food preparation, teaching labs, etc.
<i>Power Company</i>	Utilities providing electricity through hydropower (river hydrology changes), coal and nuclear (highest % of Wisconsin's energy production), petroleum, and natural gas (natural gas use and hydropower energy use in Wisconsin are less than the national averages)
<i>Lumber</i>	Lumber industry uses water for transportation (rivers) and to support the logging camps (food, etc.)
<i>Business Farm</i>	For revenue, farms use water for irrigation (i.e. dairy, beef cattle, corn, potatoes, etc.)
<i>WWII Industry</i>	Heavy machinery manufacturers, fabricated metal products, etc.
<i>Service</i>	Businesses which accomplish a task for a consumer (car wash, supermarket, restaurants, etc.)

## Resources

"Businesses in Eau Claire." July 1996. Leader-Telegram. Eau Claire, WI.	Dorothy and LaVerne Gilbertson. Interview. July 21, 1996.
<u>Blue Book of Wisconsin</u> . 1994. The State of Wisconsin, Department of Administration. Madison, WI.	Mary and Ed Elworthy. Interview. July 23, 1996.
Census Bureau Home Page: <a href="http://www.census.gov">http://www.census.gov</a> Go to Subjects A-Z, then State Profiles, click on WI, click on county.	Nesbit, Robert C. and William F. Thompson. <i>Wisconsin: A History</i> . 1989. University of Wisconsin Press. Madison, WI.
	Stark, William F. 1988. <u>Wisconsin River of History</u> . Worzalla Publishing. Stevens Point, WI.

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# Dilemma Derby



*Adapted to Wisconsin by:  
Sharon Rychter, Resource  
Teacher, Green Bay Area  
School District*

*Janice Watras, Teacher, North  
Lakeland Elementary School*

*Laurin Garlieb, Student,  
University of Wisconsin-  
Stevens Point*

## **Project WET Activity Adaptation Summary**

This activity has been modified from the national Project WET activity, "Dilemma Derby," found on page 377 of the national *Project WET Curriculum and Activity Guide (Project WET Guide)*. The following adaptation is provided as an example of how to Wisconsinize "Dilemma Derby." We encourage you to modify this activity to your community to help make the dilemmas more relevant to you and your students. Suggestions are provided to help you with this process.

This activity is most appropriate for middle and high school students. From the following scenarios and supplementary materials, students will:

- identify water-related issues, consequent human dilemmas, and the key players in the resulting situations.
- work in small groups to collectively answer questions posed.

- determine an action plan to address the identified water-related issue.
- present their conclusions to the class as a whole.
- learn more about the water dilemmas in Wisconsin.
- appreciate the challenges involved in resolving dilemmas.

To complete the activity, you will need to follow the activity procedures as written in the *Project WET Guide*.

## **Additional Materials**

- Wisconsin dilemma cards can be found at the end of this activity (these can be glued onto large index cards or poster board and laminated for durability).

## **Making Connections**

Water has always played an integral role in the lives of the people of Wisconsin. In the following scenarios, students will discuss statewide issues related to Wisconsin's water resources. These dilemmas will help your students experience the diversity of human values and attitudes regarding these water-related issues.

## **Background**

(See the Background section of "Dilemma Derby," page 377, in the national *Project WET Guide* for further information)

## **Adapt this Activity to Your Region!**

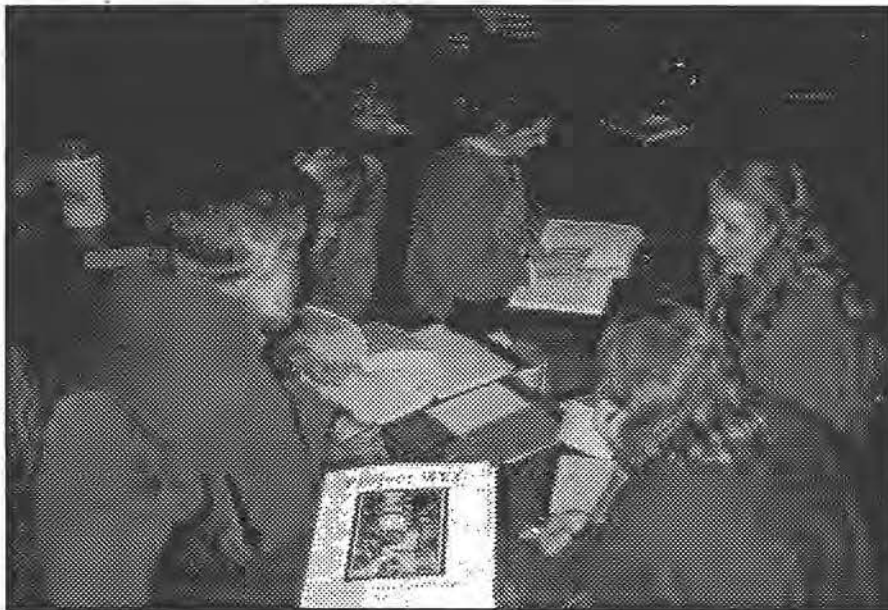
This activity provides an ideal

forum to research and discuss local dilemmas related to water. Listed below are some suggestions for investigating local issues and adapting this activity to your region:

- Look for newspaper articles related to water resource dilemmas
- Contact local water resources personnel for information about the topic (i.e. county cooperative extension agents, county Land Conservation Department, regional Department of Natural Resources staff)
- Interview community members about the dilemmas

## **Teaching Strategy**

Rather than emphasizing that a dilemma involves a potential conflict between what one wants to do versus what one believes should be done, students need to be informed that the conflicts presented are neither right nor wrong, but are different perspectives on how water may be used. This type of activity requires students and teachers to recognize that individuals have different opinions and must not be judged. As a result, it is critical to create a safe and unbiased educational environment. In addition, be certain to provide all sides of the dilemmas and, again, be clear that there is no "right" answer. Teachers should closely review the background material, pages 397-399, of the "Perspectives" activity in the



**Project WET-Wisconsin workshop participants discuss their dilemmas.**

*Project WET Guide* which relates to these concepts. For the students, the dilemma then becomes deciding which courses of action they believe they would take in a particular situation.

### Procedures

(See the Procedures section for "Dilemma Derby," page 377, in the national *Project WET Guide* for further instructions)

- In small groups, students will read the dilemmas, rank their proposed courses of action by priority, then share their findings with the whole class.

### Wrap Up and Action

(See the Wrap Up and Action section for "Dilemma Derby," page 378 in the national *Project WET Guide* for further instructions)

- After personal deliberation and small group discussion, each dilemma group shares

their scenario, plan of action, reasons behind their plan, and potential consequences of that plan.

### Assessment

- Students rank their top three original courses of action, are prepared to discuss the consequences of each choice and the reasons for their chosen ranking order.
- During small group discussion and problem-solving sessions, students will clarify the water-related issue(s), the major human dilemmas, and the principal players involved in the conflict.
- You may choose to use rubrics or other standards to assess student learning in this activity.

### Extensions

1. Students may call organizations and individuals to conduct interviews about these issues and:
  - ask in particular how

the people themselves would have solved the dilemma;

- share what they as a group proposed in order to solve the dilemma in the classroom setting.
2. Students could attend public or governmental meetings related to the scenarios.
  3. Students may elect to research a dilemma of their choice to:
    - learn more about the topic they discussed as a group;
    - explore other options for a dilemma which another group discussed;
    - investigate other personal water-related dilemmas in their lives and/or dilemmas they have heard about in Wisconsin.

### K-2 Option

As the teacher reads the book *All Eyes on The Pond* to the class, the teacher models a dilemma or perspective in which one of the pond creatures might find itself. For example, the teacher might ask what action the snapping turtle may take if it sees one of its competitors nearby. After several instances of modeling, the teacher then begins to ask the students what the water creatures might see from their perspective and in what dilemmas they might find themselves in their watery home. Pond, lake, or wetland species found in your region may be added or substituted for other species in the story.

## Resources

Anderson, Terry. 1995. Life on The Water Series. Green Bay Press Gazette. Green Bay, WI.

Bailey, Ann. 1993. Excuse Me, Sir. That's My Aquifer! (booklet and audio tape). Au Sable Institute of Environmental Studies. Mancelona, MI.

Clean Bay Backers. RAP Committee, 1994. How To Be A Clean Bay Backer (booklet and video). Wisconsin Department of Natural Resources. Green Bay, WI.

Harris, Bud. 1993. The State of the Bay. University of Wisconsin-Green Bay. Green Bay, WI.

Rosen, Michael J. 1994. All Eyes on The Pond. Hyperion Books for Children. New York, NY.



There are a variety of water-related dilemmas in Wisconsin that your students can investigate.

© Robert Korth

Say, Allen. 1988. A River Dream. Houghton Mifflin, Co. New York, NY.

Wisconsin Department of Natural Resources, 1991. The Green Bay Remedial Action Plan Summary. Wisconsin Department of Natural Resources. Madison, WI.

## Dilemma Cards

### Dilemma #1

You are currently running for mayor in your small hometown, located along the Wisconsin River bank. Although you are personally opposed to mining because of its potential environmental impacts, the possibility of mining exists in your town. The mining company that is considering utilizing your area promises to meet all environmental standards set by the state of Wisconsin, but you are not convinced. An operation akin to that proposed for your area has never been completed successfully in the past. However, your town is suffering financially and the prospect of employment opportunities would compliment your campaign very well. Do you include a bid to bring mining into your community in your campaign agenda, or choose to oppose the mining based on your concern for the possible

environmental impacts the the Wisconsin River?

1. Look at the situation from an economic perspective and recognize that allowing mining will benefit the most amount of people at the moment.
2. Choose not to invite mining into your community, but develop water-related tourism business (i.e. canoe rental, cabins for rent, etc.) along the river.
3. Do further research on the impacts and long term affects of mining projects similar to the one proposed in your community.
4. Other ideas?

### Dilemma #2

Every year your family returns to your grandparents cabin on Lake Michigan. It is tradition that dinner is whatever is caught fishing that day on the lake. However, due to the increase of contaminants from the leaching of heavy metals, such as mercury and lead, you are recommended not to eat any of the fish that are caught this year. You and your family have been eating fish from Lake Michigan for many years. This year, your infant nephew has joined the annual camping retreat. Do you keep the tradition of eating fish caught from the lake alive, or forego the ritual due to health concerns for you and your nephew?

1. Keep eating the fish since you are only eating it for a week, and the warnings should not apply to you and your family.
2. Have each family member decide whether to eat the fish or not, but insist that your nephew eat something else.
3. Find an alternative for the week.
4. Other ideas?



### Dilemma #3

You have recently been a lucky winner of the Wisconsin Powerball lottery and are looking into building your dream house. Your city is currently considering containing the stream which passes through it to allow for further development. The city has no other areas available for expansion. The stream would be contained in concrete that could potentially cause the river to lose dissolved oxygen that supports plants, fish, and other aquatic organisms. Containing the stream would enable you to obtain land to build your home where all your friends and relatives live. Do you decide to build your new home there and support the containing of the stream or look elsewhere?

1. Build your dream home near the contained stream.
2. Look in the area for an older home.
3. Build elsewhere.
4. Other ideas?



#### Dilemma #4

The beach on Lake Winnebago where your family goes every year to “get away from it all” looks dirty and littered this year. Soda cans, glass bottles, and fast food wrappers are more abundant on the beach than people. What can you do?



1. Go to another beach; you came here to relax, not worry about the state of the environment.
2. Pick up a small area of the beach and enjoy the rest of the day.
3. Organize a beach clean-up either with friends and family, or extend the invitation to the surrounding community.
4. Other ideas?

#### Dilemma #5

You have inherited a large piece of land in Northern Wisconsin from an aunt you never even knew! Most of the land is abandoned farmland that has converted back to native wetlands. You live in the city of Milwaukee and really do not have a use for the land. A contractor has approached you offering a large amount of money to purchase the land. He plans to fill in the wetlands then sell the property as lots for a housing development. What do you do with the land?

1. Sell — the land will be much more valuable to the people who choose to live there than it is as an abandoned wetland.
2. Don't sell — keep the land because wetlands are a vital component of the ecosystem and act as sponges that filter out contaminants in water.
3. Don't sell — keep the land, fill in the wetlands and build condominiums.
4. Other ideas?



### Dilemma #6

You are a dairy farmer who needs to use pesticides and fertilizers on your fields in order to grow crops to feed your cattle. These chemicals, however, are contaminating the groundwater and entering drinking water wells. Also, fecal material from your cattle is causing a problem with run-off from rain waters. You are approached by your neighbors who ask you to stop using chemicals and control your runoff. What do you do?



1. Explain to your neighbors that you cannot afford to change your practices.
2. Experiment with less chemicals and crop rotation to control pest problems and look into ways to help pay for a fence to keep the cow manure from entering the stream.
3. Science unveils new discoveries everyday. Search the market for alternative chemicals that have less of an effect on the environment.
4. Other ideas?

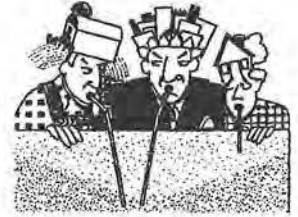
### Dilemma #7

There is a stream in your neighborhood which you have noticed is littered with trash. You want to go enjoy the stream and look for animals that might live there but you're not allowed to go there because of the trash. What are you going to do?



1. Decide that there is nothing that you can do because the stream is probably polluted and its better for your health to stay away from it.
2. Ask your parents or teachers what you can do.
3. Try and get some other kids and adults in your neighborhood to help you cleanup the stream.
4. Other ideas?





# The Pucker Effect

Adapted to Wisconsin by: James Servais, Teacher, Green Bay West High School

## Project WET Activity Adaptation Summary

This activity has been modified from the national Project WET activity, "The Pucker Effect," found on page 338 of the national *Project WET Curriculum and Activity Guide (Project WET Guide)*. The following adaptation is provided as an example of how to Wisconsinize "The Pucker Effect." This adaptation of the national Project WET activity offers more specific background information, activity extensions, and references related to groundwater issues in Wisconsin. We encourage you to modify this activity to your community. Suggestions are provided to help you with this process.

This activity is most appropriate for middle and high school students. Students will:

- observe how groundwater transports pollutants;
- simulate groundwater testing to discover the source of contamination;
- gain a better understanding of Wisconsin's groundwater resources.

To complete the activity, you will need to follow the activity procedures as written in the *Project WET Guide*.

## Additional Materials

(See the Materials section for "The Pucker Effect" in the national *Project WET Guide*, page 338, for the complete list of materials)

- Groundwater Study Guide: Groundwater Contamination Susceptibility Map

## Making Connections

Students may have been personally affected by contaminated drinking water in their community or have heard of an incident in Wisconsin. The media occasionally reports news of polluted groundwater concerns around the state. Learning about the possible effects of point and nonpoint source pollution may prompt students to assume a more active role in protecting groundwater in their communities. Below are two important definitions for this activity:

### Non point source pollution -

Pollution discharged over a wide land area, not from one specific location. This includes runoff from city streets, parking lots, home lawns, farmland, individual septic systems, and construction sites that finds its way into lakes, streams, or groundwater.

### Point source pollution -

Pollution discharged from any identifiable point; including pipes, ditches, channels, sewers, tunnels, and containers of various types.

## Background

More than 70% of Wisconsin residents depend on groundwater for their drinking water. A large number of farms and industries also rely heavily on groundwater. We are becoming more aware of groundwater mostly because of increasing incidents of contamination around the state. Many areas of the state contain soil types and geology that cause the groundwater to be very susceptible to pollution. Contamination can cause health threats to all living things when bacteria, nitrates, pesticides, metals (i.e. lead, copper, zinc, mercury), and other compounds leach into the groundwater. Some of the point and nonpoint sources of groundwater pollution include the following (also see diagrams on the following pages for visual aids):

- use and storage of road salt (nonpoint)
- improper use, disposal and storage of hazardous materials (point)
- leaking underground petroleum tanks and pipes (point)
- application of fertilizers and pesticides (nonpoint)
- improper animal waste application, storage or disposal (nonpoint)
- failing septic systems (nonpoint)

Most of Wisconsin is moderately susceptible to groundwater contamination (see "Groundwater Contamination Susceptibility in Wisconsin" map from the

*Groundwater Study Guide*). Water often travels rapidly through the state's sand and gravel glacial deposits. In areas of near surface limestone bedrock as in Door County, water can sometimes travel almost uninhibited through dissolved cracks in the rock, showing up miles away in a matter of days. However, groundwater does not travel as easily in parts of northern and eastern Wisconsin where layers or formations of clay and shale are found. As a result, water is often "guided" underground by these impermeable "layercake" or "frosting" layers. The cross-section drawings of Southern Wisconsin and Northern Wisconsin show the area's rock layer types (refer to diagrams below). In central and southern Wisconsin, there have been a number of individual's wells affected by atrazine, a pesticide

used in corn fields. In several of these areas, homeowners had to have their wells re-drilled in order to reach safe drinking water. When it was discovered that pollutants from Wisconsin's leaking underground fuel storage tanks had been affecting groundwater supplies, legislation was established to regulate existing tanks and strengthen environmental protection criteria for new tanks. It costs far less to replace a tank than to clean up the contaminated area after one has leaked. The State of Wisconsin passed a law giving the owners of leaking underground tanks a deadline for removing them from the ground. After this legislation passed in the late 1980's, they were also required to pay the cost of cleaning up the contamination.

Despite improvements to groundwater protection laws over the years, a large percentage of the population is unaware of their relationship with groundwater resources, the importance of groundwater for state residents, and our potential impacts on groundwater quality.

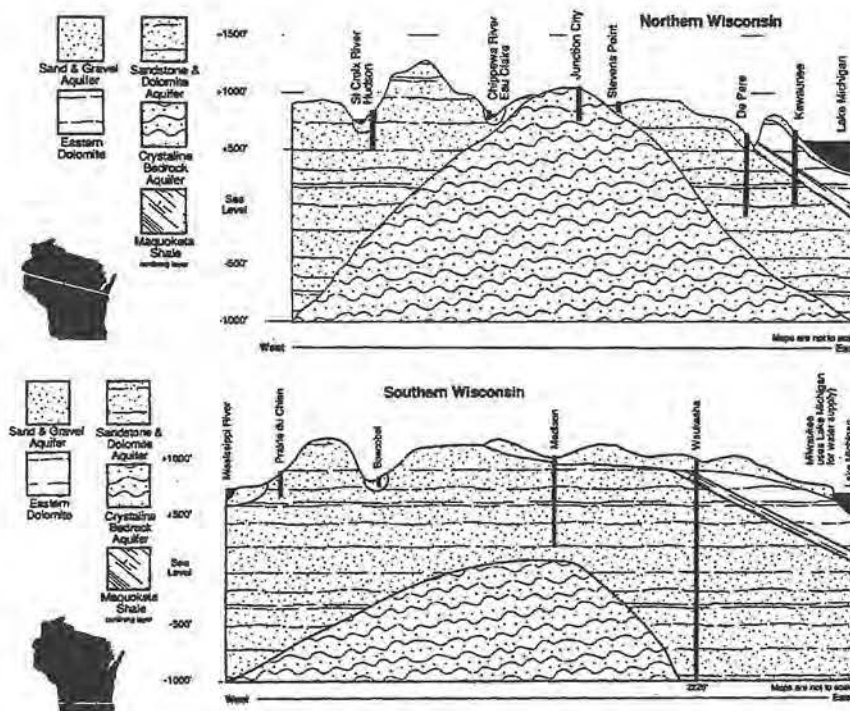
### Adapt this Activity to Your Region!

You and your students can easily adapt this activity to your region by doing any of the following:

- Investigate the geology of your area and the groundwater's susceptibility to contamination. Contact Wisconsin Geological and Natural History Survey.
- Research local groundwater issues and potential sources of groundwater contamination (contact county Land Conservation Department, DNR regional office, and/or Central Wisconsin Groundwater Center).
- Contact your city Public Works Department to find out where your water originates (see your local white pages listed under city name).
- See "Groundwater" in the *Resources* section of this *Wisconsin Supplement to National Project WET* for additional Wisconsin groundwater resources.

### Procedures

(See the Procedures section for "The Pucker Effect," page 338, in the national *Project WET Guide*)



Wisconsin's Major Aquifers  
*Wisconsin Groundwater Study Guide*

## Extensions

- Students may be interested in researching what steps their community is taking to avoid groundwater contamination from storage tanks, septic tank systems (especially those that may contain household chemicals), sanitary landfills, chemical landfills, or wastewater disposal ponds.
- Have students investigate the real costs of drilling test wells. Why would these costs vary among regions of Wisconsin (i.e. depth of water table, hardness of substrate, access to site, etc.)?
- Have students collect newspaper articles related to possible groundwater contamination within their own community, region, or throughout Wisconsin.
- Use the above information, the "Layer Cake" of bedrock formations of Wisconsin diagram above, and the



Workshop participants test for "polluted groundwater" by using a model described in "The Pucker Effect."

Groundwater Contamination Susceptibility Map (from the *Groundwater Study Guide*) to predict other areas of potential contamination.

- Take students on a field trip to any of the areas listed in the "Field Trip Ideas" section below.

## Resources

*Wisconsin Groundwater Education Resource Directory*, December 1994, Publication #WR381-94. It can be ordered from the Wisconsin Groundwater Coordinating Council, 101 South Webster Street; Box 792, Madison, Wisconsin 53707. 608/267-7610.

*Groundwater Study Guide*, A folder containing a teacher's guide, groundwater/water cycle posters, groundwater activities, copy-ready work/lab sheets, and a copy of "Groundwater: Protecting Wisconsin's Buried Treasure." It can be ordered from the Wisconsin DNR, Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790.

*Groundwater: Protecting Wisconsin's Buried Treasure* in *Wisconsin Natural Resources*. Vol. 13, No. 4. Aug. 1989. Copies of this magazine supplement (maximum of 20) are available to Wisconsin schools. The cost is \$.50 per copy plus shipping and handling. It can be ordered from the Wisconsin Geological and Natural History Survey, 3817 Mineral Point Road, Madison, WI 53705. 608/263-7389.

*Special Recycling Edition. Wisconsin Natural Resources*. Vol. 8, No. 4. July-August 1985. Wisconsin DNR, Bureau of Communication and Education, PO Box 7921, Madison, WI 53707. 608/266-6790.

*A Matter of Chance, A Matter of Choice: Environmental Risk in Wisconsin* in *Wisconsin Natural Resources*. Vol. 13, No. 2. April 1989. Wisconsin DNR (see above address and phone number).

*The Cleanup Game* in *Wisconsin Natural Resources*, Vol. 13: No. 1. February 1989. Wisconsin DNR (see above address and phone number).

## Audio-Visual Materials

*Wisconsin's Groundwater (Groundwater: Wisconsin's Buried Treasure)*, (slide/tape #16044; available in 14 minute video format #16422) 1982. For rental information, contact: Cooperative Extension Media Collection, 45 N. Charter St., Room 21, Madison, WI 53715. 608/262-3514 or 800/353-3514.

*Wisconsin's Groundwater 1984*. 25-minute video appropriate for grades 7-adult, Publication #16046. For rental information, contact: Cooperative Extension Media Collection, 45 N. Charter St., Room 21, Madison, WI 53715. 608/262-3514 or 800/353-3514.

*Groundwater Flow Model*, A classroom demonstration/lab model showing groundwater movements, well effects, water table, lake level, contamination plumes, etc. To order, contact Student Chapter AWRA, Earl Spangenberg, College of Natural Resources, UW-Stevens Point Stevens Point, WI 54481 715/346-2372.

### Resource People

- Central Wisconsin Groundwater Center, UW-Stevens Point, College of Natural Resources, Stevens Point, WI 54481 715/346-4270
- Wisconsin Geological and Natural History Survey, 3817 Mineral Point Rd., Madison, WI 53705 608/263-7389
- Water chemists
- Well drilling contractors (contact your local DNR office)
- Pump dealers
- Land Conservation Department offices
- Department of Natural Resources (DNR) environmental specialists
- Municipal/county health or environmental specialists, county planners
- County University of Wisconsin-Extension resource or agricultural agents
- Water treatment plant operators
- Hydrologists, hydrogeologists and engineers (private industry and governmental agencies)

### Field Trip Ideas

- Municipal or county landfill site, monitoring wells
- Municipal water treatment plant, well water tower
- Well drilling site (list available from local DNR office)
- Private water testing laboratory (list of certified labs available from local DNR office)
- Agricultural operation (irrigation with wells, integrated pest management)
- Water resource sites (springs, rivers, lakes, wetlands)
- Beverage or food processing industries
- Rock exposures showing groundwater effects

### Bulletins Available From UW-Extension Offices

(Cost between \$0.25 and \$1.00 per bulletin, contact UW-Extension Publications for current prices and request the publication numbers preceding the titles listed below):

UW-Extension, Cooperative Extension Publications, 630 W. Mifflin St., Rm. 170, Madison, WI 53703, 608/262-3346, Fax: 608/265-8052, Home page: <http://www.uwex.edu/ces/pubs.html>

- A7POG *Protecting Our Groundwater-A Grower's Guide*
- G3399 *Maintaining Your Home Well Water System*
- G3378 *Improving Your Drinking Water Quality*
- G3339 *Drinking Water Contamination: Understanding the Risks*
- G3338 *How Drinking Water Standards Are Established*
- G3213 *Pesticides in Groundwater: How They Get*

*There: What Happens to Them; How to Keep Them Out*

- G3054 *Nitrate in Wisconsin's Groundwater: Sources and Concerns*
- G2967 *Nonpoint Pollution: How Wisconsin Cities Affect Water Quality*

### Maps

*Groundwater Susceptibility Maps*, available in two sizes,

- 8 1/2" x 11" are \$.25 each, plus postage and handling;
- 26" x 36" maps are \$1.50 each, plus postage and handling.

Maps can be ordered from the U.S. Geological and Natural History Survey, 3817 Mineral Point Road, Madison, WI 53705. 608/263-7389.

### Wisconsin DNR Central & Regional Offices

*Central Office Bureaus:*  
Bureau of Watershed Management, 608/267-7610  
Bureau of Drinking Water and Groundwater, 608/266-0821  
PO Box 7921  
Madison, WI 53707-7921

### Northern Region

DNR  
PO Box 309  
Spooner, WI 54801  
715/635-2101

DNR  
PO Box 818  
Rhineland, WI 54501  
715/365-8900

### West Central Region

DNR  
PO Box 4001  
Eau Claire, WI 54702  
715/839-3700

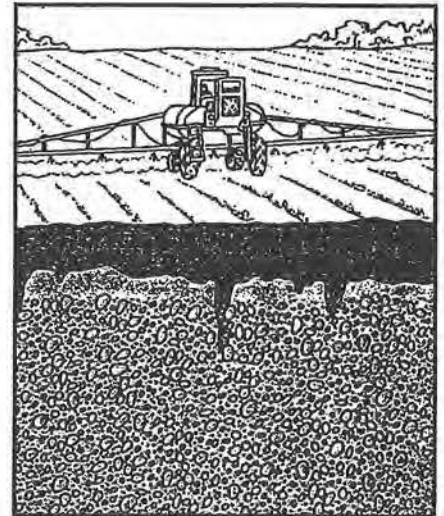
**South Central Region**  
 DNR  
 3911 Fish Hatchery Road  
 Fitchburg, WI 53711  
 608/275-3266

**Northeast Region**  
 DNR  
 2300 N. Military Avenue  
 Box 10448  
 Green Bay, WI 5430  
 414/492-5800

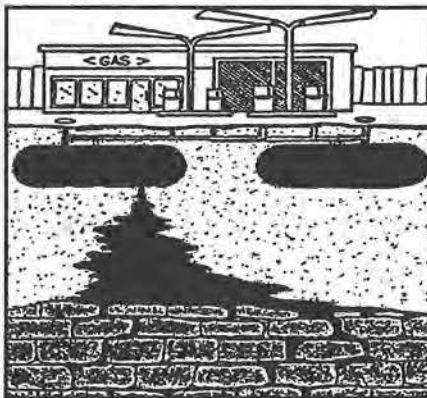
**Southeast Region**  
 DNR  
 2300 N. Martin  
 Luther King, Jr. Drive  
 Milwaukee, WI 53212  
 414/263-8500



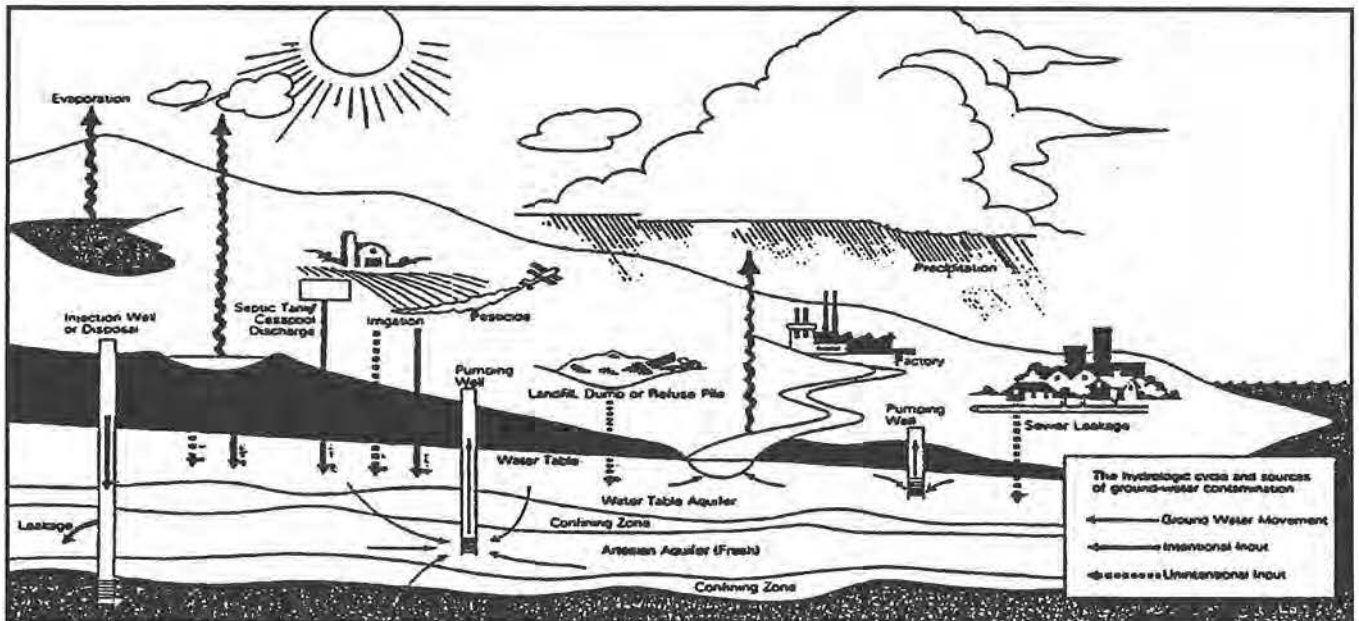
Over-application of lawn chemicals



Organic fertilizers, chemical fertilizers, and pesticides



Leaking gasoline tank



Recognizing groundwater concerns  
 from *Active Watershed Education: It's AWESome*

# Sum of the Parts

*Adapted to Wisconsin and Lake Michigan by: Karen Yost, Teacher, Our Lady of Sorrows School*

## Project WET Activity Adaptation Summary

This activity has been modified from the Project WET activity, "Sum of the Parts," found on page 267 of the national *Project WET Curriculum and Activity Guide (Project WET Guide)*. The following adaptation is provided as an example of how to Wisconsinize "Sum of the Parts" to the Lake Michigan region. We encourage you to modify this activity to a local waterway to help make it more relevant to you and your students. Suggestions are provided to help you with this process.

This activity is appropriate for upper elementary and middle school students. Students will:

- demonstrate how each person in a watershed of a lake or river can contribute to the quality of that waterway;
- recognize that everyone's "contribution" can be enhanced or diminished by different management practices;
- identify some best management practices used in Wisconsin.

To complete the activity, you will need to follow the activity procedures as written in the *Project WET Guide*.

## Additional Materials

- Large piece of paper (newsprint) or poster board (See Getting Ready section below)
- Water-based markers
- Several small items such as pencils, paper clips, books, erasers, etc.

## Making Connections

Wisconsin is truly a water-rich state. Most Wisconsin residents have had the privilege to live near or visit a lake or river and enjoy the many gifts these waterways offer. As our population has increased in the state, we have witnessed the effects on our water resources. We are often unaware of how easily we can impact local streams and lakes as well as other water users, especially those downstream. Here is an opportunity to look more closely at how we affect our waters and what land management practices can be used to help reduce those impacts.

## Background

(See the Background section of "Sum of the Parts," page 267, in the national *Project WET Guide* for further information)

## Adapt this Activity to Your Local Lake or River!

With over 40,000 miles of rivers and streams and 15,000 lakes in Wisconsin, you could easily adapt this activity to a local waterway. This will allow your students to research the actual waterfront properties and how

they are used along the local waterway. Have students identify potential point and nonpoint source pollutants coming from those properties.

For example, you may choose to adapt this activity to the Wisconsin River since many of us live within its watershed (about 15% of the state's land drains to the Wisconsin River). The Wisconsin River has a rich history of use over the decades such as: transportation for Native Americans, traders, and logs to the saw mills; dams for power and creation of recreational lakes; water source for homes and businesses; an outlet for industrial liquid waste; and thousands of other uses. Potential point source pollutants to the Wisconsin River include: paper mill by-products untreated, agricultural chemical spill, among others. Potential nonpoint source pollutants include: agricultural runoff, stormwater runoff, lawn fertilizer, motorboat engine oil, etc.

Other ideas:

- Old and recent aerial photos would be helpful to compare the land use changes that have occurred along a particular waterway.
- You may choose to do this activity in conjunction with "Color Me a Watershed" as it deals with watershed land use changes over time and the potential affects to water quality.



- See “Nonpoint Pollution” and “Water Resources Management and Protection Strategies” in the *Resources* section of this *Wisconsin Supplement* for further information.

### Procedure

(See the Procedures section for “Sum of the Parts,” page 269, in the national *Project WET Guide* for further instructions)

### Getting Ready

(See the Materials section for “Sum of the Parts,” page 267, in the national *Project WET Guide* for a diagram of the river design and further instructions)

- On a large piece of paper (newsprint) or poster board draw an enlarged outline of Lake Michigan (see attached map outline) or your local lake or river.



In “Sum of the Parts” each person is given a piece of waterfront property and a million dollars to develop their property as they wish!

- Divide the lake or river into sections\* with a dissecting line down the center (see drawing at the end of this activity).  
\*For example, seven sections allow fourteen students to each have a section. You can divide it differently depending on your group size.
- Number the sections on one side with the letter A in sequential order (1A, 2A, 3A...) placing the numbers in the upper left-hand corners and repeat for the other side with just the numbers (1, 2, see drawing in the *Project WET Guide* on page 267).
- Cut out the sections and laminate if possible (the students can use washable markers if you laminate the paper drawing).

### Warm Up

- Determine student knowledge of the location of your river or lake of choice and the various rivers that flow into it. Investigate the sub-watersheds that are part of your larger watershed (see Wisconsin watersheds maps in this *Wisconsin Supplement*).
- Discuss some of the uses of the land along the border of the waterway. Do the students think these practices could affect the lake or river? What kind of effects might occur and who would be affected?

### Activity

1. Inform students that they have just inherited a piece of riverfront property and a million dollars.
2. Pass out pieces of property and water-based markers.

Explain that the blue is water and the blank space is land they own. They have one million dollars to develop their land as they wish.

3. When students have completed their drawings, ask them to look on the reverse side of their property for a number. Explain that each piece is actually a part of a puzzle. Start with number one, have students assemble their pieces. They will construct the stream or lake and adjacent land in proper order (the ones should face each other, with the twos next to them, and so forth).
4. Have students describe how they developed their land and how they used the water. They should identify any of their actions that polluted or added materials to the waterway. Have students represent each of their contributions to the river with an item from their desks (e.g., book, piece of paper, pen, pencil).



Adopt-A-Lake youth put their pieces together to form a river and lake.

5. Tell students to take their item(s) and line up in the same order as their pieces of riverfront property. They are going to pass their pollution pieces downstream. Have them announce what kind of pollutant they are holding before they pass it on. The ones will pass their item(s) to the twos, the twos will pass

everything to the threes, and so on, until the last students are holding all the items.

6. After the students have completed the activity, have them refer to the "Recommended Land Management Practices to Promote Good Water Quality in Wisconsin" table below and consider how they

could reduce the nonpoint source pollution from their property. Let them redo the activity using some recommended land management practices for their land and observe any differences in the outcome.

### **Recommended Land Management Practices to Promote Good Water Quality in Wisconsin**

#### **Home**

- Plan your landscaping to reduce the amount of maintenance needed.
- For waterfront property owners: grow a "buffer" strip of dense, natural vegetation along the water's edge to filter pollutants and stabilize the shoreline.
- Septic tank owners: have regular inspections and pump every 2-3 years.
- Try to reduce salt use in winter. Use sand, ash, or chip the ice off pavement when possible.
- Limit the use of toxic or hazardous products. Keep them away from storm sewers, lakes, and streams.

#### **Community**

- Encourage stormwater management practices to control runoff pollution.
- Support and follow laws that reduce soil erosion from construction sites.
- Encourage the conservative use of road salt.

#### **Farms**

- Plant buffer strips next to surface waters receiving runoff from crop fields.
- Plant conservation (permanent) cover crops (perennials) on fallow land to reduce erosion.
- Use conservation cropping sequence (rotation) of close-growing grasses, legumes, and small grains with row crops to add organic residue to improve soil.
- Use conservation tillage practices that leave residues of the previous crop on the soil surface to reduce erosion.
- Practice contour farming on sloped land where the planting and cultivation are perpendicular to the slope of the land to reduce erosion.
- Create field windbreaks (strips of trees or shrubs) next to crop fields to reduce wind speed and erosion.

#### **Forestry Projects (Sediment Control)**

- Use mulch and seed where necessary to minimize soil erosion into streams, lakes, and wetlands.
- Install sediment control structures to slow the flow of runoff.
- Filter sediment and nutrients from runoff.

Compiled from *Best Management Practices for Wisconsin Farms*, UW-Extension Water Quality Fact Sheet Series, and *Wisconsin's Forestry Best Management Practices for Water Quality*



## Extensions

As a follow-up activity, students can research the actual area they were assigned to develop, investigate the actual land practices and water pollutants associated with the area. The students can:

- contact local county offices for information about the watershed.
- research the regulations associated with shoreline development.
- write letters to local government officials sharing their opinions of land use legislation.
- research how their own lifestyles and actions affect water quality in their community.

## References

*Best Management Practices for Wisconsin Farms*, UW-Extension Publications, Cooperative Extension Publications  
630 W. Mifflin St., Rm. 170  
Madison, WI 53703  
608/262-3346  
Home page:  
<http://www.uwex.edu/ces/pubs.html>

County Planning and Zoning office for aerial photos of lake or river. (Check your local white pages for county office listings)

*Rules of Thumb for Clean Water*. Yard Care and the Environment Series. UW-Extension Publications, Cooperative Extension Publications  
630 W. Mifflin St., Rm. 170  
Madison, WI 53703  
608/262-3346  
Home page:  
<http://www.uwex.edu/ces/pubs.html>

Stark, William F. Wisconsin River of History. 1988. (Check your local library)

*Water Quality Fact Sheet Series*. UW-Extension Publications, Cooperative Extension Publications  
630 W. Mifflin St., Rm. 170  
Madison, WI 53703  
608/262-3346  
Home page:  
<http://www.uwex.edu/ces/pubs.html>

*Wisconsin's Forestry Best Management Practices for Water Quality*. Wisconsin Department of Natural Resources-Bureau of Forestry  
PO Box 7921  
Madison, WI 53707-7921  
608/266-2621

Wisconsin Geological and Natural History Survey for topographic maps of lakes and river shapes.  
3817 Mineral Point Road  
Madison, WI 53705  
608/263-7389



Lake Michigan "Sum of the Parts" pieces put together.

## Lake Michigan Adaptation to "Sum of the Parts"

### Making Connections

In a social studies class students can locate the various watersheds of the Lake Michigan water basin. About 25% of Wisconsin lies in the Lake Michigan watershed (see Lake Michigan Watershed map in this Supplement). They can locate the main cities and identify the major economic sources of the area. The students can also research the historical significance of the area and its connection to Lake Michigan.

### Background

The five Great Lakes, Lake Michigan, Lake Superior, Lake Erie, Lake Huron, and Lake Ontario, contain 20% of the Earth's surface fresh water. Eight states and two Canadian provinces border the Great Lakes. We have become very dependent on the Great Lakes for industry, transportation, food supply, drinking water, and recreation. Lake Michigan is the third largest Great Lake in area and the only Great Lake entirely within the United States. It is the fourth largest freshwater lake in the world in terms of area and the fifth largest in terms of volume.

The water retention time in

Lake Michigan is approximately 99 years. This means water enters the lake, circulates slowly, and remains for about 100 years before it leaves the basin through the Straits of Mackinac. The northern part of Lake Michigan is a colder, less developed region of the upper Great Lakes. This area is sparsely populated, except for the Lower Fox River Valley which drains into Green Bay. This region has one of the most productive Great Lakes fisheries. However, it also receives waste from the world's largest concentration of pulp and paper mills.

The more southern basin of Lake Michigan is among the most urbanized areas in the Great Lakes system. It includes the Milwaukee and Chicago Metropolitan areas. This area is home to approximately eight million people, or more than 1/2 of the total population of the Great Lakes Basin. The entire Great Lakes Basin has a population of about 14 million.

The water quality in Lake Michigan generally flows in a north-to-south direction. The north having the best water quality and gradually degrading in quality as you move south. There are ten "Areas of Concern" (identified by the International Joint Commission and EPA) around the lake where degradation exists. These areas include: the western side of the lake, Manistique River Basin, Lower

Menominee River Basin, Green Bay and Fox River Basin, Sheboygan River, Milwaukee Estuary, Waukegan Harbor, and Grand Calumet River and Indiana Harbor Ship Canal. The eastern side of the lake includes the Kalamazoo River Basin, Muskegan Lake, and White Lake. The worst degradation exists in the Indiana Harbor, the Milwaukee Estuary, and Green Bay.

Pollutants can enter the lake directly or indirectly. Pollutants that enter the lake directly are referred to as point source pollutants (PS). These pollutants can be traced back to an identifiable source. Pollutants that enter the lake indirectly are referred to as nonpoint source pollutants (NPS, refer to chart on the next page). These pollutants come from many places such as the atmosphere, sediment runoff, or surface runoff. It is estimated that 50% of the phosphorus that enters Lake Michigan comes from nonpoint sources. NPS impacts are most visible near the shore of Lake Michigan. The most obvious results are poor water quality, the presence of toxins in fish and sediment, algae blooms, and harbors filling with sediment.

#### **Lake Management Plans (LaMPs)**

In response to the expanding degradation, statewide Lake Management Plans (LaMPs) have been devised to restore

and protect the waters of the Great Lakes. LaMPs are developed by the United States Environmental Protection Agency with participation from international, state, and local agencies.

LaMPs are designed to identify impaired water uses and their associated causes; determine the critical factors of lake ecosystems; identify existing and necessary management strategies to restore and protect the water; implement the plan; and track its progress. The western side of the lake currently has seven Remedial Action Plans (RAP) underway as part of the LaMP objectives. The RAPs identified several concerns within each basin.

#### **Example Remedial Action Plan (RAP) Concerns:**

***Manistique River Basin*** - historical pollutants causing sediment contamination, wastewater discharge from paper mills, and sewer overflows

***Menominee River Basin*** - arsenic contamination especially in sediment, mercury, PCB, oil and grease, storm sewer overflow, and industrial discharge

***Lower Green Bay and Fox River Basin*** - area runoff pollution from urban and rural areas, municipal and industrial wastewater discharge, and degraded habitat

***Sheboygan River Basin*** - heavy agriculture runoff (suspended solids, fecal

coliform bacteria, phosphorus, nitrogen, PCB, and heavy metals), and industrial and residential runoff

**Milwaukee Estuary** - storm sewer, urban, and industrial runoff

**Waukegan Harbor** - contaminated sediment and soils (wetland destruction), industrial leaching

**Grand Calumet River and Indiana Harbor Ship Canal** - contaminated sediments

The protection of groundwater and surface water from nonpoint source pollutants is a great challenge because of the vast and varying nature of the problem. All of the RAPs list ways citizens can get involved in the clean-up process of Lake Michigan. The national *Project WET Curriculum and Activity Guide* has several suggestions for Best Management Practices related to this activity.

## Procedure

### Warm Up

- Determine student knowledge of the location of Lake Michigan and the various rivers that flow into it. Discuss the various watersheds that make up the Lake Michigan Basin.
- Discuss some of the uses of the land along the borders of Lake Michigan. Do the students think these practices could affect the lake? What do the students think the attitude of residents on the southern end of the lake might be about the water flowing from the northern

part of the lake? Does the historical industry of our state affect the Lake Michigan water quality?

### Activity

(See the Procedures section above)

### Wrap Up

After all the items have reached the final students, discuss the activity. How did those students toward the middle or at the end of the shoreline feel? What about their property use plans? Could a student on the southern end of the lake be

### Land uses most likely to produce significant nonpoint source pollution in Lake Michigan (according to Remedial Action Plans):

Land Use	Pollutant
Urban:	
• Industrial	Toxics, oil & grease, phosphorus
• Commercial	Toxics, phosphorus
• Residential	Phosphorus
• Construction	Sediment, phosphorus
Rural:	
• Cropland	Sediment, phosphorus, toxics
• Barnyard	Phosphorus, bacteria, organics
• Eroding Streambanks	Sediments

### For further information on RAPs and LaMPs contact the following Internet sites:

Great Lakes RAPs

<http://www.greatlakes.net:2200/envt/water/watqual/manag/rap/rap.html>

Water Quality - Areas of Concern

<http://www.cciw.ca/glimr/topic-browse/graphic-mode/water-quality/areas-concern/intrc>

Lakewide Management Plans

<http://www.greatlakes.net:2200/envt/water/watqual/manag/lamp/lamp.html>

Great Lakes Information Network

<http://www.great-lakes.net>

International Joint Commission

<http://h2o.usgs.gov/public/wid/html/gl.html>

Great Lakes Information Management Resource

<http://www.cciw.ca/glimr/intro.html>

affected by the actions of a student in the northern half of the lake? Could the northern uses of the lake alter the quality of the water in the southern end? What about vice versa? The flow of the lake circulates so, all sections of the lakeshore can affect each other and the overall quality of Lake Michigan.

**Extensions**

- As a follow-up, the students can research the actual area they were assigned to develop. They can discover the real land practices and the water pollutants associated with the area.
- The students can contact the Environmental Protection Agency and find out about the Remedial Action Plans for that watershed. The students can research the regulations associated with development along the Lake Michigan shoreline.
- Students can research how their own lifestyles and actions affect water quality.
- Students could write letters to local government officials sharing their opinions of land use legislation.

**Resources**

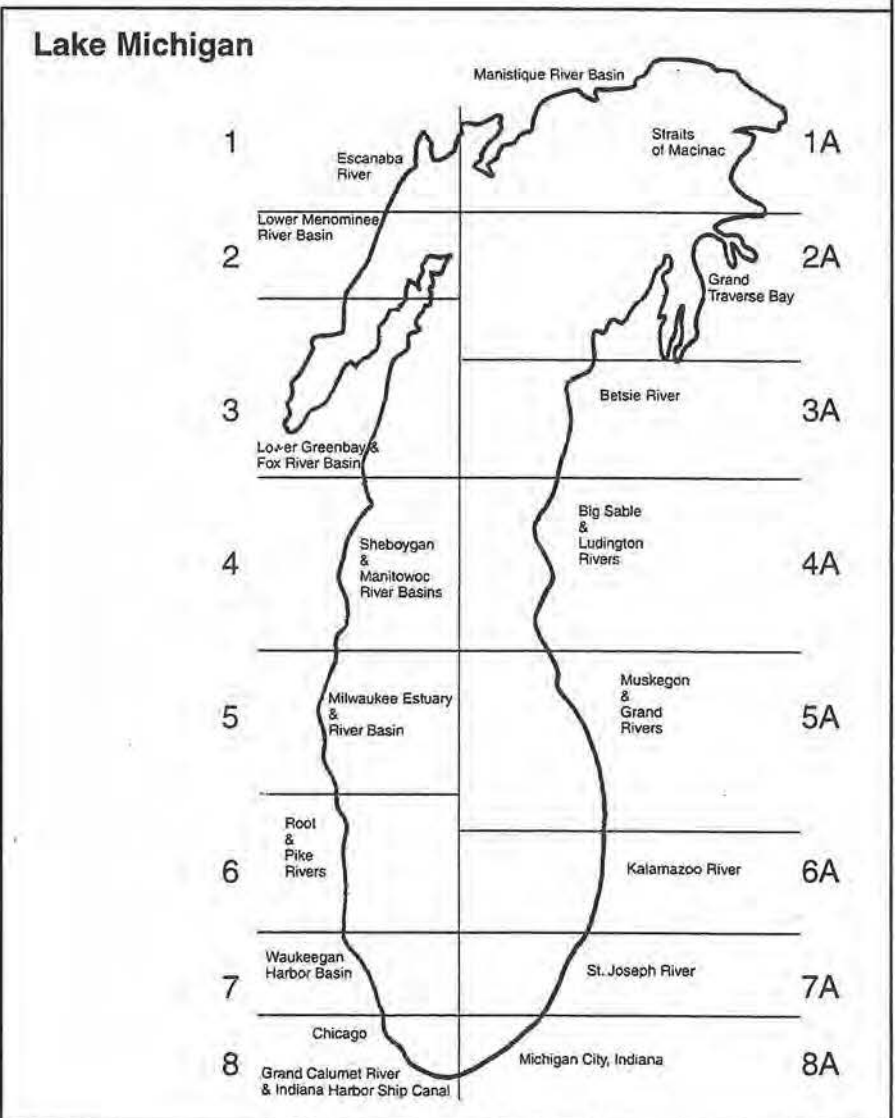
Great Lakes Information Network:  
<http://www.great-lakes.net>

*Remedial Action Plans (RAP).*  
 Wisconsin DNR, Bureau of Watershed Management  
 GEF 2, WT/2  
 PO Box 7921  
 Madison, WI 53707  
 608/267-9352

*State of the Great Lakes.* 1995.  
 Environmental Protection Agency & Environment.  
 Canada

*Wisconsin: Grateful for the Great Lakes.* Wisconsin Department of Natural Resources, Bureau of Watershed Management  
 PO Box 7921  
 Madison, WI 53707  
 608/267-7694

See Internet Sites listed on previous page



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# Water Address



*Adapted to Wisconsin by:  
Jody Henseler, Teacher, Owen-  
Withee Public Schools*

*Carolyn Peterson, Teacher, Luck  
Public Schools*

*Adapted to the Mississippi River  
by:  
Shelly Cook, Teacher, School  
District of Onalaska*

## **Project WET Activity Adaptation Summary**

This activity has been modified from the Project WET activity, "Water Address," found on page 122 of the national *Project WET Curriculum and Activity Guide* (*Project WET Guide*). The following adaptation is provided as an example of how to Wisconsinize "Water Address" to Wisconsin and the Mississippi River. It includes specific information about the Upper Mississippi River ecosystem. We encourage you to modify this activity to your region to help make it more relevant to you and your students. Suggestions are provided to help you with this process.

This activity is appropriate for upper elementary, middle, and high school students (depending on which clue cards are used). Students will:

- identify organisms by analyzing clues that describe their adaptations to aquatic ecosystems;

- gain a better understanding of Wisconsin plants and animals found in aquatic habitats.

To complete the activity, you will need to follow the activity procedures as written in the *Project WET Guide*.

## **Additional Materials**

(See the Materials section for "Water Address," page 122, in the national *Project WET Guide* for the complete list of materials)

- Map of Wisconsin
- Wisconsin Water Address clue cards (for upper elementary, middle, and high school grades)
- Upper Mississippi River Address Cards (for middle and high school grades)
- Wisconsin species pictures (pictures at end of this activity)
- Map of the Upper Mississippi River (optional)
- Mural paper, paint, paint brushes, crayons, colored pencils (optional)
- Encyclopedia (optional)

## **Making Connections**

Children have seen pictures of and observed wild animals that live in Wisconsin such as beavers, mosquitoes, and bald eagles. All of these organisms have special features, or adaptations, that help them survive in aquatic habitats. Students can gain a better appreciation for the importance of water for survival by learning

more about these specific adaptations.

## **Background**

Water plays an important role in Wisconsin. There are over 15,000 interior lakes, 40,000 miles of rivers and streams, and 5.3 million acres of wetlands located within Wisconsin. The name "Wisconsin" was taken from its principal river, the Wisconsin River, which runs nearly through the heart and length of the state. The origin of the name has many possible sources and meanings. One is derived from an Ojibwa word, "Wees-konsan," meaning "gathering of waters," describing the many bodies of water that are found here. Wisconsin is bounded on the north by Lake Superior, the west by the Mississippi River, and the east by Lake Michigan.

Within Wisconsin, plants and animals have become suited to live in aquatic environments in many ways. For example, fish have streamlined bodies and fins to help them maneuver through water. Ducks have webbed feet for swimming and glands that produce a waxy oil for waterproofing their feathers. Other organisms have developed the means to filter oxygen from water; for example, fish have gills. To live in fast-flowing water, some organisms have modified mouthparts, fins, or roots that resemble suction cups, to keep them from being swept downstream. Many aquatic plants have long stems

which allow the flower to reach the surface and disperse its seeds. There are some free-floating aquatic plants like duckweed (*Lemna* species) which have roots that are not in soil but instead get nutrients from the water.

The behavior pattern of an animal can be a response to the lack of, or abundance of, water. The Common Loon, for example, migrates great distances to leave the frozen lakes of Wisconsin to find open water farther south.

### Adapt this Activity to Your Region or Watershed!

This activity provides an opportunity for your students to investigate the aquatic-related flora and fauna of your region. Have your students create clue cards for local species through the following information sources:

- Contact Department of Natural Resources staff and refer to fact sheets about local aquatic species
- Contact local nature center staff, libraries, museums, and natural resources offices for further information about local species
- Contact U.S. Fish and Wildlife Service offices
- Contact U.S. Forest Service Offices
- See "Impacts on Plant and Wildlife Communities" in the *Resources* section of this *Wisconsin Supplement* for resources about Wisconsin species

### Procedures

(See the Procedures section for "Water Address" in the national *Project WET Guide*, page 123)

#### Warm Up

- Have students list different habitats found in Wisconsin and compare water availability in these areas.
- Ask students to list animals they think might be found in these areas and describe how these organisms either live in or use water.

#### Activity

1. Tell students they are going to play a riddle game in which they must guess an organism's identity and "water address." Ask them to form groups of three or four.
2. Hand out a set of *Water Address* cards to each group. Instruct students not to look at the cards before the game starts.
3. Explain that each card lists four adaptations to water of a certain plant or animal. Based on the clues, students will try to guess the name of the plant or animal and the habitat in which it is usually found.
4. Each group should initially pick one student as "reader." This student will read clues, one at a time and in any order, until someone else in the group can guess the plant or animal. Answers are listed at the bottom of each card. If pictures or photos of organisms are available, have students place the image on a map to indicate where it lives.
5. The student who correctly guessed the previous water

address riddle becomes the new reader and begins reading the clues on the next card. Continue the game until all cards have been read.

#### Assessment

- Explain how adaptations enable animals to live in diverse water environments.
- Create clue cards for different species, listing facts and water-related adaptations.

#### Extensions

Have groups of students in your class research different aquatic ecosystems within the state of Wisconsin. Each group can create a book, newspaper, posters, or mural depicting their specific habitat in order to inform others of unique and interesting ecosystems and species found in Wisconsin.



Jody Henseler and Owen-Withee Elementary School students play the Wisconsin version of "Water Address."

## Resources

Benyus, Janine M. 1989. Northwoods Wildlife: A Watcher's Guide to Habitats. Northwood Press, Inc. Minocqua, WI.

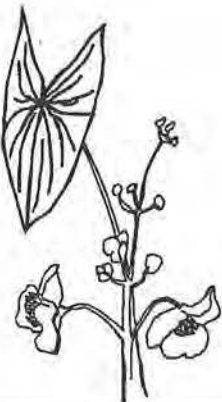
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Kochanoff, Peggy. 1994. A Field Guide to Nearby Nature: Fields and Woods of the Midwest and East Coast. Mountain Press Publishing Company: Missoula, MT.

The New Grolier Multimedia Encyclopedia. 1993. Grolier, Inc. Available online, subscription needed. Home page: <http://gme.grolier.com>

Stensas, Mark. 1993. Canoe Country Wildlife: A Field Guide to the Boundary Waters and Quetico. Pfeifer-Hamilton Publishers. Duluth, MN.



## Mississippi River Adaptation to "Water Address"

### Activity Adaptation Summary

- Students identify animals and the areas in or around the Mississippi River in which they live by analyzing clues that describe the animals' water-related adaptations.
- Before doing the activity, students should understand the importance of animals' special adaptations needed to survive in the Upper Mississippi River or surrounding areas. This activity would be most suitable as a culminating experience after a unit of study on the animals of the Upper Mississippi River. Each student could conduct research and give an oral report on an animal of their choice that lives in or around the river several weeks before doing this activity.

### Making Connections

Children who live near the Mississippi River or surrounding wetlands have seen or heard of a great blue heron, muskrat, catfish, or northern water snake. One common element among all of these animals is that they have adaptations related to surviving in the Upper Mississippi River area. Learning about the specific adaptations of animals will help students appreciate the importance of water and

the river for survival.

### Background

Three-quarters of Earth is covered with water. Many plants and animals live in water environments such as rivers, oceans, and lakes. To survive in or around water environments, plants, animals, and other living organisms have developed special features or adaptations. Developed over time, these adaptations help organisms acquire available nutrients and energy, protect themselves against enemies, and cope with diverse conditions.

The Upper Mississippi River contains a wide variety of flora (plants) and fauna (animals) that have successfully adapted to the river environment. A walk along the river's edge and its adjacent floodplain brings the sights, sounds, and smells of hundreds of species of plants and animals. The plants and animals of the river ecosystem interact and depend on one another and their environment.

Vertebrates that flourish in the Upper Mississippi River include mammals such as minks, muskrats, and beaver which can be seen in and along the river, its tributaries, and surrounding marshlands. With patience, one might catch a glimpse of a river otter. The northern water snake is a common reptile. The river can harbor a snapping turtle, which can grow up to 40 pounds, or a smaller painted

turtle that lives in a variety of nearby wetland habitats. Species of fish found in the river include: catfish, muskellunge, white bass, bluegill, and paddlefish, among others. Ducks, geese, bitterns, rails, and shorebirds thrive in the Upper Mississippi River. Bald eagles nest and winter in the area. Aquatic and riverbank plants provide the food and cover for many of these animals and their prey.

Some of the most abundant animals along the Upper Mississippi River are those that are difficult to see on a casual stroll. Thousands of invertebrates (animals without a backbone) are macro-invertebrates (invertebrates that are small, but still visible to the naked eye). Larval insects dominate the macroinvertebrate community. Other invertebrates inhabiting the river include insects, crustaceans (such as crayfish), mollusks (clams and mussels), gastropods (snails), oligochaetes (worms), and others.

The animals that live in and around the Upper Mississippi River have special features to adapt to the specific river environment where they live, feed, hide, or raise their young. There are many specific locations where you may find a particular animal. These places include: over the water, on or near the surface of the water, shallow water, deep water, river bottom, in the water near shore, on the riverbank, quiet backwaters

with lower currents, marshland, turbid water in the main river channel, or the woodland area lining the river/wooded islands. A catfish is tolerant of fast-flowing currents and moves into shallow and muddy backwaters at night to feed. Muskrat eat aquatic vegetation from the marsh as well as use marsh plants to build their dens on a shallow bottom or shore. Wood ducks perch in trees and nest in tree cavities in woodlands near the river or other wetland habitats such as marshes. Snapping turtles rest in the warm shallows, often buried in mud. Animals can obviously be found in more than one location throughout the day or year. Upper Mississippi River animals and plants interact and depend on one another and their environment for their survival.

Plants and animals have become suited to living in these specific river environments in many ways. Animals that live in strong currents often have flattened bodies and streamlined shapes to make them efficient swimmers. Ducks have webbed feet for swimming and glands that produce a waxy oil for water-proofing feathers. Other animals have special appendages, such as claws, for clinging to stones or to the river bottom. Many river species have gills that can take in oxygen dissolved in water.

Many of the organisms that inhabit the Mississippi River

look significantly different in their earliest stages of development than they do as adults. This is most obviously true for some aquatic insects. A mosquito larva living under water looks markedly different than the adult insect flying around. Aquatic mammals on the other hand, are often easy to recognize in their younger forms. In this activity, students will have the opportunity to learn more about the amazing adaptations of aquatic species.

## Procedures

(See the Procedures section above)

### Warm Up

- Ask the students to name some animals that may live in or around the Upper Mississippi River.
- Ask students what body parts the animal has or behaviors it displays in order to survive in the river or surrounding areas.

### Wrap Up and Action

- Discuss how adaptations enable animals to live in or around the Upper Mississippi River. Have students summarize some water-related adaptations of riverine species included in the game (e.g., swimming, filtering oxygen from water, keeping out excess water).
- Discuss the reasons it may be important to preserve areas such as woodland or wetland areas that are located near the Mississippi River. Remind students that there are many addi-



tional river species not included in this activity which also have interesting adaptations.

- Have the students visit the library and view videos to research additional Upper Mississippi River animals' adaptations to water, and then make additional clue cards for their own game. If students have already completed research reports on a particular river animal before this activity, have them make a card for the animal they researched. The game can then be played with these new cards, and groups can swap cards for longer games. Encourage students to play this game with friends and family.

### Assessment

- In small groups, have students draw/paint a mural of the Upper Mississippi River ecosystem including the many specific river environments where animals can be found (e.g. deep turbid water, marshes, riverbank, woodland area lining the river, etc.). Then, have students draw the actual animals (including their special adaptations) and place them in the correct locations on the mural.

### Extensions

- Have the students research a particular Wisconsin habitat and its inhabitants. Then, turn the classroom into the habitat. For one example, if your class was

to research and create a pond, have them make the animals and plants, hang them from the ceiling as if suspended in the water. A fan blowing lightly across the display will give the appearance of water movement.

- Create a model of the Mississippi River in your classroom. Use paper mache, paint, and construction paper to create the flora and fauna of the river for further study in the classroom.

### Resources

Burt, William. 1976. Peterson Field Guides-Mammals. Houghton Mifflin Co. New York, NY.

Conant, Roger. 1975. Peterson Field Guides-Reptiles and Amphibians. Houghton Mifflin Co. Boston, Mass.

*Fact Sheets about Mississippi River Species*. Wisconsin Department of Natural Resources  
3550 Mormon Coulee Rd.  
LaCrosse, WI 54601  
608/785-9000

Jeffords, Michael. 1992. Wetland Wonders. (Illinois Natural History Survey). Champaign, Illinois. Distribution McLeod, Reggie. Big River Publications.

Niering, William. 1992. The Audubon Society Nature Guides. Chanticleer Press, Inc. New York, NY.

Parker, Steve. 1988. Pond and River. Knopf. New York, NY.

Taylor, Barbara. 1992. River Life. New York, Dorling Kindersley. New York, NY.

*Zebra Mussel*. Brochure. Wisconsin Department of Natural Resources, Bureau of Fisheries Management and Habitat Protection, 608/266-1877, or Bureau of Integrated Science Services, 608/266-4359. Madison, WI.



Owen-Withee School teachers try to match the "Water Address" clues with pictures of possible species.



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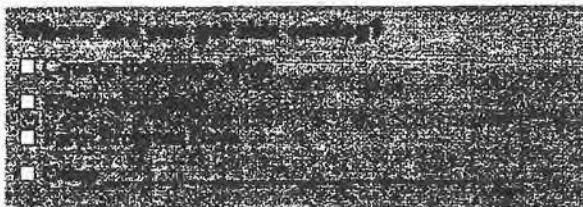
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---

# Index

\*All resources (from the *Resources* section) are italicized

- Acid Precipitation's Impact on Materials, Visibility and Human Health* 43  
*Acid Rain Deposition* 43  
*Acid Rain Fact Sheets* 43  
*Acid Rain: Impact on Aquatic Organisms other than Fish* 43  
*Acid Rain in Wisconsin* 43  
*Acid Rain Measurements: What they Mean* 43  
*Acid Rain: Potential Effects of Acidic Deposition on Forest Soil Biology* 43  
*Adopt-A-Lake* 30, 41, 85  
*Adopt-A-Lake Packet* 40  
*Adopt-A-Lake Project: A Resources Guide for Leaders* 28  
*Adopt-A-Stream Foundation* 97  
*Agricultural Management Practices* 44  
*Agricultural Management Practices to Minimize Groundwater Contamination* 44  
*Agricultural Resource Management Division* 72  
*Air Study Guide* 51  
*Aldo Leopold Foundation and Leopold Memorial Reserve* 125  
*All About Loons* 27  
*American Indian Center* 59, 110  
*American Indian Resource Manual for Public Libraries* 57  
*American Rivers* 34, 97  
*American Water Resources Association* 97  
*American Water Resources Association Careers* 12  
*American Water Resources Association Student Chapter* 12, 97  
*American Water Works Association* 13  
*America's Clean Water Foundation* 97  
*Angler Education Program* 48, 74  
*Apostle Islands National Lakeshore* 115  
*Aquatic Exotics Species Chest* 46  
*Aquatic Insects* 27  
*Aquatic Insects of Wisconsin* 27  
*Aquatic Plants* 27  
*Aquatic WILD* 18, 26  
*Area Research Centers* 59  
*Areawide Water Quality Management Plan* 38  
*Army Corps of Engineers* (see U.S. Army Corps of Engineers)  
*Audubon Society* (see national Audubon Society)  
*Audubon Society-Fox River Valley Chapter* 110  
*Bad River Band of Lake Superior Chippewa* 114  
*Natural Resources Department* 114  
*Barnyard Runoff Management* 45  
*Basin Educators* 77  
*Basin Water Quality Management Plan* 66  
*Bay Lake Regional Planning Commission* 21, 108, 140  
*Be Wisconsin Water Wise Placemats* 38  
*The Bell Museum of Natural History* 47  
*Beneficial Landscape Practices* 65  
*Best Management Practices for Wisconsin Farms* 45, 55  
*Best Management Practices to Protect Water Quality* 55  
*Better Farms and Groundwater* 22  
*Better Homes and Groundwater* 22, 65  
*Better Homes and Gutters* 65  
*Biosolids* 37  
*Blackhawk Park* 35  
*The Blue Book of Wisconsin* 57  
*Brown Water, Green Weeds* 49  
*Building Near Wetlands* 60  
*Cable Natural History Museum* 115  
*Can Acid Rain Damage Lakes in Wisconsin?* 43  
*Career Services* 12, 82  
*Caring for our Lakes: A Curriculum on the Yahara Watershed* 28, 66, 82  
*Carry Creek Teaching Tool* 31  
*CESAs* (see Cooperative Education Service Agency)  
*Center for Global and Regional Environmental Research* 102  
*Center for Integrated Agricultural Systems* 45, 81, 85  
*Center for Limnology* 81  
*Central Wisconsin Groundwater Center* 15, 16, 24, 25, 50, 63, 80, 127  
*Champions of the Public Trust* 57, 60  
*Chequamegon National Forest* (see U.S. Forest Service)  
*Chippewa Treaty Rights* 61  
*Chippewa Valley Museum* 59, 123  
*Citizens for a Better Environment* 85  
*A Citizen's Guide to Governmental River Management and Protection Programs and Agencies in Wisconsin* 31  
*A Citizen's Streambank Restoration Handbook* 31  
*Clean Air Publications Order Form* 51  
*Clean Bay Backer Education Package* 20, 49  
*Clean Bay Backers* 108  
*Clean Water Action Project* 97  
*Cleaning up Stormwater Runoff* 53  
*College of Agricultural and Life Sciences* 81  
*College of Natural Resources* 82  
*Color Me A Watershed* 165  
*Commerce and Conservation on the Upper Mississippi River* 34  
*Common Groundwork: A Practical Guide to Protecting Rural and Urban Land* 61  
*Common Water* 170  
*Community Conservation Associates* 123  
*The Complete Guide to Environmental Careers* 12  
*Computer Networking* 101  
*Coons Creek Contribution* 31  
*Cooperative Education Service Agency (CESA)* 91, 122  
*Cooperative Extension County Offices* 77  
*Cooperative Extension Districts* 77  
*Cooperative Extension Media Collection Office* 77  
*Cooperative Extension Northeast District* 78  
*Cooperative Extension Publications* 78  
*Cooperative Extension Southeast District* 78  
*Cooperative Extension Southern District* 78  
*Cooperative Extension Western District* 78

---

# Index

- County Cooperative Extension Districts 78  
County Extension Office (see UW-Extension Cooperative Extension County Offices)  
County Land Conservation Department Offices (see Land Conservation Department)  
County and Municipal Government Offices 130  
    Environmental Health Department 130  
    Health and Social Services 130  
    Planning and Zoning 130  
    Public Works Department 130  
Crandon Mining Company 64  
*Crandon Mining Company's Summary Report: A Project Description and Environmental Baseline Data* 64  
*Cryptosporidium Species Oocyst and Giardia species Cyst: Occurrence, Concentrations and Distributions in Wisconsin Waters* 16  
Cultural and Historical Uses 57  
*Cultural Map of Wisconsin* 57  
*The Cumulative Impacts of Mining Development in Northern Wisconsin* 64  
Dane County Extension 123  
    *Dane County Water Watchers* 123  
Dane County Lakes and Watershed Commission 124  
Dane County Regional Planning Commission 124  
Department of Administration 72  
    Wisconsin Acid Deposition Council 72  
    Wisconsin Coastal Management Program 72  
Department of Agriculture, Trade and Consumer Protection 72  
    Bureau of Agrichemical Management 72  
    Bureau of Land and Water Resources 72  
Department of Commerce 72  
    Division of Safety and Buildings 72  
    Division of Environmental and Regulatory Services 72  
Department of Health and Family Services 72  
    Bureau of Public Health 15, 16, 72  
Department of Natural Resources 72  
Department of Natural Resources Central Office 72  
Department of Public Instruction 77  
    Publication Sales 77  
Department of Tourism 77  
Department of Transportation 77  
    Bureau of the Environment 69, 77  
*Dilemma Derby* 179  
*The Directory of Great Lakes Education Materials* 20  
*Directory to Wisconsin's Environmental Education and Nature Centers* 70, 91  
DNR Bureau of Air Management 73  
DNR Bureau of Communication and Education 73  
DNR Bureau of Community Financial Assistance 73  
DNR Bureau of Cooperative Environmental Assistance 62, 73, 74  
DNR Bureau of Drinking Water and Groundwater 73, 74  
DNR Bureau of Endangered Resources 73  
DNR Bureau of Facilities and Lands 73  
DNR Bureau of Fisheries Management and Habitat Protection 73  
    Angler Education Program 74  
    Fisheries and Aquatic Resources Section 74  
    Lakes and Wetlands Section 30, 69, 74  
    Monitoring Section 74  
    Rivers and Regulation Section 74  
    Watchable Fish 49  
DNR Bureau of Forestry 59, 73, 74  
DNR Bureau of Human Resources 73  
DNR Bureau of Integrated Science Services 73, 74  
DNR Bureau of Law Enforcement 61, 73, 74  
DNR Bureau of Remediation and Redevelopment 74  
DNR Bureau of Waste Management 73, 74  
DNR Bureau of Watershed Management 75  
    Floodplain/Shoreland Management Section 75  
    Great Lakes and Watershed Planning 75  
    Nonpoint Source Program 50, 56  
    Point Source Technical Evaluation Section 75  
    Remedial Action Programs Coordinator 75  
    Runoff Management Practices Section 75  
    Self-Help Lake Monitoring Program 75  
    Surface Water Quality Standards Section 75  
    Water Action Volunteers 75  
    Water Quality Modeling Section 75  
DNR Bureau of Wildlife Management 49, 73, 75  
DNR Careers 12  
*DNR Fact Sheets* 26, 68  
DNR Geographic Management Unit (GMU) Offices 75, 76, 145  
DNR Home Page 73  
*DNR Laws* 61  
DNR Mining Project Managers 64  
DNR Nonpoint Source Program (see DNR Bureau of Watershed Management)  
DNR Publications 75  
    Order Form 211  
DNR Recycling Coordinator 52  
DNR Regional Offices 75, 144, 188  
    Northern Region Offices 75, 114, 122  
    Northeast Region Office 75  
    Southeast Regional Office 75, 108  
    South Central Regional Office 75, 124  
    West Central Office 75, 118, 122  
*DNR Series on Contaminants* 26  
DNR Staff Directory (Information Center) 73  
DNR Technical Bulletin Series 28  
DNR Western Boundary Rivers Unit 35, 118  
*Do You Need a Mechanical Aquatic Plant Harvester?* 28  
Door County Maritime Museum 22, 110  
*Down to the Shoreline: Cutting Pollutants that Flow to Coastal Waters* 42  
*Dredging on the Upper Mississippi* 34  
Drinking Water Contaminants 16  
*Drinking Water Contamination: Understanding the Risks* 14  
Drinking Water Supply 14  
Ducks Unlimited 70, 85  
    Green Wings Program 85  
East Central Wisconsin Regional Planning Commission 108, 140  
East Michigan Environmental Action Council (see Great Lakes Environmental Education Project)  
*Eco Masters* 37  
Econet 102  
Edgewood College 124



---

# Index

- Educ'Ade: Environmental Education Publications for Teachers* 17
- Educating Young People About Water: A Guide to Goals and Resources with Emphasis on Nonformal and School Enrichment Settings* 18, 98
- Education for the Earth: A Guide to Top Environmental Studies Programs* 12
- Education Handbook for Wisconsin* 12
- Educators' Guide to the Upper Mississippi River National Fish and Wildlife Refuge* 34
- EE Link 102
- EE News* 17, 62, 73
- Effigy Mounds National Monument 36, 60, 121
- Eisenhower National Clearinghouse for Science 19, 98, 102
- Environmental Career Opportunities* 12
- Environmental Careers Organization 12, 13, 98
- Environmental Management Technical Center 35, 36, 118
- Environmental News Network 102
- Environmental Protection Agency (EPA) (see U.S. Environmental Protection Agency)
- Environmental Resources Center (refer to UW-Extension) 79
- Environmental Task Force Lab 82, 127
- Enviroscape Runoff Pollution Model* 50
- Enviroscape Wetlands Model* 68
- EPA Lake and Reservoir Restoration Guide* 28
- EPA Region V (see U.S. EPA)
- ERIC Clearinghouse for Science, Mathematics and Environmental Education 19, 98
- Erosion Control for Home Builders* 53, 66
- Eurasian Water Milfoil: A Threat to Wisconsin Lakes* 46
- Eurasian Water Milfoil and Northern Water Milfoil* 46
- Exotic Species Advisory Poster* 46
- Exotic Species Management Program 47
- Exotic Species Problems/Public Education Solutions* 46
- Exotics: Don't Let Them Ride With You!* 46
- Fact Sheet Series, Department of Health and Family Services* 16
- Farm Operation Model* 45
- Farm Practices Inventory* 80
- FARM\*A\*SYST 14, 45
- Farmland Preservation 85
- Farmstead Assessment System* (see FARM\*A\*SYST)
- Federal Agencies 93
- Federal Emergency Management Agency (FEMA), Region V 93
- Federation of Environmental Toxicologists 52, 62, 85
- Federation of Fly Fishers 48, 85
- Fertilizers and Wisconsin Lakes* 45
- A Field Guide to Aquatic Exotic Plants and Animals* 46
- Field Manual for Water Quality Monitoring: An Environmental Education Program for Schools* 40
- Fields and Streets* 50
- Findings* 26
- Fish 27
- Fisheries and Aquatic Resources Section (DNR Bureau of Fisheries Management and Habitat Protection) 74
- Fisheries Management 48
- Fishing and Boating on the Upper Mississippi River* 34
- Floodplain Management: Sharing the Challenge* 53
- Forest County Potawatomi 108
- Forest Impacts: Acid Rain, Air Pollutants and Other Stress Factors* 44
- Fort Folles Avoine 60, 121
- The 4th R: Action Booklet for Recycling* 51
- Fox/Wolf Basin Alliance 110
- Fox/Wolf Rivers Environmental History Project* 59, 110
- Freshwater Foundation 98
- Freshwater Mussels of the Upper Mississippi River* 34
- Gathering Waters* 42
- Gathering Waters, Inc. 43, 85
- A Gathering of Waters: Education About Water Resources in Wisconsin* 17
- General (Resources) 17
- Genoa National Fish Hatchery 94, 121
- Getting to Know Your Streams* 31
- Give Water A Hand 19, 38, 98
- Government and Citizenship Issues 60
- Great Lakes 20
- Great Lakes Commission 104
- The Great Lakes: An Environmental Atlas and Resource Book* 20
- Great Lakes Environmental Directory* 20
- Great Lakes Environmental Education Project* 20, 104
- Great Lakes Environmental Research Laboratory 94
- Great Lakes Home Pages 105
- Great Lakes Information Network 105
- Great Lakes Indian Fish and Wildlife Commission 59, 104
- Great Lakes in My World* 20
- Great Lakes Regional Environmental Information System 105
- Great Minds! Great Lakes!* 20
- Great Lakes Regional Pollution Prevention Roundtable 51, 105
- Great Lakes Regional Pollution Prevention Roundtable Newsletter* 51
- Great Lakes Research Facility 81
- Great Lakes Organizations 104
- The Great River Flyway* 27
- GREEN (Global Rivers Environmental Education Network) and Cross Cultural Watershed Program 19, 33, 41, 42, 98, 102
- Green Bay Metropolitan Sewerage District 37, 111
- The Green Square Game and the Fun Factory: Interactive Exercises for Waste Reduction Training* 52
- Groundwater 22
- Groundwater Fact Sheets* 23
- Groundwater Flow Demonstration* 23
- Groundwater Investigation Kit* 23
- Groundwater Model Project 82
- Groundwater Report Special Issue* 23
- Groundwater Study Guide* 23
- Groundwater: Protecting Wisconsin's Buried Treasures* 23, 42
- A Guidebook to Groundwater Resources and Education Opportunities in the Great Lakes Region* 23
- A Guide to Curriculum Planning in Environmental Education* 18

---

# Index

- A Guide to Wisconsin's Lake Management Law* 61  
Hamline University Center for Global Environmental Education 118  
Havenwoods Environmental Awareness Center (DNR) 110  
Heritage Hill State Park 60, 111  
Historical Society of Wisconsin 86  
    Area Research Centers 86  
Ho-Chunk Nation 124  
HOME\*A\*SYST 14, 45  
*Home Water Safety Education Packet* 65  
*Home Water Safety: Evaluating the Condition of Your Private Water Supply* 14, 65  
*Home Water Safety: Evaluating the Condition of Your Public Water Supply* 14, 65  
Horicon National Wildlife Refuge 94, 129  
*House Builders Guide to Protect Water Resources* 65  
*How a Mine is Permitted* 64  
*How and Why we Monitor the Environment (Vital Signs)* 42  
*How Clean is the Mississippi River?* 34  
Hydrologic (Unit) Maps 40, 67  
*Impacts of Phosphorous on Streams* 45  
*Impacts of Stormwater Runoff on Urban Streams* 56  
Impact of Water Quality on Plant and Animal Communities 26  
*Industrial Waste Reduction Information Clearinghouse* 52  
Industry and Business 62  
Institute for Environmental Studies 81  
*Intensive Cultural Survey of Communities* 57  
International Joint Commission, Great Lakes Regional Office 98, 105  
*Interactive Lake Ecology: Student Workbook* 28  
*An Introduction to Wisconsin Wetlands* 68  
*It All Adds Up* 38, 50  
Izaak Walton League of America (National Office) 41, 98  
Izaak Walton League of America (Wisconsin chapter) 48, 70, 86  
Jason Project 18, 99  
*The Job Seeker* 12  
*Jobtrak* 13  
*Keeping Current (Newsletter)* 38, 50, 67  
*Keeping Our Shores* 53  
*Key to Life in the Pond* 27, 28, 40  
*Key to Macroinvertebrate Life in the River* 27, 32, 40  
Kickapoo Indian Caverns and Native American Museum 60  
Lac Courte Oreilles Band of Lake Superior Chippewa, Conservation Department 114  
Lac du Flambeau Band of Lake Superior Chippewa, Tribal Natural Resources Department 114  
Lac Lawrann Nature Conservancy 111  
LaCrosse Fishery Resource Office 94, 121  
Land Conservation Department 130  
Land Conservation Department County Offices 130-134  
*The Lake Connection* 29  
*The Lake in Your Community* 29  
*Lake Leader's Handbook* 29  
*The Lake List* 29  
Lake Michigan Federation 21, 104, 108  
Lake Michigan Forum 105  
Lake Michigan Watershed 107  
Lake Superior Center 21, 114  
Lake Superior Research Institute 115  
Lake Superior Watershed 113  
*LakeTides* 29  
*Lake Use Surveys* 29  
Lakes 28  
Lakes-1 101  
Lakes-Student-1 31, 42, 101  
Lakes and Wetlands Section (DNR Bureau of Fisheries Management and Habitat Protection) 74  
Land Conservation Department County Offices 130  
*Law of the Land: A Citizen's Guide...Influencing Local Land Use Decisions that Affect Water Quality* 61  
*Lawn and Garden Fertilizers* 66  
*Lawn and Garden Pesticides* 66  
*Lawn Watering* 66  
*Lawn Weed Control* 66  
*Lead in Drinking Water* 14  
The League of Women Voters 86  
*Leap into Lakes* 29  
Legislative Council 86  
    Document Sales 86  
    Legislative Document Room 86  
    Legislative Hotline 86  
    Legislative Reference Library 86  
Leopold Memorial Reserve and Aldo Leopold Foundation 60  
*License to Dam* 42  
*Life on the Edge* 29, 61, 65  
*The Life of the Lakes: The Great Lakes Fishery* 20  
Lifestyle and Water Conservation 63  
Little Norway Historical Park 60  
*Living Lightly on the Planet: A Global Environmental Education Curriculum Guide* 52  
*Local Decisions in Mining Projects* 64  
Local Parks and Nature Centers 70, 91  
Londquist, Ken 70  
LoonWatch 86, 114  
Madeline Island Historical Museum 60, 116  
Madison Children's Museum 30, 124  
Madison Metropolitan Sewerage District 37, 125  
Madison Storyteller's Guild 125  
*Making A Difference College Guide: Outstanding Colleges to Help You Make a Better World* 12  
*Making Streams Better* 32  
*Map of Priority Watershed Projects in Wisconsin* 67, 138-9  
*Marine Education: A Bibliography of Educational Materials* 20  
*Marine Science Careers* 12  
*Masinaigan* 58  
*Meeting the Challenge: Upper Mississippi River System Environmental Management Program* 34  
Menominee Nation 108  
    Treaty Rights and Mining Impacts Office 108  
    Tribal Environmental Services Department 108  
*Methods in Fish Population Analysis: Basic Tools for Understanding Aquatic Ecosystems* 48  
Michael Fields Agricultural Institute 86  
Michigan Sea Grant College Program 104

# Index

- Midwest Treaty Network 61, 87  
*The Milwaukee: Rebirth of a River* 32  
Milwaukee Maritime Center 111  
Milwaukee Metropolitan Sewerage District 37, 111  
Milwaukee Public Museum 60, 112  
Mining 64  
Mining Impact Coalition 64, 87  
*Mining Information Fact Sheets* 64  
Mining Museum 64, 126  
Minnesota DNR 118  
    Division of Water 118  
The Minnesota Project 118  
Minnesota Sea Grant 104  
Minnesota Valley Archaeological Center 121  
Minnesota Valley National Wildlife Refuge 36, 94, 119, 121  
Minnesota-Wisconsin Boundary Area Commission 35, 119  
*Mississippi Blues* 34  
Mississippi Headwaters RIVER WATCH 119  
Mississippi River Basin Alliance 35, 36, 119  
Mississippi River Museum 34, 36, 119  
Mississippi River Regional Planning Commission 119, 140  
Mississippi River Watershed 117  
*Mississippi River Workshops* 34  
Mississippi Valley Archaeological Center 36  
Mole Lake-Sokaogon and of Lake Superior Chippewa 109  
*Monitoring Milfoil* 47  
Monitoring Section (DNR Bureau of Fisheries Management and Habitat Protection) 74  
National Audubon Society 87  
    Great Lakes Regional Office 87  
National Biological Survey 36, 93  
National Fish and Wildlife Refuges (see U.S. Fish and Wildlife Service)  
National Institute for Science Education 81  
National and International Organizations 97  
National Park Service 93  
National Project WET 99  
National Science Teachers Association 98  
National Water Information Center 98  
National Water Quality Database 102  
The National Wildlife Federation 69, 99  
*Natural Resources Careers and Workshops for High School Students* 13  
Natural Resources Conservation Service 45  
    County Field Offices 135  
The Nature Conservancy 43, 59, 87  
Necedah National Wildlife Refuge 94, 129  
Neville Public Museum 112  
Nicolet National Forest 112  
*Nitrate in Drinking Water* 14  
Nonpoint Source Pollution 49  
*Nonpoint Source Pollution: Where to Go with the Flow, Wisconsin's Challenge for the Next Decade* 50  
Nonpoint Source Pollution Issues (NPSINFO) 51, 101  
North American Association for Environmental Education (NAAEE) 19, 99  
North American Lake Management Society (NALMS) 30, 31, 99  
    Electronic Bulletin Board 100, 103  
    Home Page 103  
North Central Regional Planning Commission 127, 140  
The Northeast Wisconsin Sustainable Farm Network 87  
Northern Great Lakes Center 22, 105, 114  
Northwest Regional Planning Commission 114, 122, 140  
Northwoods Storytelling Guild (see Storytelling Resources)  
NPSINFO (see Nonpoint Source Pollution Issues above)  
Nutrient and Pest Management Program 45, 80  
*Occupations Handbook for Wisconsin* 12  
*Occupational Outlook Handbook* 12  
*OEAGLS and OEAGLETS (Oceanic Education Activities for Great Lakes Schools)* 21  
*Of Time and the River* 58  
Ohio Sea Grant College Program 21, 105  
Old World Wisconsin 60, 112  
*On the Waterfront* 58  
Oneida Nation 109  
    Planning Department 109  
*An Ounce of Detention: A New Look at Stormwater Ponds* 53  
*Our Great Lakes Connection: A Curriculum Guide for Grades Kindergarten Through Eight* 21  
*Our Wisconsin River: Border to Border* 32  
Outdoor Skills Center 69, 70, 109, 126  
*Paddle-to-the-Sea: Supplemental Curriculum Activities* 21  
*Paying for the Past, Investing in their Future: Wisconsin Plans for Cleaner Harbors* 42  
*Pesticides and Water Quality* 45  
*Pet Waste and Water Quality* 66  
Planning and Zoning Offices (see County Offices)  
Point Source Pollution 51  
Pollution Prevention 51  
*Pollution Prevention Case Studies and Fact Sheets* 52  
*Pond and Stream Safari* 32  
*Pond Manual* 29  
*Potential Mining Development in Northern Wisconsin* 64  
*Practical Tips for Home and Yard* 66  
Priority Watershed Educators 136  
Priority Watershed Program, Statewide and Regional Contacts 63  
Priority Watershed Program Publications 67  
Priority Watershed Project Managers 39  
Priority Watershed Projects 25, 39, 41, 47, 50, 56, 68  
    Wisconsin (map) 138-9  
*Priority Watershed Project Plans* 39, 67  
*Priority Watershed Project Reports* 67  
Project Learning Tree 73  
Project WILD Aquatic 87  
*Project WILD Aquatic Activity Guide* 73  
*Protecting the Mississippi River: A Directory of People and Organizations* 34  
*Public Concerns Regarding the Proposed Crandon Mine Discharge into the Wisconsin River* 64  
Public Works Department (see County Offices)

---

# Index

- The Pucker Effect* 185  
*Questions About Careers in Oceanography* 13  
*Recognizing Eurasian Water Milfoil* 47  
Recommended Wisconsin Resources for Project WET Activities 146  
*Recycling Publications Order Form* 52  
*Recycling Study Guide and K-3 Study Guide* 52  
Red Cliff Band of Lake Superior Chippewa, Tribal Administration 115  
Regional Planning Commissions 140  
Remedial Action Plans (RAP) 39  
*Rethinking Yard Care* 66  
The River Alliance of Wisconsin 33, 41, 48, 87  
River Watch Network 100  
Riveredge Nature Center 33, 41, 109  
Rivers and Streams 31  
*The Rivers Curriculum Project* 32  
*River of Life Program* 34  
*The Role of Geologic Materials and Soils* 44  
Rural and Residential Homeowners 65  
*Rural Conservation Practices for Cleaner Water* 65  
St. Croix Band of Lake Superior Chippewa 120  
    Natural Resources Department 120  
    Tribal Resources Center 120  
St. Croix National Scenic Riverway 33, 115, 120  
St. Croix Wildlife Management District 95, 122  
Sand County Foundation 125  
*Save Our Streams* (video and materials) 32, 40  
Save Our Streams (organization, see Izaak Walton League) 98  
*Save Wisconsin's Water: Making Every Drop Count* 18, 63  
Schlitz Audubon Center 22, 109, 112  
*Science Careers* 13  
Science Museum of Minnesota 36, 119  
Sea Grant College Program (see UW-Sea Grant)  
*Sediment: Clogging the Life Lines of the Upper Mississippi River System* 34  
Self-Help Lake Monitoring Program 30, 41  
*Septic System Model* 37  
*Septic Tank Model* 37  
*Shallow Lakes: Wisconsin's Most Misunderstood Waters* 42  
*Shorelandscaping* 65  
*Shoreline Development and Aesthetic Issues* 65  
*Shoreline Plants and Landscaping* 54, 65  
Sierra Club-Midwest Office, Great Lakes Ecoregion Program 87  
Sigurd Olson Environmental Institute 87, 115  
    Loon Watch Program (see Loon Watch)  
*Soil Erosion Trays* 50  
Solid and Hazardous Waste Education Center (SHWEC) 52, 80  
*Sourcebook for Watershed Education* 67  
Southeastern Wisconsin Regional Planning Commission 109, 140  
Southern Illinois University-Edwardsville 120  
Southwestern Wisconsin Regional Planning Commission 125, 140  
A Speakers Bureau on Business and the Environment 52, 53, 62  
*Sportfish Advisory* 27  
*Standard Erosion Control Plan for 1 & 2 Family Dwelling Construction Sites* 54  
State and Tribal Fish Hatcheries and Watchable Fish Sites 49  
State Conservationist 83  
State Historical Society 59  
State Historical Society Museum 60  
State Laboratory of Hygiene 82  
State Libraries 92  
Statewide Government Organizations 72  
Statewide, National, and International Organizations 71  
Statewide Water-Related Organizations 85  
*Status and Control of Purple Loosestrife in Wisconsin* 47  
*A Status Report of Acid Research in Wisconsin* 44  
Stevens Point-Whiting-Plover Wellhead Protection Project 25, 127  
Stockbridge-Munsee Tribe 109  
*Storm Drain Stenciling: How You Can Prevent Water Pollution* 54  
*Storm Sewers: The River Beneath our Feet* 50, 54  
Stormwater Management 53  
*Stormwater Ponds: An Effective Way to Control Urban Runoff* 54  
*Storytelling Resources* 58  
*A Strategic Plan for Managing the Mississippi River into the Next Century* 34  
*Stream Flow Model* 32  
*Stream Investigation Kit* 32  
Suggestions for Localizing Project WET Activities 163  
*Sulfide Mining - Mole Lake* 64  
*Sulfide Mining, The Process and the Price: A Tribal & Ecological Perspective* 64  
*Sum of the Parts* 190  
*Superior: A Vision for the Future* 42  
*Surface Water Inventory of Counties ("The Green Book")* 29, 32, 40  
Sustainable Resource Management 55  
*A Tale of One City: A Community Searches for Solutions to Urban Nonpoint Pollution* 43, 50, 56, 65  
*Testing the Waters* 40  
*Tests for Drinking Water from Private Wells* 14  
*Through the Looking Glass: A Field Guide to Aquatic Plants* 27  
*Toward a Sustainable Agriculture: A Teacher's Guide* 45  
*Transactions* 58  
*Treaty Resource Manual* 61  
Trees for Tomorrow Natural Resources Education Center 120  
Trempeleau National Wildlife Refuge 95, 121  
Trout Lake Environmental Station 44, 81, 128  
Trout Unlimited 48, 88, 100  
*Understanding Lake Data* 29  
Upper Mississippi River National Fish and Wildlife Refuge 36  
University of Wisconsin-Cooperative Extension County Offices (see UW-Extension)  
University of Wisconsin-Extension (see UW-Extension)  
University of Wisconsin-Madison 81  
    Center for Integrated Agricultural Services 81

# Index

- Center for Limnology 81
  - Trout Lake Station 81
- College of Agricultural and Life Sciences 81
- Institute for Environmental Studies 81
- National Institute for Science Education 81
- State Laboratory of Hygiene 82
  - Water Resources Center Library 82
- Water Resources Management Program 82
- University of Wisconsin Sea Grant (see UW-Sea Grant)
- University of Wisconsin-Stevens Point 79, 82
  - Career Services 82
  - College of Natural Resources 82
  - Environmental Task Force Lab 82
  - Groundwater Model Project 83
  - Wisconsin Center for Environmental Education (WCEE, see Wisconsin Center for Environmental Education)
- University of Wisconsin-Superior 22, 79, 83, 115
  - Lake Superior Research Institute 83, 115
  - Sea Grant Advisory Services 83, 115
  - Water Watchers Program 83
- University of Wisconsin System 77
- Upper Mississippi River Basin Association 35, 120
- Upper Mississippi River Conservation Committee (UMRCC) 35, 120
- Upper Mississippi River National Fish and Wildlife Refuge 95, 120, 121
- Urban Cost-Sharing for Cleaner Water* 56
- Urban Programs for Cleaner Water* 56
- Urban Runoff: How Polluted is it?* 56
- Urban Runoff Model* 56
- Urban Water Issues 55
- U.S. Army Corps of Engineers 36, 93, 120, 35, 61, 69
  - Blackhawk Park 35, 120
- U.S. Environmental Protection Agency, Region V 15, 16, 26, 93
  - Environmental Research Laboratory – Duluth 94, 115
  - Great Lakes National Program Office 94, 105, 109
  - National Wetlands Hotline 94
  - Pollution Prevention Office 52
  - Water Resources Center 94
  - Watershed and Nonpoint Source Programs 94
  - Wetlands Office 69, 94
- U.S. Fish and Wildlife Service 94
  - Field Office 94, 109
  - Fish Hatcheries
    - Genoa 94
    - LaCrosse Fishery Resource Office 94
  - National Wildlife Refuges (NWR) 94
    - Horicon NWR 94
    - Minnesota Valley NWR 94
    - Necedah NWR 94
    - Trempelau 95
    - Upper Mississippi River NWR 95
  - Regional Office 94
  - Upper Mississippi River 26
  - Wildlife Management Districts (WMD) 95
    - St. Croix WMD 95
- U.S. Forest Service 95
  - Chequamegon NF 95, 128
    - Forest Supervisor 95
    - Glidden Ranger District (RD) 95, 128
    - Hayward RD 95, 128
    - Medford RD 95, 128
    - Park Falls 95, 128
    - Washburn RD 95, 128
  - Nicolet National Forest 95, 128
    - Eagle River RD 95, 128
    - Florence RD 95, 128
    - Forest Supervisor
    - Lakewood RD 95, 128
    - Laona RD 96, 128
  - Public Affairs Office 95
- U.S. Geological Survey 24, 26, 33, 36, 84, 96
  - Environmental Management Technical Center 96
  - Field Offices 25, 33, 96
    - Madison 96, 125
    - Merrill 96, 128
    - Rice Lake 96, 122
  - Wisconsin District 120
- U.S. Water News, Inc. 100
- USDA Natural Resources Conservation Service (see Natural Resources Conservation Service)
- A User's Guide to the Wisconsin Wetland Inventory* 68
- UW-Careers 13
- UW-Career Services 13
- UW-Madison Arboretum 126
- UWEX (see UW-Extension)
  - Basin Educators 56
  - Cooperative Extension Service 79
  - Environmental Resources Center 39, 79
- UW-Extension Cooperative Extension County Offices 142
- UW-Extension Cooperative Extension Districts 141
  - Central District 141
  - Northeast District 141
  - Northern District 141
  - Southeast District 78, 141
  - Southern Area 125, 141
  - Western District 141
- UW-Extension Environmental Resources Center (ERC) 79
  - Educating Young People About Water 79
  - Give Water a Hand 79
  - FARM\*A\*SYST & HOME\*A\*SYST 79
  - Water Action Volunteers 79
- UW-Extension Lake Management Office 30
- UW-Extension Publications Order Form 210
- UW-Extension Staff Directory 20
- UW-Extension Water Educators 78, 109, 123
- UW-Extension Water Resources Program 79
  - Central Wisconsin Groundwater Center 80
  - Farm Practices Inventory 80
  - Home Page 101
  - Nutrient and Pest Management Program 80
  - Solid and Hazardous Waste Education Center (SHWEC) 80
  - Lake Management Office 80

---

# Index

- Wisconsin Geological and Natural History 80
- UW-River Falls 79
- UW-Sea Grant Institute and College Program 47, 81
- Advisory Services 22
  - Communications Office 21, 105
  - Great Lakes Research Facility 81, 105
  - UW-Superior Sea Grant Advisory Services 82
  - Water Quality Specialist 82, 105, 110
- UW-Stevens Point (see University of Wisconsin-Stevens Point)
- UW-Superior (see University of Wisconsin-Superior)
- Villa Louis 36, 121
- Voyageur: Northeast Wisconsin's Historical Review* 58, 110
- The Voyageur's Guide to the Lower Wisconsin River* 58
- Waste Less News* 52
- The Waste Reduction Guide* 52
- Waste Water Treatment Issues 36
- Watchable Fish* 48
- Water Action Volunteers (WAV) 33, 39, 41
- Water Action Volunteers (WAV): Introductory, Hands-On Stream and River Projects for Wisconsin* 32, 39, 40
- Water Activities to Encourage Responsibility* 18, 39, 63
- Water Address* 197
- Water Bugs* 27, 41
- Water Cycle Poster* 24
- Water Education Resource Centers 18, 25, 88
- Eau Claire Area 88, 122, 123
  - Grant County Area 88, 125
  - Madison Area 88, 125
  - Milwaukee River Watershed 88, 110
  - Sheboygan Area 88, 110
  - Stevens Point Area 88, 128
  - Waukesha Area 88, 110
- Water Environment Federation 37, 88, 100
- Packet 37
  - Wisconsin Chapter 37
- Water Quality and Stream Biology* 33
- Water Quality Effects of Potential Urban Best Management Practices: A Literature Review* 56
- Water Quality Monitoring 40
- Water Quality: Risk Assessment and Reduction 38
- Water Quality Specialist 82
- Water Resources: A Guide for Municipal Officials* 42
- Water Resources Center Library 82
- Water Resources Management and Protection Strategies 42
- Water Resources Management Program 82
- Water Resources Reference Service (see Water Resources Center Library)
- Water Rich and Water Wise: Progress in Meeting Wisconsin's Water Quality Challenges* 43
- The Water Source Book* 37
- Water Studies for Younger Folks* 41
- Waterlinks 103
- Watershed in a Box* 67
- Watershed Education Resources on the Internet* 68
- Watersheds 66
- Water Use 57
- Water Watchers Program (see University of Wisconsin-Superior)
- West Central Regional Planning Commission 123, 140
- Wetland Functional Values Inventory* 68
- Wetlands International 70
- Wetland Investigation Kit* 69
- Wetland Tool Kit* 69
- Wetland Trunk* 69
- Wetland Understanding Leading to Protection (WULP)* 69
- Wetlands 68
- Wetlands, Wonderlands* 43
- WETNET: The Wetlands Network 70
- What is a Watershed?* 67
- What is Stormwater Runoff?* 54
- WI-Lakes Bulletin Board Systems (BBS) 102
- WILD and WET* 39
- Wild Rice and Ojibway People* 58
- Wildlife 27
- WISCINFO GOPHER 101
- Wisnet 102
- Wisconsin: A History* 58
- Wisconsin Academy of Science, Arts, and Letters 59, 89
- Wisconsin Academy Staff Development Initiative 89
- Wisconsin Acid Deposition Council 44
- Wisconsin Association for Environmental Education 18, 89
- Wisconsin Association of Lakes, Inc. 30, 89
- Wisconsin Bureau of Public Health Fact Sheet Series* 14
- Wisconsin Center for Environmental Education 19, 83, 89, 102, 128
- Wisconsin Conservation Hall of Fame 59, 89, 129
- Wisconsin Department of Natural Resources (see DNR)
- Wisconsin Department of Transportation (see Department of Transportation)
- Wisconsin Earth Science Teachers Association (WEST) 19, 89
- Wisconsin Fisheries and Acid Rain* 44
- Wisconsin Geological and Natural History Survey 15, 17, 24, 59, 80
- Publications Order Form 213
- Wisconsin: Grateful for the Great Lakes* 43
- Wisconsin Groundwater* 24
- Wisconsin Groundwater Education Resource Directory* 24
- Wisconsin Lakes* 29
- Wisconsin Lakes BBS 31, 42
- Wisconsin Lakes Partnership 30, 90
- Wisconsin Land and Water Conservation Association 90
- Wisconsin Manufacturers and Commerce 62, 90
- Wisconsin Maritime Museum 22, 112
- Wisconsin Natural Resources Magazine* 42, 73
- Wisconsin Power and Light, Land Resources and Stewardship 126
- Wisconsin Public Service 112
- Wisconsin Resources Protection Council 64, 90
- Wisconsin River of History* 58
- Wisconsin Rural Development Center, Inc. 90
- Wisconsin Rural Water Association 90, 128
- Wisconsin: Searching for Common Ground* 43

---

# Index

- Wisconsin Society of Science Teachers 19, 90  
*Wisconsin Stormwater Manual (#1720)* 54  
Wisconsin Technical College System 83  
Wisconsin Valley Improvement Authority 90, 129  
Wisconsin Wastewater Operators Association 38, 90  
*Wisconsin Water Law* 61  
*Wisconsin Water Law: A Guide to Water Rights and Regulations* 61  
*The Wisconsin Water Quality Assessment Report to Congress* 39  
*Wisconsin Water Resources Catalog* 18  
Wisconsin Water Well Association 17, 91  
Wisconsin Waterfowl Association 69, 91  
Wisconsin Watersheds Map 106  
Wisconsin Waterways Commission 30, 91  
Wisconsin Wetlands Association 69, 91  
*Wisconsin's Aquatic Resources Education Programs for Fish, for Fun, for the Future!* 48  
Wisconsin's Environmental Decade 89  
*Wisconsin's Forestry Best Management Practices for Water Quality: A Field Manual for Loggers, Landowners, and Land Managers* 39, 55  
*Wisconsin's Pollution Prevention Information Clearinghouse* 74  
*Wisconsin's Sensitivity to Acid Rain* 44  
'Wisconsinized' Project WET Activities 165-209  
WIWR-list (Wisconsin Water Resources Internet Discussion Group) 102  
Wolf River Watershed Alliance 112  
*The Woodland Indians of the Western Great Lakes* 58  
*Working for the Rivers* 33  
Wyalusing State Park 36, 122  
*Yard Care and the Environment Series* 65  
*You and Your Well* 15  
*Your Aquatic Plant Harvesting Program: A How-to Field Manual* 29  
*Your Personal Water Supply* 15  
*Zebra Mussels; A Boater's Guide* 47  
*Zebra Mussel: An Unwelcome North American Invader* 47  
*Zebra Mussel Monitoring Handbook for Inland Waters* 47  
*Zebra Mussel Trunk* 47  
Zoological Society-Education at Milwaukee County Zoo 112