

# MINNESOTA GROUND WATER ASSOCIATION

NEWSLETTER v.5 n.2 April 1986

## SEMINAR COMMITTEES AND SPEAKER'S BUREAU FORMED

The membership of the MGWA can look forward to a full schedule of four quarterly seminars/meetings in 1986, thanks to the fine work of past officers and to new program committee volunteers: Dave Kill, Glen Evavold and Bob Karls.

The first quarterly MGWA seminar will be a joint meeting with the Wisconsin Ground Water Association (WGWA) in Eau Claire, Wisconsin on May 16, 1986. The topic of the seminar is Geophysical Exploration. More details of the meeting are presented elsewhere in this newsletter. This meeting was originally organized by past-president Gil Gabanski last fall. However, scheduling constraints required that it be moved to this spring. An excellent agenda for this seminar has been prepared. Dr. Bob Taylor of the University of Wisconsin/Milwaukee will give an overview of geophysical exploration methods in a two hour morning session. This overview will include descriptions of various geophysical methods, some theory, advantages and disadvantages. In the afternoon, Bison, Minnesota Dept. of Natural Resources, R. G. Ikola and Associates and Donohue and Associates will demonstrate a wide variety of geophysical equipment in the field including seismic refraction, resistivity, EM and ground penetrating radar. The demonstration will be held at a local clay borrow pit near Eau Claire where the site geology has been well defined. Registration is limited, so apply early.

Dave Kill of Johnson UOP has volunteered to be chair of the summer seminar/meeting. This

meeting will be held in the first two weeks of July, 1986 somewhere in the Twin Cities. A topic has not been set.

The fall meeting will be held in Duluth in early October when the fall colors should be at their peak in Northern Minnesota. Glen Evavold of REM, Inc. from Duluth will be the chair of this meeting. No topic has been selected.

The winter meeting will be held in the Twin Cities in late December or early January, 1987. Bob Karls of the MPCA will chair this meeting/seminar. Bob has expressed an interest in addressing the nuclear waste site selection problem.

If any of you have ideas for future meetings/seminar topics, please let me know. My telephone number is (612) 641-9353. I will pass your ideas on to the committee chair.

Gretchen Sabel has volunteered to chair the MGWA Speaker's Bureau. The Speaker's Bureau will provide a means by which MGWA can increase public understanding and awareness of the ground water resource. If you are interested in preparing a talk please contact Gretchen Sabel.

The 1986 year is looking great for the Minnesota Ground Water Association. I look forward to seeing all of you at the spring meeting on May 16, 1986 in Eau Claire, Wisconsin. -Jerry Rick

### IN THIS ISSUE:

SPRING SEMINAR . . . . .	PAGE 2
SPEAKER'S BUREAU . . . . .	PAGE 3
MGWA ELECTIONS . . . . .	PAGE 4
ENVIRONMENTAL MEDIATION . . . . .	PAGE 6

**JOINT MEETING**

**MINNESOTA GROUND WATER ASSOCIATION  
WISCONSIN GROUND WATER ASSOCIATION**

**GEOPHYSICAL EXPLORATION**

**MAY 16, 1986**

**EAU CLAIRE, WISCONSIN HOLIDAY INN**

**EAU CLAIRE, WISCONSIN**

**(715-834-3181)**

**AGENDA**

**8:00 - 9:30 Registration**

**9:30 - 12:00 Overview of Geophysical Methods**

**Dr. Robert Taylor**

**University of Wisconsin/Milwaukee**

**12:00 - 1:00 Buffet Lunch**

**1:00 - 4:00 Field Demonstration**

**Bison - Resistivity & Seismic Refraction**

**R.J. Ikola & Associates - several methods**

**Minnesota Dept. of Natural Resources - EM 31 and EM 34**

**Donohue & Associates - Ground Penetrating Radar**

---

**Registration:**

- Accepted until May 7, 1986 (full refunds till May 7)
- \$15.00 (includes buffet and transportation to field demonstration site)
- Make checks payable to Wisconsin Ground Water Association.
- Mail registration to:

**Bill Griffin  
Ayes & Associates  
P.O. Box 1590  
Eau Claire, Wisconsin 54702**

- Any questions: call Jerry Rick (612) 641-9353

**Membership in either the Wisconsin or Minnesota Ground Water Association is required. Dues are \$10.00.**

## 75 PEOPLE ATTEND JANUARY 15 WORKSHOP

"Ground Water Quality Data Analysis" was the topic at a jointly sponsored MGWA/Minnesota Pollution Control Agency workshop in January. Instructors and materials at the workshop were provided at no cost to either organization by the National Council of the Paper Industry for Air and Stream Improvement. (The MGWA did pick up the tab for coffee and breakfast treats at the workshop.) Due to room size limitations, registration was cut off at 75 persons a week before the end of the registration period, and the capacity crowd swelled the MPCA Board Room. Topics covered ranged from graphical methods of data interpretation to non-parametric statistical methods and trend analysis. Those who attended said the workshop was well-presented and very worthwhile.

This is an example of the kind of meeting which an organization like the MGWA is able to offer to its members. If you attend a seminar which you think would be of interest to MGWA members or you would like to help get a program together on some timely topic, please contact Jerry Rick at 641-9353. He has organized the program committee and is in search of topics for summer and fall meetings.

## MPCA GROUND WATER MONITORING FORUM

On March 31, 1986 the Program Development Section of the Solid and Hazardous Waste Division of the Minnesota Pollution Control Agency sponsored a forum for the discussion of current issues in ground water monitoring. The focus of the forum this year was monitoring well construction. Speakers representing both the private and public sectors gave brief presentations which were followed by a lively discussion period. Much of the discussion centered around the Department of Health's Water Well Construction Code, as it pertains to monitoring wells.

The forum allowed the people involved with ground water monitoring to discuss the issues with which they are concerned. From the discussion, new ideas were shared and people developed a feeling for the views of others in the field. Notice of the meeting was sent to MGWA members, consulting engineers and engineers who are registered with the Department of Health to install monitoring wells. From that group, more than 125 people came to participate. A similar forum is expected to be held this fall, focusing on issues pertinent to sampling of ground water and laboratory analysis. Another forum on monitoring wells is planned for the early spring of 1987. If you would like to participate in the planning or presentation of either forum, please contact:

Gretchen Sabel, Program Development Section  
Minnesota Pollution Control Agency  
1935 West County Road B-2  
Roseville, MN 55113-2785.

## SPEAKER'S BUREAU

One of the primary aims of the MGWA is to further public awareness of the ground water resource. We have among our membership some of the leaders in ground water management and protection, both in the public and private sectors. Formation of a speaker's bureau would create a pool of talent which would be available to speak to schools, organizations and at such meetings as the regional ground water conferences sponsored by the state's Regional Environmental Education Councils.

Participants will be asked to select a ground water topic with which they feel comfortable, and provide me with an outline of their talk, an autobiographical sketch and any audio-visual needs for the presentation. Once we line up our talent, I anticipate putting out a mailing to various groups to inform them of the service. If a group is interested in a presentation, I will contact the speaker to see if their schedule is convenient and to arrange the details. For their efforts, the participants will be rewarded with a warm feeling, knowing that they were able to help enlighten concerned citizens on current ground water issues and concerns. Although the MGWA is not wealthy, there will probably be funds available to help defray the speakers expenses, if necessary.

Please contact me if you are interested in letting your light shine out of the professional barrel.

Gretchen Sabel  
c/o MGWA  
P.O. Box 65365  
St. Paul, Minnesota 55165

## MGWA ELECTIONS FOR PRESIDENT-ELECT AND TREASURER

The following candidates have been nominated for the offices of President-Elect and Treasurer. According to the Bylaws, members must vote by secret ballot before the annual business meeting. The upcoming MGWA meeting on May 16, 1986 will also be our business meeting. Accordingly, the newsletter contains a ballot which you, as a member, are urged to mail before May 5, 1986. Those candidates who receive a plurality of ballots for each position shall be declared winners.

The new officers will serve terms starting at the business meeting. The President-Elect will serve a one-year term and will then become President for one year. The Treasurer serves for two years.

A brief description of each candidate is given below. Again, you are urged to complete the ballot and mail it before May 5, 1986.

### CANDIDATES FOR PRESIDENT-ELECT

**Rick Johnston.** Rick is a hydrologist with the Minnesota Pollution Control Agency. He received a degree in geology from the University of Minnesota and is currently completing work on a second degree in Civil Engineering.

**Jeanette Leete.** Jeanette is a hydrologist with the Minnesota Department of Natural Resources, Division of Waters. She received a bachelor's degree in Geology from Macalester College and a M.S. in Forest Hydrology from the University of Minnesota and is currently completing her Ph.D. in Hydrology, also from the University of Minnesota.

### CANDIDATES FOR TREASURER

**Pat Bloomgren.** Pat is Supervisor of the Technical Analysis Unit of the Division of Waters, Dept. of Natural Resources. She completed a degree in physical sciences from Fort Lewis College, Durango, Colorado, received a M.S. in geology from Colorado State University and has done additional graduate work in geology at the University of Minnesota.

**Mike Schoenberg.** Mike is a hydrologist with the U.S. Geological Survey. Mike received a degree in geology from the City College of New York, a M.S. in geology from Cornell University and has done post-graduate work in geo-engineering at the University of Minnesota.

## BALLOT

### President-Elect

Please vote for one candidate for each office.

Rick Johnston \_\_\_\_\_

Jeanette Leete \_\_\_\_\_

\_\_\_\_\_

### Treasurer

Please vote for one candidate for each office.

Pat Bloomgren \_\_\_\_\_

Mike Schoenberg \_\_\_\_\_

\_\_\_\_\_

Return ballot to:  
MGWA  
P.O. Box 3362  
St. Paul, MN 55165

## ST. ANTHONY FALLS HYDRAULIC LABORATORY

### SPRING SEMINAR SERIES

**April 24** "Design of the Minneapolis East Interceptor". Mr. Keith Anderson, Donohue and Associates, Inc. and Dr. Charles C.S. Song, Professor, St. Anthony Falls Hydraulic Laboratory.

**May 1** "Experiments in Cavitation and Related Noise". Mr. Michael Rogers, Research Assistant, St. Anthony Falls Hydraulic Laboratory.

**May 8** "St. Charles, Virginia Watershed Flood and Sedimentation Analysis". Mr. Rollin Hotchkiss, Research Assistant, St. Anthony Falls Hydraulic Laboratory.

**May 15** "Three-Dimensional Boundary Layer Transition on a Concave-Convex Curved Wall". Dr. Yasuaki Kohama, Institute of High Speed Mechanics, Tohoku University, Japan.

**May 22** "Kinetic Theory for Rapid Deformation of Granular Material". Dr. James Jenkins, Cornell University, Ithaca, New York.

**May 29** "Inputs of Atmospheric Pollutants Across Eastern North America". Dr. Steven Eisenreich, Dept. of Civil and Mineral Engineering, University of Minnesota.

All seminars are held on Thursdays 3:30 - 4:30 p.m. in the St. Anthony Falls Hydraulic Laboratory Auditorium, Mississippi River at 3rd Avenue S.E. in Minneapolis. For more information call (612) 373-2782.

## DROP EVERYTHING...

### CALL FOR PAPERS

*19th Annual Water Resources Conference, November 20-21, 1986, University of Minnesota, St. Paul, Minnesota. Deadline for abstracts is May 1, 1986. For more information contact John Vollum, University of Minnesota at (612) 373-3157 before April 26 or (612) 625-1534 after April 26.*

*Solving Ground Water Problems with Models, February 10-12, 1987, Denver, Colorado. Deadline for abstracts is August 15, 1986. For more information contact Kathy Butcher, NWWA at (614) 761-1711.*

### NWWA APRIL-JULY WORKSHOP SCHEDULE

**April 28-May 2** *Safety at Hazardous Materials Sites - Modules I and II: A Hands-On Safety Workshop.* Reynoldsburg, Ohio.

**May 8-9** *Distinguished Seminar Series: Geochemical Processes in Ground Water Flow Systems.* Tysons Corner, Virginia.

**May 13-15** *Ground Water Treatment Technology.* Edison, New Jersey.

**May 19-22** *Sixth National Symposium and Exposition on Aquifer Restoration and Ground Water Monitoring.* Columbus, Ohio.

**June 2-4** *Compliance with RCRA Ground Water Monitoring Requirements.* Somerville, Massachusetts

**June 9-10** *Northeast Ground Water Exposition.* Hershey, Pennsylvania.

**June 16-18** *Fundamentals of Ground Water Technology.* Columbus, Ohio.

**June 17-18** *Distinguished Seminar Series: Well Hydraulics and Injection Wells.* Rolla, Missouri

**June 18-20** *Corrective Action Short Course.* Salt Lake City, Utah.

**June 22-26** *Third Annual Canadian/American Conference on Hydrogeology: Hydrogeology of Sedimentary Basins: Application to Exploration and Exploitation.* Banff, Alberta, Canada.

**June 24-26** *Ground Water Treatment Technology.* San Jose, California.

**June 23-27** *Safety at Hazardous Material Sites: A Hands on Safety Workshop.* White Plains, New York.

**July 9-11** *Corrective Actions Short Course.* San Jose, California.

**July 21-23** *Ground Water and Unsaturated Zone Monitoring and Sampling for the New Practicing Ground Water Professional.* Springfield, Massachusetts.

**July 30-31** *Distinguished Seminar Series: Contaminant Migration Processes: A Field Perspective.* Boston, Massachusetts.

For more information call (614) 761-1711.

...SEND IN YOUR BALLOT  
RIGHT NOW!

# ENVIRONMENTAL MEDIATION

by Pat Leonard-Mayer

*As ground water scientists and engineers we often find ourselves involved in complex environmental disputes and many of us have had to become quite familiar with the regulatory and legal processes used to resolve these disputes. In recent years, some environmental disputes, including disputes involving ground water, have been successfully resolved through mediation. Environmental mediation is relatively new and has not been widely used either nationally or here in Minnesota. It is likely, however, that environmental mediation will be attempted more frequently in the future - as the use of all forms of alternative dispute resolution increases- and ground water professionals will be among the participants. This article summarizes background information on environmental mediation and describes some of the efforts made to develop and use the environmental mediation process here in Minnesota.*

Mediation was first used to resolve a major environmental dispute in Washington State in 1973. Since then, interest in environmental mediation has grown steadily due to the general dissatisfaction with results obtained from the traditional dispute resolution procedures and the relatively high rate of success of mediation in resolving environmental disputes. The term "environmental mediation" describes a variety of methods that allow parties to a dispute to meet face-to-face to reach a mutually acceptable resolution of their dispute through the assistance of a neutral mediator. Environmental mediation does not include the traditional dispute resolution procedures, litigation, arbitration and administration actions, which are obviously not designed to reach consensus.

One of the reasons that environmental disputes have been difficult to resolve has to do with the unique characteristics of environmental disputes (those characteristics are described below). The traditional dispute resolution procedures segment complex problems into separate legal or administrative actions and limit the number of parties, the range of issues and the information that will be considered in a proceeding. By doing this, courts and agencies ignore many of the unique characteristics of the dispute and reach decisions that do not address the real concerns of the parties. Mediation is far more flexible and can take into account more of the features of environmental and other complex disputes.

Before describing the unique characteristics of environmental disputes, a few characteristics of mediation should be pointed out. First, it should be kept in mind that although mediation can settle disputes, it cannot resolve basic differences.

For example, a mediated agreement might be reached on criteria for operating a mine in a national forest. Afterwards, environmentalists may still believe the mine should not be there, while the mining company may still believe its actions represent the public interest. The mediated agreement simply shows that in the immediate situation confronting them, the parties found a solution on which they could agree in spite of their basic differences.

Second, mediation is not "where everyone sits around a big table." The essential activity of the mediator is to establish a framework for negotiation and this takes place before the parties meet jointly. Later, during joint negotiations, the mediator may spend most of his or her time with caucuses of one or more of the parties, exploring positions and formulating alternatives, advising on the process, carrying and interpreting messages, and trying out offers on behalf of the parties.

## Characteristics of Environmental Disputes

The literature on environmental mediation<sup>1</sup> characterizes environmental disputes by comparing them to more well-known types of conflict. Collective bargaining in labor relations has long been held up as a model for conflict management and provides convenient and useful comparison<sup>2</sup>. Labor-management disputes and environmental disputes have common elements. In both cases, bargaining requires parties who have something to trade and a willingness to bargain, a commitment by the parties to compromise, and, when appropriate, the use of a neutral mediator. Important characteristics of environmental disputes not shared by the labor-management model include the following: irreversible effects; difficulty in identification of parties, boundaries and costs; difficulty in implementation; and the political nature of the dispute.

*Irreversible effects.* In a labor-management dispute, a strike may drive a company into bankruptcy, it may induce the company to leave the state, and it may have a devastating impact on the lives of the workers. As severe as those effects are, nearly all these changes could be reversed if society desired. An environmental dispute, however, may involve truly irreversible effects such as species extinction and habitat destruction. Not all these effects are necessarily harmful, but the destabilizing impact of man's action must be taken into account in decisions likely to impact the natural environment. The irreversibility of environmental impacts is an important agenda item in many environmental disputes and is a concern that sets environmental disputes apart from other social conflicts.

*Parties, boundaries and costs.* In a labor-management dispute, the parties are known and they share a common vocabulary given by the contract terms describing wages, benefits and working conditions. Competing offers can be compared in terms of dollars; the impact of the agreement is predictable. The corresponding terms in an environmental dispute are not as easily determined. Environmental disputes may involve many interested parties, both residents and non-residents. Identification of a management number of legitimate, necessary and distinct interests to be included in the mediation can be a major difficulty. Apart from any deliberate attempt by a party of use delay as a tactic, the number and wide range in backgrounds of individuals and groups having an interest may contribute to the delay involved in resolving an environmental dispute.

Geographic and time boundaries are rarely distinct in environmental disputes. There are no necessarily "correct" geographic boundaries for a particular dispute; they may need to be negotiated. Similarly, time boundaries may need to be negotiated, for example, to determine how far into the past liability should attach or at what point in the future an environmental standard should apply. Changes in the geographic or time boundaries of an environmental dispute may change the number of interested parties as well as the total cost.

Finally, there is no consensus on how to value environmental costs and benefits. Neither translates easily into a common unit of valuation. Individual groups can perform cost/benefit analysis to substantiate their positions, but the environmental costs and benefits to all affected parties cannot be summed to make the "correct" decision.

*Implementation problems.* Implementation of a collective bargaining agreement is rarely a problem. The parties have entered a well-understood contract relationship which courts and agencies can interpret. Because bargaining takes place in regular cycles, neither party can ignore the agreement as that would make the next round of bargaining much more difficult. In environmental disputes implementation may be difficult. The agreement may be challenged by an individual or group not included in the mediation. The agreement may be novel and courts and agencies may not interpret it as the parties intended. Agency approval for implementation is needed when the subject matter of the dispute is within the statutory jurisdiction of a government agency. If the agency has not been a party to the bargaining process and settlement, it may frustrate implementation by denying permits and licenses or by initiating enforcement actions.

*Political nature of the dispute.* Environmental disputes involve fundamentally political issues: the amount of risk and damage society is willing to accept in return for a benefit, who will benefit and who will pay the costs. Technical and scientific issues are often included in these disputes because of the irreversibility of environmental effects, but, due to the complexity and interconnectedness of the environment, effects cannot be predicted exactly. The few scientific tools for predicting the long-term catastrophic effects resulting from a "bad" environmental decision are characterized by a high degree of uncertainty.

The need for scientific and technical input in environmental disputes has important implications. One is that technical and scientific expertise has become a political resource needed for constructive interaction with project proponents in environmental disputes. However, this expertise is not evenly distributed within society or between interest groups. When this resource is not available, a group cannot develop alternatives and project modifications and may feel obligated to take an absolute negative stand against a project to have any input at all.

Another result of the scientific and technical nature of environmental disputes is that technical aspects may intimidate policy-makers so that they defer essentially political decisions to technically trained bureaucrats. Thus, the design and implementation of a project may be treated as a purely technical exercise without the necessary social impact analysis.

### Resolving Environmental Disputes: A Decade of Experience<sup>3</sup>

The use of environmental mediation began in 1973 when the governor of Washington invited 2 mediators to help settle a long-standing dispute over a proposed flood control dam on the Snoqualmie River. In the next decade, mediators were involved in more than 160 major environmental disputes. The primary issues involved in the disputes fall into 6 categories. Some cases involved site-specific disputes over particular project or plan; others involved disputes over questions of environmental policy.

*Land-use.* About 70 site-specific and 16 policy-level land use disputes have been resolved with the assistance of a mediator. They have involved neighborhood and housing issues, commercial and urban development issues, parks and recreation, preservation of agricultural land and other regional planning issues, facility siting, and transportation.

*Natural resource management and use of public lands.* Mediation has been used in 29 site-specific and 4 policy-level controversies, involving fisheries resources, mining, timber management, and wilderness areas, among others.

*Water resources.* Among the 16 site-specific cases and 1 policy-level case that involved water resources, the issues in dispute included water supply, water quality, flood protection, and the thermal effects of power plants.

*Energy.* In this area, 10 site-specific and 4 policy-level cases involved such issues as siting small-scale hydroelectric plants, conversion of power plants to use coal instead of oil, and geothermal development.

*Air quality.* Odor problems, national air quality legislation, and acid rain were the topics of 6 site-specific cases and 7 policy dialogues.

*Toxics.* National policy on the regulation of chemicals, plans for removal of asbestos in schools, pesticide policy, and hazardous materials cleanup were among the issues discussed in 5 site-specific cases and 11 policy dialogues.

The success rate in these mediations has been looked at in two ways - first, the percent of disputes in which an agreement was reached; second, the percent of agreements that were eventually implemented. In terms of reaching an agreement, there was little difference between site-specific and policy-level disputes; the rates of agreement were 79 and 76 percent respectively. Agreements in site-specific disputes were more likely to be implemented, however (80% of site-specific disputes were fully implemented, 13% were partly implemented; 41% of the policy-level disputes were fully implemented, 18% were partly implemented).

Only a limited amount of information is available about the length of the environmental mediation process, but based on the information available, the median duration of a dispute was between 5 and 6 months, with 10% of the disputes taking more than 18 months to resolve. During the first decade of environmental mediation the mediator's services were paid for principally by foundation grants and provided free of charge to the parties.

Although the success rate of environmental mediation in resolving some major disputes is impressive, important questions remain to be resolved including: who will pay for the mediation services in the future; to whom will mediators be accountable and how will accountability be maintained.

## **Environmental Mediation in Minnesota**

Minnesota does not have a long history of solving environmental disputes through mediation. A search for early examples of environmental mediation uncovered only two. In 1976, a dispute involving construction of a malting barley plant in Moorhead, Minnesota was mediated by the Environmental Balance Association of Minnesota, Inc. (EBA), an organization of labor and industry groups which advocated a balance between a healthy economy and a quality environment. The efforts of EBA resulted in the dismissal of a lawsuit and in agreement among the Minnesota Public Interest Research Group, the City of Moorhead, and the Anheuser-Busch Corporation. More recently, a dispute involving the design and construction of a bridge in Wabasha, Minnesota was resolved through the efforts of a mediator.

Minnesota's interest in environmental mediation is, however, growing due to the recent successes in other parts of the country. The related activities of the State Planning Agency (SPA) and the Office of Administrative Hearings (OAH) are discussed below. Environmental mediation is expected to be a major topic in a study now underway at the University of Minnesota.<sup>4</sup>

*State Planning Agency.* In 1983, SPA began the Alternate Dispute Resolution Program. The program proposed the creation of a statewide Office of Dispute Resolution. The recently created Office is to act as coordinator, purveyor of information, and advocate for non-judicial forms of dispute resolution; in particular, the Office is to inform state agencies about mediation and help employ it whenever possible. The Office will develop educational programs for state employees outlining procedures for determining mediability of disputes and planning of mediation sessions. The Office will provide practical training for state mediators and test the effectiveness of mediation in major disputes involving multiple parties, such as environmental disputes. During the coming year, the Office will work with the Attorney General's office and state agencies to identify which major disputes are candidates for mediation.<sup>5</sup>

*Office of Administrative Hearings.* OAH is the independent state agency which conducts rule-making hearings and contested case hearings for most state agencies. OAH recently adopted rules for the mediation of contested cases<sup>6</sup>. Under the new rules, OAH will provide mediation services to any state agency, court or political subdivision of the state in a contested case proceeding or other contested matter, other than labor relations disputes which are under the jurisdiction of the Bureau of Mediation Services. The mediation is confidential and voluntary, and the person conducting the mediation cannot be assigned to hear any portion of the case should mediation terminate unsuccessfully.

Three minor disputes involving land use were successfully mediated by OAH judges in 1984. One dispute involved dams built on a protected water course without the required permits; the second involved placement of fill on a lakeshore; the third dealt with filling of part of a wetland area. The issues in these three cases were narrow and the disputes did not have many of the attributes of environmental disputes as they were previously defined. Nevertheless, mediation of land use cases such as these is a reasonable first step toward greater use of environmental mediation by state agencies in Minnesota.

#### Notes

1. The following books and articles provide general background material on environmental mediation:

Environmental Mediation: The Search for Consensus, L. Lake, ed., Westview Press, Boulder, Colorado (1980).

S. Mernitz, Mediation of Environmental Disputes, A Sourcebook, Praeger Publishers, New York (1980).

Susskind and A. Weinstein, Towards a Theory of Environmental Dispute Resolution, 9 Environmental Affairs 311, 323-336 (1980).

2. Much of the comparison between labor-management disputes and environmental disputes has been summarized from the discussion by Mernitz in the text cited in note 1.

3. The material in this section is summarized from G. Bingham, Resolving environmental disputes: a decade of experience, 17 Resolve 1-7 (1986); a book by the same title and author is soon to be published by the Conservation Foundation.

4. John Clark, Department of Sociology, University of Minnesota, oral communication, October, 1985.

5. Roger Williams, State Planning Agency, remarks to the League of Women Voters, October 29, 1985.

6. Minn. Rules 1400.5950, State Register, Monday, April 8, 1985, 2286-2287.

#### AMERICAN WATER RESOURCES ASSOCIATION - MINNESOTA CHAPTER

May 8, 1986 5:30 pm. The final meeting before summer break will be held at 5:30 pm, May 8, 1986 at the St. Anthony Falls Hydraulics Lab. The meeting will combine a burger and beans picnic with an exciting program. Guest speakers will be the Minnesota state winning debate team from South High School, who will argue the question, "Should the United States establish a National Water Policy?" The debate will be a warmup exercise for the Minnesota Champions prior to entering the national finals this June in Tulsa, Oklahoma. Member or not - join us for the picnic and program on May 8th. Call Pat Leonard-Mayer at 623-5297 or Don Albin at 725-7841.

---

## MGWA MEMBERSHIP APPLICATION

Annual Membership Dues: \_\_\_\_\_ Individual-\$10/Year, \_\_\_\_\_ Student-\$5/Year  
Make checks payable to: Minnesota Ground Water Association  
P.O. Box 3362, St. Paul, MN 55165

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Telephone Number: ( \_\_\_\_\_ ) \_\_\_\_\_

Signature: \_\_\_\_\_

## NEXT ISSUE OF THE MGWA NEWSLETTER

Look for your next copy of the MGWA Newsletter to arrive in June. Highlights will include:

- Results of the MGWA Elections.
- MDNR report on the effects of lake level lowering on lake - groundwater interactions.
- Details of the MGWA summer meeting (tentatively scheduled for July)

**MARK J. SIMONETT, C.P.G.S.**  
CONSULTING GROUNDWATER HYDROLOGIST

(612) 560-1318

6949 COLORADO AVE. N.  
BROOKLYN PARK, MN 55429

## NEW MEMBERS

**Michael J. Heiling:** IBM Corporation, Rochester

**Terrence A. Lee:** Olmsted County Health Department, Rochester

**John Findley:** Braun Environmental Labs, Minneapolis

**Doug Connell:** Barr Engineering, Minneapolis

**Steven McManamon:** Winona State University, Winona

**Greg P. Busacker:** U.S. Army Corps of Engineers, St. Paul

**Earl Windahl:** Consultant, Minnetonka

## Bergerson-Caswell Inc.

- Ground water monitoring well drillers
- Air & mud rotary wells
- Cable tool wells
- Well abandonment
- Stabilization & zone pumping tests
- H.E.R.D. & high velocity well development
- Video well logging

**Wells, Pumps, Service and Repairs 24 Hour Answering Service**

**John H. Gilbertson, P.E.**  
Registered  
Monitoring Well Engineer

**MEMBER**  
**GROUND WATER INSTITUTE**

5115 Industrial Street  
Maple Plain, MN 55359  
(612) 479-3121

## GROUNDWATER SAMPLING AND ANALYSES

- Sampling
- Sampler Rental
- Complete Chemical Analyses Including Volatile Organics and Toxic Heavy Metals



**MINNESOTA VALLEY TESTING LABORATORIES, INC.**  
326 Center St. New Ulm, MN 56073

In Minnesota Call Toll Free  
**1-800-782-3557**  
Outstate Call Collect  
**507-354-8517**



When the subject is environmental protection, Bay West has a lot to offer:

### CONSULTING AND TRAINING SERVICES

Remedial Investigation/Feasibility Studies  
Groundwater Studies/Computer Modeling  
Risk Assessment  
Industrial Hygiene  
Worker Right to Know Training  
Regulatory Compliance

### HAZARDOUS WASTE SERVICES

Emergency Response  
Hazardous Waste Site Cleanup  
Sludge Removal/Tank Cleaning  
Facilities Decontamination  
Preparation of Wastes for Transportation and Disposal  
On-Site Treatment Equipment  
Spill Control Supplies

### GROUNDWATER SERVICES

Geotechnical Studies  
Monitoring Well Installation  
Groundwater Recovery and Treatment  
On-Site Treatment Equipment

### TANK MANAGEMENT SERVICES

Development of Tank Management Systems  
Certified Petro-Tite® Precision Testing  
Soil Borings and Monitoring Wells  
Electronic Leak Detections Systems

Call or write today for a profile of our services:



**Bay West** inc.

Environmental Services  
800 N. Grotto Street • St. Paul, MN. 55104  
Phone: (612) 488-1008

**WATER RESOURCES & ENVIRONMENTAL CONSULTANTS**

HAZARDOUS WASTE SITE INVESTIGATIONS      COMPUTER MODELING  
 REGULATORY COMPLIANCE ASSISTANCE      MINELAND RECLAMATION  
 REMEDIAL MEASURES ENGINEERING      HYDROGEOLOGICAL EVALUATIONS

**Barr**  
 ENGINEERING CO.

BARR ENGINEERING CO.      CONSULTING ENGINEERS  
 7803 GLENROY ROAD      MINNEAPOLIS, MN 55435      (612) 830-0555

**LEGGETTE,  
 BRASHEARS  
 & GRAHAM, INC.**



consulting ground-water geologists

---

— Contamination Studies — Field Investigations — Well Logging —  
 — Water Supply — — Computer Modeling — — Dewatering —

1210 W. County Rd. E  
 St. Paul, MN 55112  
 (612) 481-4670

Tampa, Florida      Wilton, Connecticut  
 (813) 879-8177      (203) 762-1207



**twin city testing  
 corporation**

Consulting Engineers and Chemists  
 662 Cromwell Avenue, St. Paul, MN 55114  
 PHONE 645-3601

Additional offices in: Mankato,  
 Rochester and St. Cloud

**pace**  
 laboratories, inc.

Professional Analytical Chemistry & Engineering

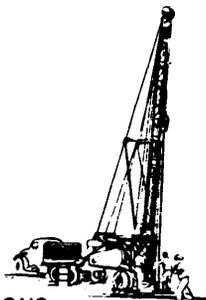
1710 Douglas Drive North  
 Minneapolis, MN 55422  
 Phone: (612) 544-5543

Bench and Pilot Scale Treatment  
 Laboratory Analysis  
 Groundwater Monitoring  
 Environmental Audits  
 Hazardous Waste Management  
 Industrial Hygiene

**Stevens**  
 Specializing in Monitoring  
 Wells & Test Drilling  
 (612) 479-2591  
 6240 Highway 12 Maple Plain, MN  
 State License #27194

**E. H. Renner & Sons**

INCORPORATED  
 WELL DRILLING FOR FOUR GENERATIONS



6300 Industry Ave. N. W. ☆ Anoka, Minnesota 55303  
 Residence (612) 753-3576

- ★ RESIDENTIAL SERVICE
- ★ COMMERCIAL SERVICE
- ★ INDUSTRIAL SERVICE
- ★ IRRIGATIONAL SERVICE
- ★ MONITORING WELLS
- ★ TEST HOLE DRILLING
- ★ WELL ABANDONMENT
- ★ CATHODIC PROTECTION

Submersible & Lineshaft Turbine Sales & Service

*"Call for a free estimate"*

ROGER E. RENNER

Office (612) 427-6100



612-559-1423

BRUCE A. LIESCH ASSOCIATES, INC.

- CONSULTING HYDROLOGISTS —
- PROFESSIONAL GEOLOGISTS —
- ENVIRONMENTAL SCIENTISTS —

EXPERTS IN GROUND WATER AND  
 SURFACE WATER HYDROLOGY

3131 Fernbrook Lane ■ Minneapolis, MN 55441

**Stevens**  
Specializing in Monitoring  
Wells & Test Drilling  
(612) 479-2591  
6240 Highway 12 Maple Plain, MN  
State License #27194



**GEOTECHNICAL  
ENGINEERING  
CORPORATION**

1925 Oakcrest Ave.  
Roseville, MN 55113  
(612) 836-7744

7373-147th St. West  
Apple Valley, MN 55124  
(612) 431-5266

**BRAUN**  
COMPANIES

Minnesota: Minneapolis • St. Cloud • Hibbing  
Rochester • St. Paul  
North Dakota: Bismarck • Williston Montana: Billings  
(Minneapolis Phone (612) 941-5600)

Geotechnical, Materials, & Environmental Testing and Consultation:  
Test Borings, Foundation Engineering, Non-Destructive Testing,  
Physical & Chemical Tests of Soils, Water, Steel, Concrete,  
Bituminous, Hazardous Wastes

Groundwater Monitoring  
Products  
by  
**Johnson® screens**

P.O. Box 64118  
St. Paul, Minnesota 55164  
Telephone 612-636-3900

**DAVID L. KILL, P.E.**

MINNESOTA  
GROUND WATER ASSOCIATION  
P.O. BOX 3362 ST. PAUL, MN 55165