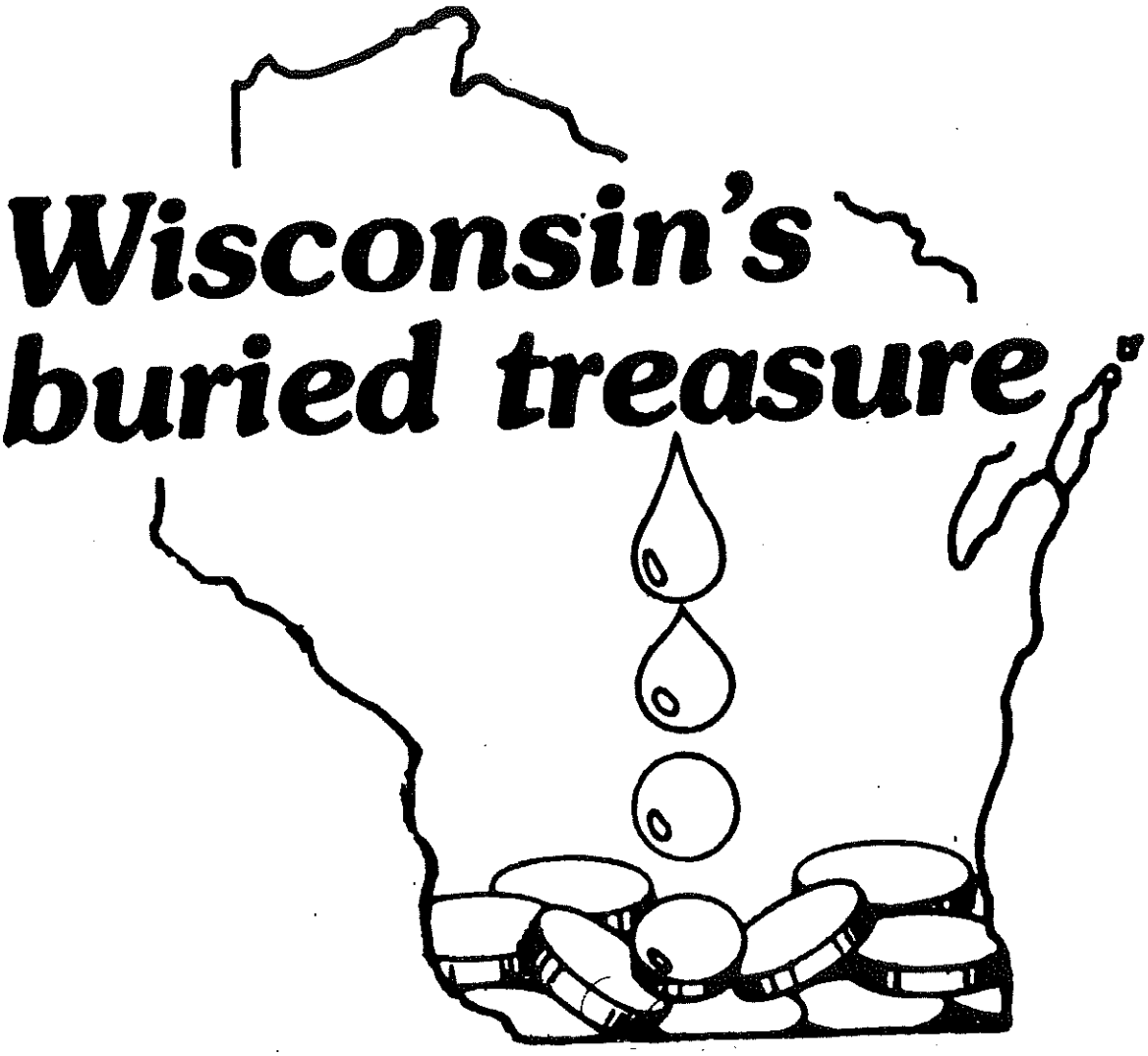
WISCONSIN GROUNDWATER COORDINATING COUNCIL



REPORT TO THE LEGISLATURE

AUGUST 1990

GROUNDWATER COORDINATING COUNCIL MEMBERS

Department of Natural Resources - Lyman Wible (Chair)
Department of Agriculture, Trade and Consumer Protection - Nick Neher
Geological and Natural History Survey (State Geologist) - Meredith Ostrom
Governor's Representative - John Metcalf
Department of Health and Social Services - Henry Anderson
Department of Industry, Labor and Human Relations - Michael Corry
Department of Transportation - Theodore Stephenson
University of Wisconsin System - Ruth Robertson

Subcommittee Members

Research

Geological and Natural History Survey (State Geologist) - Ken Bradbury (Chair)
Department of Agriculture, Trade and Consumer Protection - Jeff Postle
Department of Health and Social Services - Henry Anderson and Lynda Knobeloch
Department of Industry, Labor and Human Relations - Bennette Burks
Department of Natural Resources - David Lindorff
University of Wisconsin System - William Fetter and David Armstrong

Monitoring and Data Management

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Department of Agriculture, Trade and Consumer Protection - Gary LeMasters
Geological and Natural History Survey (State Geologist) - Mike Bohn and Ron Hennings
Department of Health and Social Services - Jay Goldring
Department of Industry, Labor and Human Relations - Bennette Burks
University of Wisconsin System - Byron Shaw

Planning and Mapping

Geological and Natural History Survey (State Geologist) - Ron Hennings (Chair), Mike Bohn and Alexander Zaporozec
Department of Natural Resources - David Lindorff
Department of Agriculture, Trade and Consumer Protection - Jeff Postle
University of Wisconsin System - Steve Born

Education

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Department of Agriculture, Trade and Consumer Protection - Karl Gutknecht
Geological and Natural History Survey (State Geologist) - Ron Hennings and Meredith Ostrom
Governor's Representative - John Metcalf
Department of Natural Resources - Cathy Cliff and Mike Lemcke
Department of Public Instruction - Dave Engleson
Vocational Education - Bill Rockwell

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Senate Urban Affairs, Energy, Environmental Resources and Elections Committee
Senate Transportation, Tourism and Conservation Committee
Assembly Environmental Resources and Utilities Committee
Assembly Natural Resource Committee
Secretary Ronald R. Fiedler - Department of Transportation
Secretary Gerald Whitburn - Department of Industry, Labor and Human Relations
Secretary Alan T. Tracy - Department of Agriculture, Trade and Consumer Protection
Secretary Patricia Goodrich - Department of Health and Social Services
Secretary Carroll D. Besadny - Department of Natural Resources
President Kenneth A. Shaw - University of Wisconsin
State Geologist Meredith Ostrom - Wisconsin Geological and Natural History Survey

Enclosed is the 1990 Groundwater Coordinating Council Report to the Legislature as required by state law. The Council was formed to help state agencies coordinate non-regulatory activities and the exchange of information related to groundwater. Much of the focus of the Coordinating Council's activities during the past year has been related to the coordination of groundwater monitoring and research to meet the needs of state agencies. The Council:

- worked with the University of Wisconsin System (UWS) to implement the $500,000 groundwater research program created by the biennnial budget.

- worked with the UWS to develop procedures to coordinate groundwater monitoring and research in Wisconsin.

- recommended organization of an annual conference to allow groundwater researchers funded by state agencies to discuss their findings.

- met with representatives of federal agencies to promote communication and coordination of federal and state groundwater activities.

Additional copies of this report are available from the Department of Natural Resources, Bureau of Water Resources Management. We hope you, your staff and the public will find this report useful in protecting Wisconsin's valuable groundwater resource.

Sincerely,

Lyman F. Wible

Lyman F. Wible, Chair
Groundwater Coordinating Council

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EXECUTIVE SUMMARY

This is the Report to the Legislature by the Groundwater Coordinating Council as required by s. 15.347, Wis. Stats. The report describes the condition of the groundwater resource and its management and summarizes the Council's activities from August, 1989 through August, 1990.

In 1984, the Legislature enacted Wisconsin Act 410 with the intention of improving the management of the state's groundwater. The Council is directed by ch. 160.50, Wis. Stats., to "serve as a means of increasing the efficiency and facilitating the effective functioning of state agencies in activities related to groundwater management. The Groundwater Coordinating Council shall advise and assist state agencies in the coordination of nonregulatory programs and the exchange of information related to groundwater, including, but not limited to, agency budgets for groundwater programs, groundwater monitoring, data management, public information and education, laboratory analysis and facilities, research activities and the appropriation and allocation of state funds for research."

Membership of the Groundwater Coordinating Council includes the Secretaries of the Departments of Natural Resources; Industry, Labor and Human Relations; Agriculture, Trade and Consumer Protection; Health and Social Services; Transportation; the President of the University of Wisconsin System; the State Geologist; and a representative of the Governor. Members are listed on the inside of the front cover.

Since its last report, the Groundwater Coordinating Council has taken the following major actions:

1. The Coordinating Council worked with the University of Wisconsin System (UWS) to implement the groundwater research program created by the biennial budget. The UWS budget contains $500,000 for groundwater research for this biennium. To implement this program, the UW Groundwater Research Advisory Council (GRAC) solicited proposals and received 20 proposed groundwater research projects. The GRAC recommended funding 19 of the projects at a reduced level of funding. The Coordinating Council endorsed the GRAC recommendation at its February meeting. The projects funded are listed in Table 5 of this report.

2. The Coordinating Council and the GRAC developed and endorsed procedures to coordinate groundwater research and monitoring among state agencies. A mechanism has been established for the joint solicitation of groundwater monitoring and research project proposals on an annual basis. That mechanism will begin this fall for projects to be funded during fiscal year

1992. The procedures are listed in Table 6.

3. The Coordinating Council met with representatives of federal agencies to discuss federal groundwater activities and promote communication and coordination of federal and state groundwater activities. Federal agency representatives have been invited to be ex officio subcommittee members.

4. The Coordinating Council endorsed the concept of a farmstead pollution potential assessment system as an education mechanism to provide environmental information to farmers. This system could be used by farmers to voluntarily evaluate groundwater pollution potential related to activities and structures around their farmstead.

5. The Coordinating Council endorsed a conference on groundwater management to be held in early 1991. The objectives of the conference will be to assess the groundwater management experience in Wisconsin and make recommendations for improving management of this valuable resource at the local level. Council agencies will assist in the planning for this conference.

INTRODUCTION

PURPOSE

The purpose of this report is to describe the condition of the groundwater resource and its management and summarize the activities of the Groundwater Coordinating Council from August 1989 to August 1990. This report is required by s. 15.347, Stats.

SUMMARY OF WISCONSIN'S GROUNDWATER LEGISLATION

Because 1990 is Earth Year, it is appropriate to look at the comprehensive groundwater legislation passed in 1984 and see how that legislation has been implemented. 1983 Wisconsin Act 410, Wisconsin's comprehensive Groundwater Protection Act was signed into law on May 4, 1984. This law greatly expanded Wisconsin's legal, organizational and financial capacity for controlling groundwater pollution. The Groundwater Protection Act created Chapter 160, Wisconsin Statutes, which serves as the backbone of Wisconsin's program. There are a number of major components to our groundwater protection program:

1) Standards. Under Chapter 160, Stats., the Department of Natural Resources is to establish the state groundwater quality standards based on advice from the Department of Health and Social Services. Standard setting is a continuing process based upon a priority list established by the state agencies. The state groundwater standards are contained in Chapter NR 140, Wisconsin Administrative Code. Once standards are established, all state agencies must manage their regulatory programs to comply. The groundwater standards are described in more detail under "Implementation of Chapter 160, Stats."

2) Regulatory Programs. Each state regulatory agency must have rules to assure that the groundwater standards are met and to require appropriate responses when the standards are not met. The state regulatory agencies are the Department of Natural Resources (solid and hazardous waste, industrial and municipal wastewater, spills); the Department of Industry, Labor and Human Relations (septic systems, petroleum product storage tanks); the Department of Agriculture, Trade and Consumer Protection (pesticide use and storage and fertilizer storage); and the Department of Transportation (salt storage). The implementation of the groundwater standards by the state agencies is described under "Implementation of Chapter 160, Stats."

3) Monitoring and Data Management. At the time the groundwater

legislation was created, there was concern that Wisconsin needed a groundwater monitoring program to determine whether the groundwater standards were being met. Therefore, the groundwater monitoring program was created under s. 160.27, Stats. Money from the Groundwater Account of the Environmental Fund has been used for problem assessment monitoring, regulatory monitoring, at-risk monitoring and management practice monitoring as well as establishment of a data management system for collection and management of the groundwater data. See the "Groundwater Monitoring and Research" discussion in this report.

4) Research. Although all state agencies must comply with the groundwater standards, the processes by which groundwater becomes contaminated, the technology for clean-up, the mechanisms to prevent contamination and the environmental and health effects of the contamination are often not well understood. In addition the basic data on geology, soils, and groundwater hydrology is often not available. The University of Wisconsin and the state agencies have recognized that additional efforts in these research areas are badly needed. The Governor and the Legislature included a new groundwater research appropriation for the University of Wisconsin System in the 1989-1991 budget. See the "Groundwater Monitoring and Research" discussion for more details.

5) Coordination. In establishing the groundwater law, the Legislature recognized that management of the state's groundwater resources was a responsibility divided among a number of state agencies. Therefore, the Groundwater Coordinating Council was created to advise and assist state agencies in the coordination of non-regulatory programs and the exchange of information related to groundwater. The Coordinating Council has been meeting since 1984. See the "Coordination Activities" discussion in this report.

The following report is intended to update the Legislature and Governor on the status of the state's groundwater program and the activities of the Groundwater Coordinating Council.

IMPLEMENTATION OF CHAPTER 160, STATS.

GROUNDWATER STANDARDS

Chapter 160, Wisconsin Statutes, created by 1983 Wisconsin Act 410, required the adoption of state groundwater quality standards based upon recommendations from the Wisconsin Department of Health and Social Services (DHSS).

The groundwater quality standards adopted in NR 140, Wis. Adm. Code, provide the backbone for Wisconsin's groundwater protection program because the standards are comprehensive. That is, the groundwater standards apply to all groundwater in the state and must be utilized by all state agencies in their regulatory programs. The state programs for landfills, hazardous wastes, spills, wastewater sludge, septic tanks, salt storage, fertilizer storage, pesticides, and underground storage tanks must comply with the standards. The standards allow a uniform level of protection for the valuable groundwater resources of Wisconsin.

Each regulatory agency must identify substances already detected in the groundwater or substances that have a reasonable probability of entering the groundwater that result from activities the agencies regulate. The Department of Natural Resources (DNR) prioritizes the substances and transmits the list to the DHSS.

Standards are established for substances of health concern as well as for substances that might cause taste, color, odor, or other "public welfare" concerns. The DHSS recommends enforcement standards and preventive action limits for those substances that are determined to be a public health concern. The DNR develops standards for those substances considered to be a public welfare concern. Federal drinking water standards called "Maximum Contaminant Levels" or other federal numbers are utilized in accordance with a specified methodology. DNR adopts, by rule, all standards for each substance.

Groundwater protection standards are established on a two-tiered basis. For each substance identified, an "enforcement standard" (ES) and a "preventive action limit" (PAL) will be set. The preventive action limit represents a lesser concentration of the substance than the enforcement standard. The PAL is either 10%, 20%, or 50% of the enforcement standard as specified by statute based on the health-related characteristics of the particular substance.

The preventive action limit serves two purposes. First, the PAL must be used in design codes for facilities (e. g., landfill design) and management practices (e. g., pesticide use regulations) so that contamination is prevented through use of stringent

designs. Regulatory agencies are required to review their existing design code regulations to assure that they conform to the PALs to the extent technically and economically feasible.

The second purpose of the PAL is to serve as a "trigger" for remedial actions. Some regulatory response may be necessary if a preventive action limit is exceeded. Preventive action limits are intended to provide regulatory agencies with time to take preventive measures to ensure that the enforcement standard is not attained or exceeded.

Enforcement standards define when a violation has occurred. When a substance is detected in the groundwater in concentrations equal to or greater than its enforcement standard, the activity, practice or facility that is the source of the substance is subject to immediate enforcement action.

The DNR is required to adopt, by rule, standards for each substance for which the DHSS makes recommendations. The first state standards were established in Chapter NR 140, Wis. Adm. Code, in 1985. Chapter NR 140 adopted groundwater standards for 36 substances of health concern and 10 substances of welfare concern. In 1988, ch. NR 140 was amended to add standards for 14 additional health-related substances. Chapter NR 140 has been amended this year to add groundwater standards for 12 additional substances and modify groundwater standards for 6 substances based on recommendations from DHSS. Additional standards will be adopted as new substances are found in groundwater.

STANDARDS REGULATION

As discussed previously, all state agencies that regulate sources of groundwater contamination are required to make sure facilities, practices and activities they regulate meet the groundwater standards once standards are established in NR 140. Since the groundwater standards were first adopted in 1985, several state agencies have adopted rules to ensure compliance with the groundwater standards.

The Department of Agriculture, Trade and Consumer Protection (DATCP) adopted Ag 161, 162, and 163, Wis. Adm. Code, in 1985 to regulate bulk storage of fertilizers and bulk storage and use of pesticides. DATCP is preparing a new administrative code (Ag 30) to regulate the use of the herbicide atrazine because it has been found in groundwater above the PAL and enforcement standard in parts of the state.

In 1988, the DNR adopted the 500 series of administrative codes to regulate solid waste disposal. The hazardous waste program is developing regulations to comply with the groundwater law. This year, the DNR adopted amendments to existing wastewater codes for land disposal facilities (NR 214, NR 206, and NR 110) to comply

with ch. 160, Stats. The DNR also adopted ch. NR 141 which regulates the installation and construction of groundwater monitoring wells.

The Department of Transportation (DOT) adopted administrative code TRANS 277 in 1986 to regulate the storage of highway salt. It mandated that any person storing 1000 pounds or more of highway salt report the site to the DOT. Highway salt must be stored in a manner that will protect the waters of the state from contamination. To date there are approximately 2000 salt storage sites which are inspected annually by the Department to assure compliance with TRANS 277.

The Department of Industry, Labor and Human Relations (DILHR) is nearing completion on amendments to rules that regulate underground petroleum storage tanks (ILHR 10) and large scale septic systems (ILHR 88) to comply with the groundwater standards. DILHR is also revising its platting code (ILHR 85) to require developers to estimate groundwater impacts from proposed unsewered subdivisions.

WHAT MAKES THE GROUNDWATER PROGRAM WORK? There are three main factors that contribute to the effectiveness of Wisconsin's program for management of groundwater:

1) Emphasis on Prevention. Wisconsin's groundwater standards and regulatory programs emphasize prevention of contamination since groundwater cleanup is much more expensive, can take decades, and may be technologically infeasible. Our "two-tiered" standards approach is intended to assure that facilities, activities and management practices are stringently designed and that remedial action is triggered as early as possible. This approach has been used as a model by the federal government and other states.

2) Multi-Agency Approach. Wisconsin's groundwater program does not rely upon a single state agency to implement all of the components of the state program. Rather, specific responsibilities are assigned to a number of different state agencies. Coordination of the non-regulatory portions of the state program is accomplished through the Groundwater Coordinating Council. The groundwater standards law, Chap. 160, Wis. Stats., assures that regulatory programs have the same goals and criteria.

3) Comprehensive Standards. The Wisconsin laws do not allow for one set of standards and performance criteria for one agency or set of agencies and a different set of standards for other agencies. For example, once the standards for a particular pesticide are established, those same standards are used by the Department of Agriculture, Trade and Consumer Protection to regulate the use and storage of the compound and the Department of Natural Resources to regulate spills and waste disposal practices.

COORDINATION ACTIVITIES

GROUNDWATER COORDINATING COUNCIL

The Groundwater Law established the Wisconsin Groundwater Coordinating Council to advise and assist state agencies in coordinating nonregulatory programs and exchanging groundwater information. The Groundwater Coordinating Council consists of the heads of all state agencies with some responsibility for groundwater management plus a Governor's representative. The state agencies include the Departments of Natural Resources; Industry, Labor and Human Relations; Health and Social Services; Agriculture, Trade and Consumer Protection; Transportation; State Geologist (Geological and Natural History Survey) and the University of Wisconsin System (UWS).

The Groundwater Coordinating Council (GCC) met four times during the past year. Much of the focus of the Coordinating Council's activities during the past year has been related to the coordination of groundwater research and monitoring to meet state needs. In response to discussion with the GCC, the UWS established the Groundwater Research Advisory Council (GRAC) in early 1988 to advise the UWS in the development of a groundwater research decision item narrative (DIN) and a long-range research plan. The GRAC prepared a groundwater research DIN which was endorsed by the GCC and was included in the UW 1990-1992 biennial budget request.

A $500,000 appropriation for groundwater research by the UWS was included in the Governor's budget and was approved by the Legislature. The budget requires that there be agreement between the UWS and the GCC on the use of the funds before they can be released by the Department of Administration. To comply with this requirement, a Memorandum of Understanding (MOU) was signed during the summer of 1989 between GCC, the GRAC and the UWS identifying the procedures for establishing priorities and selection of projects for funding of UWS groundwater research.

The GRAC solicited groundwater research proposals last fall and selected 19 of the projects submitted for funding. The GCC endorsed the proposals at its February meeting. The funding for these projects has now been released from the Department of Administration.

The GCC has also worked with the GRAC to coordinate the groundwater monitoring and research programs being carried out in the state. At the present time, the DNR administers a fund for management practice monitoring, DATCP administers a fund for pesticide research, the UWS administers the groundwater research money and DILHR administers a fund for research on alternative onsite wastewater treatment systems. The GRAC and GCC have developed

procedures to establish a single mechanism for soliciting proposals and identifying the appropriate agency for possible funding. That mechanism will begin this fall for proposals to be funded during fiscal year 1992. This will be an annual process and will allow better coordination of groundwater monitoring and research in Wisconsin.

The Council discussed coordination of groundwater activities with federal agencies. Representatives of four federal agencies - the U. S. Geological Survey, Soil Conservation Service, Environmental Protection Agency and Agricultural Stabilization and Conservation Service - were invited to the May GCC meeting to discuss their agency's groundwater activities in Wisconsin. There was consensus on the importance of communication and coordination among all agencies with groundwater responsibilities. The GCC recommended that the federal agencies be invited to attend GCC meetings at least annually to discuss federal activities. In addition, federal agencies will be invited to identify representatives to serve as ex officio members of any of its four subcommittees.

The Coordinating Council endorsed a conference on groundwater management to be held early in 1991. The focus of the conference will be on assessing the groundwater management experience in Wisconsin and recommending ways to improve management of the groundwater resource at the local level. Council agencies will help organize the conference which is part of a national Groundwater Policy Education Project funded by the Kellogg Foundation.

The Council directed each of the four subcommittees to review its goals to determine if any changes were necessary. The subcommittee reports which follow summarize the actions taken by each subcommittee.

SUBCOMMITTEE ACTIVITIES

Research Subcommittee - The Research Subcommittee met jointly with the Monitoring and Data Management Subcommittee twice during the year. The two subcommittees met in January to identify priority needs for groundwater monitoring. The results of the meeting were used by the Department of Natural Resources (DNR) in soliciting groundwater management practice monitoring proposals to be funded by the Groundwater Account of the Environmental Fund.

The two subcommittees met again in April to review the management practice monitoring proposals which had been received by the DNR. Subcommittee members made recommendations which were used to decide which monitoring proposals to fund for fiscal year 1991.

At the April meeting, the Research Subcommittee considered the goals of the subcommittee. Four on-going goals were identified:

1. Review research priorities,

2. Coordinate groundwater research/monitoring among state agencies,

3. Review groundwater monitoring proposals for the DNR's monitoring program, and

4. Disseminate research findings.

There was strong interest among the subcommittee for a periodic conference to allow researchers to report on the results of groundwater research/monitoring in Wisconsin.

The Subcommittee also reviewed the process used by the University in soliciting, reviewing and selecting groundwater research projects for funding this biennium. The subcommittee determined that the MOU between the UW, GCC and GRAC was followed with four exceptions. The subcommittee made suggestions for future coordination of research/monitoring proposals.

Monitoring and Data Management Subcommittee - The Monitoring and Data Management Subcommittee met jointly with the Research Subcommittee twice during the year. The subcommittee identified two goals:

1. Develop an integrated groundwater monitoring plan that most efficiently uses available resources to provide the information needed to manage and protect groundwater resources, and

2. Establish a data management system that ensures state agencies can access accurate, up-to-date information on the state's geology and groundwater resources.

The subcommittee decided it is important to be able to fund long-term monitoring projects and will discuss this issue further with the GCC.

The subcommittee also discussed the use of a standardized locational coordinate system to locate regulated facilities. The subcommittee recommended the use of either the State Plane or Latitude and Longitude coordinate systems, which provides accuracy to within 75 feet.

Planning and Mapping Subcommittee - The Planning and Mapping Subcommittee met in May to consider the goals for the subcommittee. The members agreed to continue to be the coordinating body for planning and mapping activities conducted by state agencies. In the short-term, the subcommittee will work on the development of standard formats for contamination susceptibility maps so that information can be transferred from one map to another.

Education Subcommittee - The Education Subcommittee met three times in the past year. The subcommittee agreed that its goal is to identify and promote education initiatives that provide state residents with the information they need to understand and participate in the management of Wisconsin's groundwater.

At all three meetings, the subcommittee discussed the potential for funds from the Kellogg Foundation in Michigan to support information and education activities in Wisconsin and the development of an education program on farmstead pollution assessment. A number of proposals are being developed by various state agencies. The subcommittee prepared a letter which was endorsed by the GCC to request funding from the Kellogg Foundation to hire an individual to work through the GCC to support the Council's activities and coordinate grant proposals to the Kellogg Foundation for information and education efforts in Wisconsin. The Kellogg Foundation rejected our proposal.

At the May meeting of the Coordinating Council, the concept of developing a farmstead pollution assessment system was unanimously endorsed. A cooperative UW Extension, DNR, DATCP and EPA project has developed a pilot program which will be field tested in the fall of 1990. A grant-preproposal to expand this effort has been submitted to the Kellogg Foundation. Their initial response was positive.

GROUNDWATER AUDIT

In October of 1989, the Legislative Audit Bureau (LAB) began an audit of the state's groundwater protection program. The audit has focused on a number of issues, including:

1. whether the agencies regulating activities impacting groundwater are receiving accurate information on groundwater quality in a timely manner,

2. whether these agencies are taking appropriate actions when groundwater quality standards are exceeded,

3. whether the method used to fund the program is adequate and fair, and

4. the extent to which revenue from the Groundwater Account is used to regulate and monitor septic systems.

The Coordinating Council and the state agencies represented on the Coordinating Council have met with the LAB and have provided information to assist in the audit. The LAB is preparing a final report which will be released later this summer.

GROUNDWATER MONITORING AND RESEARCH

CONDITION OF THE RESOURCE

As part of 1983 Wisconsin Act 410, the Groundwater Account of the Environmental Fund was created to support groundwater monitoring by state agencies to determine the extent of groundwater contamination in Wisconsin and identify the sources of contamination. Groundwater monitoring has found that the primary contaminants of concern are volatile organic chemicals (VOCs), pesticides and nitrates. Each are discussed below.

Volatile Organic Chemicals - Volatile organic chemicals (VOCs) vaporize under normal temperatures and pressures. Examples of VOCs include gasoline and industrial solvents, household products such as spot and stain removers, paints and thinners, drain cleaners, and air fresheners. Many VOCs are suspected carcinogens if exposure to them is long term. In the short term, high concentrations of VOCs can cause nausea, dizziness, tremors, or other health problems.

To date, the Department of Natural Resources has sampled over 6,000 wells for VOCs. The 58 different VOCs found in Wisconsin groundwater to date are listed in Table 1. Also included in Table 1 are the groundwater quality standards (both preventive action limits and enforcement standards) for 28 of the VOCs, the number of wells that have had VOCs detected in them, and the number of detections that have exceeded groundwater quality standards. Trichloroethylene is the VOC most often detected at levels exceeding groundwater enforcement standards.

The major VOC sources, where sources could be identified or tentatively pinpointed, are leaking underground gasoline storage tanks, landfills, and hazardous waste storage and handling facilities. Volatile organic chemicals disperse quickly in groundwater and often spread over a large distance (2-3 miles) in relatively uniform concentrations. Therefore, when various VOC sources are present in an area, it is often difficult to identify the specific source of contamination.

Pesticides - Pesticides were first found to be a problem in Wisconsin when aldicarb was detected in groundwater near Stevens Point in 1980. Although the amount of aldicarb being applied to potatoes in Wisconsin has declined dramatically, it is still detected in the groundwater of the central sands portion of Wisconsin. As of June, 1990, approximately one-quarter of the 1,895 wells sampled show detectable levels of aldicarb.

The pesticide sampling program was expanded in 1983 to sample for various pesticides (in addition to aldicarb) used in Wisconsin. Pesticides can reach groundwater as a result of normal application

TABLE 1 - SUMMARY OF GROUNDWATER VOC MONITORING PARAMETERS
FOR PERIOD OF RECORD

CHEMICAL CODE	CHEMICAL NAME	COMMON NAME	TOTAL WELLS SAMPLED	WELLS WITH DETS	NO. OF SAMPLE DETECTS	TEST UNITS	ENFORCEMENT STANDARD	WELL DETS EXCEEDING ENF. STD.	PREVENTIVE ACT. LIMIT	WELL DETS EXCEEDING PAL LEVEL
39180	TRICHLOROETHYLENE		6154	585	1807	UG/L	5	298	0.18	554
34506	1,1,1-TRICHLOROETHANE		6112	552	1529	UG/L	200	27	40	82
34423	METHYLENE CHLORIDE		2095	494	880	UG/L	150	50	15	138
34475	TETRACHLOROETHYLENE		6146	491	1318	UG/L	1	411	0.1	459
39175	VINYL CHLORIDE		5980	446	885	UG/L	0.2	426	0.0015	427
34496	1,1-DICHLOROETHANE		6027	434	1367	UG/L	850	36	85	63
34546	1,2-DICHLOROETHYLENE		6034	360	1012	UG/L	100	67	20	116
81551	XYLENE, ORTHO AND PARA		5534	300	623	UG/L	620	46	124	73
34010	TOLUENE		1604	293	577	UG/L	343	55	68.6	79
32106	CHLOROFORM		6013	271	454	UG/L	6	115	0.6	218
34501	1,1-DICHLOROETHYLENE		6002	271	535	UG/L	7	85	0.024	270
34488	TRICHLOROFLUOROMETHANE		5790	243	500	UG/L	3490	20	698	20
81575	DICHLOROIODOMETHANE		4353	189	267	UG/L	NONE	0	NONE	0
34235	BENZENE DISS		4543	174	436	UG/L	5	122	0.067	147
34481	TOLUENE DISS		4527	172	337	UG/L	343	27	68.6	43
34311	CHLOROETHANE		5945	165	265	UG/L	NONE	0	NONE	0
34531	1,2-DICHLOROETHANE		4477	138	349	UG/L	5	76	0.05	134
34371	ETHYL BENZENE		4490	115	235	UG/L	1360	4	272	17
34418	CHLOROMETHANE		1362	96	157	UG/L	NONE	0	NONE	0
32102	CARBON TETRACHLORIDE		5950	90	131	UG/L	5	36	0.5	69
34511	1,1,2-TRICHLOROETHANE		5941	84	121	UG/L	0.6	60	0.06	81
34571	1,4-DICHLOROBENZENE		5613	83	119	UG/L	75	0	15	6
32101	BROMODICHLOROMETHANE		5872	80	106	UG/L	179	4	36	4
34668	DICHLORODIFLUOROMETHANE		852	79	95	UG/L	NONE	0	NONE	0

TABLE 1 - SUMMARY OF GROUNDWATER VOC MONITORING PARAMETERS
FOR PERIOD OF RECORD

CHEMICAL CODE	CHEMICAL NAME	COMMON NAME	TOTAL WELLS SAMPLED	WELLS WITH DETS	NO. OF SAMPLE DETECTS	TEST UNITS	ENFORCEMENT STANDARD	WELL DETS EXCEEDING ENF. STD.	PREVENTIVE ACT. LIMIT	WELL DETS EXCEEDING PAL LEVEL
34301	CHLOROBENZENE		5938	77	115	UG/L	NONE	0	NONE	0
34516	1,1,2,2-TETRACHLOROETHANE		5941	73	109	UG/L	NONE	0	NONE	0
81607	TETRAHYDROFURAN		4958	64	98	UG/L	50	30	10	53
77651	ETHYLENE DIBROMIDE		1111	59	138	UG/L	0.01	57	0.001	57
34536	1,2-DICHLOROBENZENE		5618	53	75	UG/L	1250	0	125	0
34576	2-CHLOROETHYL VINYL ETHER		5828	53	55	UG/L	NONE	0	NONE	0
32105	DIBROMOCHLOROMETHANE		5750	51	72	UG/L	215	2	43	3
34566	1,3-DICHLOROBENZENE		5632	48	64	UG/L	1250	0	125	0
32104	BROMOFORM		5909	43	51	UG/L	NONE	0	NONE	0
34413	BROMOMETHANE		5884	43	52	UG/L	NONE	0	NONE	0
34704	1,3-DICHLOROPROPENE, CIS		5879	38	46	UG/L	NONE	0	NONE	0
34699	1,3-DICHLOROPROPENE, TRANS		5830	36	40	UG/L	NONE	0	NONE	0
77135	XYLENE, O		274	23	31	UG/L	620	0	124	1
81595	METHYL ETHYL KETONE		4813	18	18	UG/L	NONE	0	NONE	0
77128	STYRENE		4874	17	23	UG/L	NONE	0	NONE	0
34210	ACROLEIN		4745	12	12	UG/L	NONE	0	NONE	0
71880	FORMALDEHYDE		11	8	8	UG/L	NONE	0	NONE	0
81611	TRICHLOROTRIFLUOROETHANE		4779	8	10	UG/L	NONE	0	NONE	0
34215	ACRYLONITRILE		4736	7	8	UG/L	NONE	0	NONE	0
77041	CARBON DISULFIDE		4758	7	10	UG/L	NONE	0	NONE	0
77562	1,1,1,2-TETRACHLOROETHANE		4912	6	6	UG/L	NONE	0	NONE	0
81555	BROMOBENZENE		4817	6	6	UG/L	NONE	0	NONE	0
77223	ISOPROPYLBENZENE		4420	5	6	UG/L	NONE	0	NONE	0
34551	1,2,4-TRICHLOROBENZENE		405	4	4	UG/L	NONE	0	NONE	0
77443	1,2,3-TRICHLOROPROPANE		377	4	4	UG/L	NONE	0	NONE	0

TABLE 1 - SUMMARY OF GROUNDWATER VOC MONITORING PARAMETERS
FOR PERIOD OF RECORD

CHEMICAL CODE	CHEMICAL NAME	COMMON NAME	TOTAL WELLS SAMPLED	WELLS WITH DETS	NO. OF SAMPLE DETECTS	TEST UNITS	ENFORCEMENT STANDARD	WELL DETS EXCEEDING ENF. STD.	PREVENTIVE ACT. LIMIT	WELL DETS EXCEEDING PAL LEVEL
77596	DIBROMOMETHANE		364	4	4	UG/L	NONE	0	NONE	0
34391	HEXACHLOROBUTADIENE		127	3	3	UG/L	NONE	0	NONE	0
77093	1,2-DICHLOROETHYLENE CIS		196	2	2	UG/L	100	0	10	0
77161	1,2-DICHLOROPROPENE, TRANS		4424	2	2	UG/L	NONE	0	NONE	0
77189	BUTYL ACETATE		4360	2	2	UG/L	NONE	0	NONE	0
77222	1,2,4 - TRIMETHYLBENZENE		25	1	2	UG/L	NONE	0	NONE	0
77224	PROPYLBENZENE N		25	1	2	UG/L	NONE	0	NONE	0
77275	O-CHLOROTOLUENE		4424	1	2	UG/L	NONE	0	NONE	0
85795	TEST NAME UNKNOWN		25	1	2	UG/L	NONE	0	NONE	0
38760	1,2-DIBROMO-3-CHLOROPROPANDBCP		4427	0	0	UG/L	0.05	0	0.005	0
77168	1,1-DICHLOROPROPENE		196	0	0	UG/L	NONE	0	NONE	0
77173	1,3-DICHLOROPROPANE		196	0	0	UG/L	NONE	0	NONE	0
77277	P-CHLOROTOLUENE		4408	0	0	UG/L	NONE	0	NONE	0
77297	BROMOCHLOROMETHANE		25	0	0	UG/L	NONE	0	NONE	0
77342	N BUTYLBENZENE		25	0	0	UG/L	NONE	0	NONE	0
77350	BUTYLBENZENE SEC		25	0	0	UG/L	NONE	0	NONE	0
77353	BUTYLBENZENE TERT		25	0	0	UG/L	NONE	0	NONE	0
77356	ISOPROPYL TOLUENE		25	0	0	UG/L	NONE	0	NONE	0
77613	1,2,3 TRICHLOROBENZENE		25	0	0	UG/L	NONE	0	NONE	0

practices (nonpoint sources) or as a result of spills, waste disposal and improper storage practices (point sources). The pesticides tested for and detected in groundwater since 1983 are identified in Table 2. Groundwater quality standards have been adopted for 28 pesticides and are listed in Table 2.

A significant problem identified through pesticide sampling is groundwater contamination related to the handling and storage of pesticides. To date, about 30 sites in Wisconsin have been identified where the improper handling of pesticides has contaminated groundwater. Because of the number of handling facilities at which groundwater contamination has been detected, the DNR and the Department of Agriculture, Trade and Consumer Protection (DATCP) have initiated a project to determine how widespread the problem is by investigating 28 randomly selected pesticide mixing/loading sites across the state. The sites are primarily non-bulk facilities.

The first phase of the investigation has been completed. Seventeen sites have been identified as requiring additional soil and groundwater investigation to meet the study objectives. A total of 9 sites require groundwater monitoring. No further action is needed at 11 sites. The next phase will be to perform the necessary site investigations.

DATCP has initiated several studies to investigate pesticides in groundwater. Beginning in 1985, DATCP installed monitoring wells at a number of farm fields in susceptible geologic environments to determine the impact of pesticide use on groundwater. To date, the herbicide atrazine has been found at 25 of 35 sites and the herbicide alachlor (trade name Lasso) has been found at 7 of 23 sites at which they have been used.

DATCP randomly sampled well water on 534 Grade A dairy farms between August, 1988 and February, 1989 to determine the extent of pesticide contamination. Grade A dairy farms were sampled due to access and regulatory authority considerations. Water samples were analyzed for 44 pesticides and nitrates. A total of 71 wells (13%) contained one or more pesticides. Atrazine was found alone or in combination in 66 wells (12%). In 39 of these 66 wells (59%) the concentration of atrazine was above its preventive action limit (PAL) of 0.35 micrograms per liter (ug/l), and in 3 of these it was over its enforcement standard (ES) of 3.5 ug/l. Alachlor exceeded its enforcement standard of 0.5 ug/l in all 5 wells where it was found.

Two studies have been initiated during the past year as a follow-up to the Grade A dairy survey. DNR staff began resampling the 71 wells which showed detectable concentrations of one or more pesticides. Nearby private wells were also sampled to determine the extent of pesticide occurrence associated with the original detects. Preliminary results indicate that 39% of the wells

sampled contained detectable concentrations of atrazine and 6% had detectable concentrations of alachlor (Lasso). None of the atrazine detects exceeded the enforcement standard.

DATCP initiated a rural well sampling program to get a better understanding of pesticides and nitrates in groundwater in rural portions of Wisconsin. A special analytical procedure was used to screen for atrazine and similar pesticides. Approximately 2,200 rural wells were sampled at a cost of $16 to the homeowner.

Preliminary results show that 36 percent (694 of 1,944) completed well tests contained detectable concentrations of triazine-class compounds, of which atrazine is the most prominent member. 198 of the 694 wells (28%) with triazine detects had concentrations over the preventive action limit for atrazine. Fifty-four percent of the wells sampled in Dane County so far (138 of 253 sample analyses) had triazine detects.

Any well with a concentration of triazines above the PAL or nitrates above 10 milligrams/liter was resampled by the DNR for a more complete list of pesticides. While not all the resampling has been completed, the results to date show 54 percent (136 of 251) of the resampled wells have detectable concentrations of one or more pesticides, predominantly atrazine. Thirty four percent (85 of 251) of the wells have atrazine concentrations in excess of the PAL and 3 percent (7 of 251) exceed the enforcement standard.

Nitrates - Nitrate is the most commonly found groundwater contaminant, and frequently exceeds the state drinking water standard and enforcement standard of 10 milligrams/liter (mg/l). Consumption of water containing high concentrations of nitrate or nitrite can induce methemoglobinemia, a condition in which hemoglobin is oxidized to a form which is unable to carry oxygen to the body's tissues. Serious poisonings in infants have occurred following ingestion of water containing nitrate concentrations as low as 50 mg/l, just 5 times the current standard. Fatal poisonings usually involve ingestion of water containing 100-150 mg/l nitrate. The effects of ingesting lower concentrations are not known, but some experts believe this could cause a chronic oxygen shortage, which could injure an infant's nervous system.

Nitrates can enter groundwater from many sources, including nitrogen-based fertilizers, animal waste storage and feedlots, municipal and industrial wastewater, refuse disposal areas, and septic systems. County groundwater assessments conducted by the Wisconsin Geological and Natural History Survey have found that approximately 10% of the private water supply wells in the state contain nitrate-nitrogen above 10 mg/l. This percentage was confirmed by the nitrate sampling done in conjunction with the DATCP Grade A dairy farm well water quality survey.

The sampling found nitrate-nitrogen concentrations above the PAL

TABLE 2 - SUMMARY OF GROUNDWATER PESTICIDE MONITORING PARAMETERS
FOR PERIOD OF RECORD

CHEMICAL CODE	CHEMICAL NAME	COMMON NAME	TOTAL WELLS SAMPLED	WELLS WITH DETS	NO. OF SAMPLE DETECTS	TEST UNITS	ENFORCEMENT STANDARD	WELL DETS EXCEEDING ENF. STD.	PREVENTIVE ACT. LIMIT	WELL DETS EXCEEDING PAL LEVEL
39053	ALDICARB, TOTAL	TEMIK	1895	480	2691	UG/L	10	194	2	381
01051	LEAD PB,TOT		1236	434	1801	UG/L	50	279	5	392
39033	ATRAZINE	AATREX	1490	295	606	UG/L	3.5	68	0.35	217
01034	CHROMIUMCR,TOT		1026	294	696	UG/L	50	283	5	288
01002	ARSENIC AS,TOT		1069	271	981	UG/L	50	251	5	271
01042	COPPER CU,TOT		478	202	364	UG/L	1000	163	500	168
46317	ALACHLOR	LASSO	1563	83	196	UG/L	0.5	65	0.05	83
81408	METRIBUZIN	SENCOR	967	74	131	UG/L	250	2	50	3
77651	ETHYLENE DIBROMIDE		1111	59	138	UG/L	0.01	57	0.001	57
39356	METOLACHLOR	DUAL	1257	56	141	UG/L	15	15	1.5	41
77780	CYANIZINE	BLADEX	659	27	62	UG/L	12.5	3	1.25	24
39730	2,4-D WHL SMPL	2,4-D	170	11	14	UG/L	100	0	20	1
81410	BUTYLATE	SUTAN	87	10	16	UG/L	67	0	6.7	0
34361	ENDOSULFAN I		30	9	9	UG/L	NONE	0	NONE	0
81287	DINOSEB	DINITRO	235	9	23	UG/L	13	4	2.6	7
82052	DICAMBA	BANVEL	64	9	14	UG/L	300	2	60	3
39055	SIMAZINE	PRINCEP	71	6	11	UG/L	2150	0	215	0
81894	EPTAM	ERADICANE	163	6	8	UG/L	250	0	50	0
39740	2,4,5-T WHL SMPL		30	4	4	UG/L	10	4	2	4
77700	CARBARYL	SEVIN	225	4	6	UG/L	960	0	192	0
39720	PICLORAM	TORDON	27	3	3	UG/L	NONE	0	NONE	0
39770	DACTHAL	DCPA	10	2	3	UG/L	NONE	0	NONE	0
34259	BHC, DELTA		6	1	1		NONE	0	NONE	0
34685	ENDRIN		96	1	1	UG/L	NONE	0	NONE	0

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FOR PERIOD OF RECORD

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38477	LINURON	LOROX	147	1	1	UG/L	NONE	0	NONE	0
38730	METAM-SODIUM	VAPAM	34	1	1	UG/L	NONE	0	NONE	0
39410	HCHLR WHL SMPL		31	1	1	UG/L	NONE	0	NONE	0
39760	SILVEX WHL SMPL	SILVEX	96	1	1	UG/L	10	0	2	0
46314	DIMETHOATE	DIMETHOATE	22	1	1	UG/L	2	0	0.4	1
81405	CARBOFURAN	FURADAN	168	1	3	UG/L	50	0	10	1
82051	CHLORAMBEN	AMIBEN	54	1	5	UG/L	150	0	30	1
82088	TERBUFOS	COUNTER	149	1	1	UG/L	NONE	0	NONE	0
82576	ALDICARB SULFOXIDE		1	1	1	UG/L	NONE	0	NONE	0
82587	ALDICARB SULFONE		1	1	1	UG/L	NONE	0	NONE	0
34356	ENDOSULFAN II		18	0	0	UG/L	NONE	0	NONE	0
34621	2,4,6-TRICHLOROPHENOL		39	0	0	UG/L	NONE	0	NONE	0
38486	MCPB		1	0	0	UG/L	NONE	0	NONE	0
38491	MCPP	MECOPROP	1	0	0	UG/L	NONE	0	NONE	0
38760	1,2-DIBROMO-3-CHLOROPROPANE	DBCP	4427	0	0	UG/L	0.05	0	0.005	0
38815	HEXAZINONE	VELPAR	1	0	0	UG/L	NONE	0	NONE	0
38865	OXAMYL	VYDATE	5	0	0	UG/L	NONE	0	NONE	0
38872	TOLBAN (PROFLURALIN)		2	0	0	UG/L	NONE	0	NONE	0
39002	BENEFIN	BALAN	1	0	0	UG/L	NONE	0	NONE	0
39032	PENTACHLOROPHENOL		2	0	0	UG/L	NONE	0	NONE	0
39051	METHOMYL	LANNATE	20	0	0	UG/L	NONE	0	NONE	0
39056	PRAMITOL		3	0	0	UG/L	NONE	0	NONE	0
39075	BHC GAMMA		19	0	0	UG/L	NONE	0	NONE	0
39151	MCPA	AGROXENE	3	0	0	UG/L	NONE	0	NONE	0
39300	DDT P,P		21	0	0	UG/L	NONE	0	NONE	0

TABLE 2 - SUMMARY OF GROUNDWATER PESTICIDE MONITORING PARAMETERS
FOR PERIOD OF RECORD

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39305	DDT O,P		8	0	0	UG/L	NONE	0	NONE	0
39310	DDD P,P		9	0	0	UG/L	NONE	0	NONE	0
39315	DDD O,P		8	0	0	UG/L	NONE	0	NONE	0
39320	DDE P,P		9	0	0	UG/L	NONE	0	NONE	0
39330	ALDRIN, WHL WATER SMPL		40	0	0	UG/L	NONE	0	NONE	0
39338	BHC, BETA		6	0	0		NONE	0	NONE	0
39348	CHLORDANE, ALPHA		6	0	0	UG/L	NONE	0	NONE	0
39350	CHLORDANE		21	0	0	UG/L	NONE	0	NONE	0
39380	DIELDRINWHL SMPL		39	0	0	UG/L	NONE	0	NONE	0
39390	ENDRIN WHL WATER SMPL		11	0	0	UG/L	0.2	0	0.02	0
39398	CHLORPYRIFOS	LORSBAN	30	0	0	UG/L	NONE	0	NONE	0
39480	METHOXYCHLOR		90	0	0	UG/L	100	0	20	0
39530	MALATHN WHL SMPL		2	0	0	UG/L	NONE	0	NONE	0
39540	PARATHION		27	0	0	UG/L	NONE	0	NONE	0
39570	DIAZINON	DIAZINON	31	0	0	UG/L	NONE	0	NONE	0
39580	AZINPHAS-METHYL (GUTHION)		1	0	0	UG/L	NONE	0	NONE	0
39600	METHYL PARATHION		8	0	0	UG/L	NONE	0	NONE	0
39640	CAPTAN		4	0	0	UG/L	NONE	0	NONE	0
39800	PHOSMET		1	0	0	UG/L	NONE	0	NONE	0
39810	CHLORDANE, GAMMA		6	0	0	UG/L	NONE	0	NONE	0
46291	LINDANE, GAMMA BHC		6	0	0	UG/L	0.02	0	0.002	0
46313	THIMET	THIMET	170	0	0	UG/L	NONE	0	NONE	0
46325	DDE O,P		8	0	0	UG/L	NONE	0	NONE	0
70314	CHLOROTHALONIL	BRAVO	11	0	0	UG/L	NONE	0	NONE	0

TABLE 2 - SUMMARY OF GROUNDWATER PESTICIDE MONITORING PARAMETERS
FOR PERIOD OF RECORD

CHEMICAL CODE	CHEMICAL NAME	COMMON NAME	TOTAL WELLS SAMPLED	WELLS WITH DETS	NO. OF SAMPLE DETECTS	TEST UNITS	ENFORCEMENT STANDARD	WELL DETS EXCEEDING ENF. STD.	PREVENTIVE ACT. LIMIT	WELL DETS EXCEEDING PAL LEVEL
77687	2,4,5-TRICHLOROPHENOL		16	0	0	UG/L	NONE	0	NONE	0
78657	NONACHLOR, TRANS		1	0	0	UG/L	NONE	0	NONE	0
78885	DIQUAT		1	0	0	UG/L	NONE	0	NONE	0
78916	NITRAPYRIN		1	0	0	UG/L	NONE	0	NONE	0
78917	ISOFENPHOS	AMAZE	1	0	0	UG/L	NONE	0	NONE	0
78922	NONACHLOR, TRANS		5	0	0	UG/L	NONE	0	NONE	0
78923	NONACHLOR, CIS		1	0	0	UG/L	NONE	0	NONE	0
78924	NONACHLOR, CIS		5	0	0	UG/L	NONE	0	NONE	0
79190	PENDIMETHALIN		1	0	0	UG/L	NONE	0	NONE	0
79191	PERMETHRIN, CIS		5	0	0	UG/L	NONE	0	NONE	0
81284	TRIFLURALIN	TREFLAN	7	0	0	UG/L	7.5	0	0.75	0
81294	FONOFOS	DYFONATE	74	0	0	UG/L	NONE	0	NONE	0
81316	PENTACHLORONITROBENZENE (PPCNB		9	0	0	UG/L	NONE	0	NONE	0
81888	DISULFOTON	DISYSTON	139	0	0	UG/L	NONE	0	NONE	0
82198	BROMACIL	HYVAR	3	0	0	UG/L	NONE	0	NONE	0
82416	PARAQUAT	PARAQUAT	11	0	0	UG/L	NONE	0	NONE	0

of 2 mg/l in 255 wells (48%) and over the ES of 10 mg/l in 55 (10%) of these wells. Pesticides were found in 28 (52%) of the 55 wells with nitrate-nitrogen over the 10 mg/l ES. The April, 1989 DATCP report "Grade A Dairy Farm Water Well Survey" provides a summary of this pesticide and nitrate sampling effort.

This study and other statewide studies have shown nitrate contamination above the drinking water standard in 10% of the state's domestic wells overall. We estimate that at least 10% or 70,000 of Wisconsin's 700,000 wells exceed the standard of 10 mg/l of nitrate - nitrogen.

While agricultural activities are the most significant sources of nitrates, other sources include septic tanks and industrial/municipal wastewater, sludge and refuse disposal areas. Because of the concern with nitrates, the Groundwater Coordinating Council endorsed a resolution in 1989 recommending that newly constructed water supply wells be sampled for nitrates as well as coliform bacteria.

MONITORING/RESEARCH

Management Practice Monitoring - The Department of Natural Resources has approximately $300,000 available each year to support groundwater monitoring studies evaluating existing design and/or management practices associated with potential sources of groundwater contamination. The intent of these studies is to reduce the impacts of potential sources of contamination by changing the way land activities are conducted. Table 3 is a list of the 19 projects to be funded in fiscal year (FY) 91. Thirteen projects are continuing projects which are being funded for the second year of a two year study. Six new projects were selected from 22 proposals submitted requesting a total of nearly $400,000. Members of the Monitoring and Data Management and Research Subcommittees of the Groundwater Council assisted in establishing the priority needs for monitoring studies and in evaluating the proposals submitted.

In addition to the money available to fund management practice monitoring projects, there are three sources of money for groundwater research:

1. Pesticide research monies administered by the Department of Agriculture, Trade and Consumer Protection.

2. Groundwater research monies administered by the University of Wisconsin, Water Resources Center.

3. Research on alternative on site wastewater treatment systems administered by the Department of Industry, Labor and Human Relations.

Table - 3

July 2, 1990 — Summary of the Groundwater Management Budget for F.Y 1991

Project Number	Initial Project Title	Project Contact	Amount Committed
2	DATCP Pesticide Field Study for the Lower Wis. River Testing for Atrazine, with additional study in Dunn and Trempealeau Counties	Jeff Postle	$11,800.00
9	Barnyard Improvements Monitoring. Monitoring Improvements in Barnyards for Protecting Groundwater Quality	Byron Shaw	$13,236.00
64	Field Study of Pesticide Contamination of Groundwater at Grade A Dairy Farms In Dane County, Wisconsin	K. Bradbury	$18,065.50
65	Sources and Extent of Atrazine Contamination of Groundwater at Grade A Dairy Farms in Dane County, Wisconsin	G. Chesters	$22,615.00
66	Effects of Soil Type, Selected BMPs, and Tillage on Atrazine and Alachlor Movement Through the Unsaturated Zone: Model Calibration and Validation	Birl Lowery K. McSweeney	$25,000.00
67	Unsewered Subdivision Impacts on Groundwater Quality	Byron Shaw	$22,500.00
70	DATCP Grade A Follow-up with Pesticide & Nitrate Analysis for Neighboring Wells with Detects	Bob Krill	$9,000.00
71	Development and Evaluationm of Optimum Manure Application Rates for Crop Production and GW Protection	Byron Shaw	$19,881.00
72	Water Quality Monitoring of Wells Constructed in Door County Under Special Written Variances	Bruce Urban	$8,619.12
73	Volatile Organic Chemical (VOC) Attenuation in Unsaturated Soil Above and Below an Onsite Infiltration System	Jerry Tyler	$24,639.00
74	Variation in Hydraulic Conductivity Measurements: Site Variability Versus Field Methodology	D. Mickelson K. Bradbury	$4,850.00
75	Field Evaluation of Drainage Ditches as Controls on the Migration of Agricultural Chemicals in Groundwater	Jean Bahr	$14,985.00
77	Analytical Determination of Pesticide Metabolites and Carrier Chemicals in Wisconsin Well Water	W. Sonzogni	$18,900.00
78	To Expand Groundwater Sampling in the Lower Wisoconsin River Valley	Fred Madison	$10,950.00
79	Waupaca County Groundwater Project/VOC's and Pesticides	Tom Wilson	$7,450.00
80	Crop Rotations Affects on Leaching Potentential and Groundwater Quality	J. Posner	$17,250.00
81	A Study of the Response of Nitrate and Pesticide Concentrations to Agricultural Best Management Practices in Sandy Corn Fields	F. Madison	$8,860.00
82	A Comparative Study of Nitrate Loading to Groundwater from Mound, In-Ground Pressure and At-Grade Septic Systems	B. Shaw	$32,500.00
83	Utilization of Aquatic Life Toxicity Tests to Assess Biological Impact of Landfill Leachate - Contaminated Groundwater to Nearby Surface Waters	W. Sonzogni	$23,140.00
	Management Practice Contract Expenses		$314,240.62

DATCP Pesticide Research - Beginning in 1989, DATCP has approximately $125,000 available annually through fees from pesticide manufacturers as a result of the pesticide law to fund research on pesticide issues of regulatory importance. A committee was established in 1988 to identify and prioritize pesticide research needs. The top six needs identified were:

1. Factors influencing the leaching of pesticides in Wisconsin.
2. Identification of sources of contamination in groundwater at grade A dairy farms.
3. On-farm pesticide spill containment systems.
4. Maintenance of pesticide bulk storage containment systems.
5. Use-related monitoring of pesticides in groundwater.
6. Evaluation of irrigation management and the effect of irrigation on pesticide contamination in groundwater.

Projects were solicited in early 1989 and 12 proposals were submitted. Five two-year projects were selected for funding which began June 1, 1989. An additional project was funded beginning June 1, 1990 to study the problem of disposal of pesticide containers.

All six projects are listed in Table 4 below. Although the pesticide research projects aren't required to address groundwater issues, the six funded projects deal with groundwater in some way. In fact, the first three projects are at least partially co-funded by DNR management practice monitoring money.

Table 4 - Summary of DATCP Research Projects for FY 1991

Project Title (Principal Investigator)	FY 1991 costs
Sources and Extent of Atrazine Contamination of Groundwater at Grade A Dairy Farm in Dane County (G. Chesters, UW-Madison)	$22,490
Field Study of Pesticide Contamination of Groundwater at Grade A Dairy Farms in Dane County (K. Bradbury, WGNHS)	$22,473
Effect of Soil Type, Selected Best Management Practices, and Tillage on Atrazine and Alachlor Movement Through the Unsaturated Zone: Model Calibration and Validation (B.Lowery and K. McSweeney, UW-Madison)	$39,000
Design of a Small Scale Transportable Mixing/ Loading System (D. Kammel and R. Straub, UW-Madison)	$21,500
Pesticide Concentration in the Prairie du Chien Formation, Big River Basin, Pierce County, Wisconsin (S. Huffman, UW-River Falls)	$6,043
Pesticide Container Disposal Study (DATCP staff)	$20,000
Total	$131,506

UWS Research Projects - At the request of the Groundwater Coordinating Council, the UW System in 1988 created a Groundwater Research Advisory Council (GRAC) to establish a long-range research plan and develop a groundwater research decision item narrative (DIN) for inclusion in the University's biennial budget. The GRAC consists of university, state agency and public representatives. The UWS also identified the Water Resources Center as the central coordinating body for UWS groundwater research activities.

Based on discussions with the Coordinating Council, the GRAC prepared a groundwater research decision item narrative (DIN) for inclusion in the University's 1990-1992 biennial budget request. The Coordinating Council endorsed the DIN at its October 14, 1988 meeting. The DIN was included in the governor's budget and was approved by the Legislature at a level of $500,000 for the biennium for groundwater research.

The budget requires that there be agreement between the UWS and the Coordinating Council on the use of the UWS research funds before they can be released by the Department of Administration. To expedite this agreement, a Memorandum of Understanding (MOU) was signed by representatives of the Groundwater Coordinating Council, the GRAC and the University of Wisconsin System on use of the UWS groundwater research funds. The MOU spells out the procedures for establishing priorities and selection of projects for funding of UW groundwater research. The Coordinating Council has a substantive role in establishing research priorities and an advisory role in project selection to minimize overlap and duplication.

In accordance with the MOU, the UWS sent out a request for groundwater proposals in October, 1989 to meet the research priorities identified in the DIN. Those research priorities are:

- Pollutant transformations in groundwater
- Pollutant transport in groundwater
- Impact of waste management practices on groundwater contamination
- Agricultural management practices as they effect groundwater
- Characterization of geologic factors affecting groundwater movement
- Examination of the economic impact of groundwater contamination
- Evaluation of policy alternatives for controlling contamination

A total of 20 proposals were submitted. The GRAC recommended funding 19 of the projects at a lower funding level than requested. This recommendation was endorsed by the Coordinating Council at its February meeting. The funding was released by the Department of Administration in May and the projects have begun. The 19 projects funded are listed in Table 5.

DILHR Septic System Research - The Department of Industry, Labor and Human Relations has received an annual appropriation of $50,000 to fund research on alternatives to current septic system technology. The research, which will include groundwater monitoring, focuses on designs, products, and management practices that minimize nitrate contributions from septic systems.

Two projects were funded for FY 91. One study will investigate and test onsite wastewater treatment systems designed to reduce nitrate concentrations in groundwater. The other project will develop and evaluate a model private sewage system management program.

Groundwater Research/Monitoring Coordination - In order to provide consistency and coordination among the four state agencies (DATCP, DNR, DILHR and UW) in identifying and funding monitoring and research needs, the GRAC and GCC have developed and endorsed procedures to coordinate the solicitation of funds in 1990 and future years. A mechanism has been established so that there will be only one submittal of project proposals, rather than four as is now the case. This will facilitate determination of the most appropriate funding source for funding a particular project. The procedures will be started in the fall of 1990 to solicit project proposals for funding beginning in fiscal year 1992. A copy of the procedures is attached as Table 6.

GROUNDWATER DATA MANAGEMENT

The Wisconsin Department of Natural Resources (DNR) has charge for the responsibility of groundwater protection under the bureaus in the Division of Environmental Quality. The collection and coordination of groundwater data exchange between the bureaus and other state agencies has been increasingly important as an issue externally as well as internally within DNR. The DNR is currently in the middle of a renewed effort to coordinate the collection and retrieval of all groundwater data, as a result of DNR funding, inter-agency responsibilities, and cooperative agreements.

The DNR currently has a computer system called the Groundwater Information Network (GIN) which is under a process of reanalysis and migration from the State Regional computer to the DNR VAX computer system. The system's intent is to bring all DNR collected groundwater data under one common retrieval format. Groundwater data from a variety of sources, including non-point source basin studies, county sampling projects, DNR management practice monitoring projects, DNR regulatory monitoring, and DATCP pesticide projects are some of the current data sources being brought together.

TABLE 5

SUMMARY OF GROUND WATER RESEARCH PLAN
1989-1991

Because of some interdependencies, individual projects have been grouped into five categories. It is the intent of the Groundwater Research Advisory Council to have the participants meet on two or three occasions annually to discuss the research progress in their particular group or in related areas between groups. The suggested grouping is:

Group I--Preferential Flow of Water and Contaminants in the Soil Profile.

- o Near-Source Transport of Contaminants in Heterogeneous Media--J. A. Hoopes
- o Convective Flux of Chemicals across a Sediment-Water Interface--T. Green
- o Using Ground Penetrating Radar to Predict Preferential Solute Movement--K-J. S. Kung, F. Madison and R. T. Chin
- o Contamination Attenuation Indices for Sandy Soils: Tools for Information Transfer--K. McSweeney, F. Madison and B. Lowery
- o Nitrate Movement through the Unsaturated Zone of a Sandy Soil in the Lower Wisconsin River Valley--B. Lowery, W. R. Kussow and K. McSweeney
- o Variation of Hydraulic Conductivity in Sandy Glacial Till: Site Variability versus Methodology--D. M. Mickelson and K. R. Bradbury

Group II--Soil and Aquifer Characteristics Affecting the Movement of Contaminants to and in Ground Water.

- o Reactions of Chlorohydrocarbons on Clay Surfaces--J. J. Fripiat
- o Adsorptive Behavior of Atrazine and Alachlor in Organic-Poor Soils and Sediments--T. J. Grundl
- o Effects of Complex Mixtures of Chemicals in Leachates on the Transport of Pollutants in Groundwater--T. J. Grundl, D. S. Cherkauer and D. N. Edgington
- o Role of Mobile Colloids in the Transport of Chemical Contaminants in Groundwaters--D. E. Armstrong and M. S. Shafer

Group III--Development and Testing of Predictive Mathematical Models for Assisting Regulatory Decision-making.

- o Integrated Decision Support System for Wellhead Protection--T. M. Adams, C. H. Benson, P. J. Bosscher, E. F. Joeres and K. W. Potter
- o Tracking Contaminant Pathways in Groundwater with a Geologically Based Computer Model for Outwash--M. P. Anderson
- o Transport of Agricultural Contaminants in Sand Aquifers Affected by Drainage Ditches--J. M. Bahr
- o A Tracer Technique for Measuring Regional Groundwater Velocities from a Single Borehole--P. L. Monkmeyer

Group IV--Remediation of Contaminated Soils and Waters using Biological, Photocatalytic and Chemical Techniques.

- o Bioremediation of Pesticide-Contaminated Soil and Water--R. F. Harris and D. E. Armstrong

- o Renovation of Pesticide-Contaminated Rinse Waters by Chemical Methods--G. Chesters and J. M. Harkin
- o Prediction of Organic Chemical Leachate Concentrations from Soil Samples--J. K. Park
- o Removal of Iron, Manganese and Radium from Groundwater--E. R. Christenson and D. S. Cherkauer

Group V--Establishing the Impact of Contaminated Water on Property Values.

- o Economic Effects of Groundwater Contamination on Real Estate--G. W. Page

Approximate funding distribution between the five groups of projects will be

Group I	$115,000
Group II	125,000
Group III	125,000
Group IV	115,000
Group V	20,000
Total	$500,000

The Water Resources will supplement these funds by approximately $50,000 and provide the necessary administrative and reporting services. It is intended that the final products of this program will be:

a. Individual detailed final project reports.
b. Summary reports for the five groupings of projects.
c. A final integrated report on the total research program.

Since many of the projects listed here dovetail with projects supported through the Department of Natural Resources and Agriculture, Trade and Consumer Protection, the College of Agricultural and Life Sciences and University Extension it is intended to invite participants to the Group Workshops. Discussions are needed to determine if joint reporting of some projects would be advisable.

TABLE 6

RULES FOR REVIEWING AND SELECTING UNIVERSITY OF WISCONSIN SYSTEM GROUNDWATER RESEARCH PROJECTS

Approved by the Groundwater Research Advisory Council
May 3, 1990

In keeping with the Memorandum of Understanding (MOU) on the "Use of University of Wisconsin System Groundwater Research Funds" signed 7/7/1989 by the University of Wisconsin System and the Chairs of the State Groundwater Coordinating Council (GCC) and the UWS Groundwater Research Advisory Council (GRAC), rules are required to select projects for funding. To coordinate planning with the State Agencies funding similar groundwater monitoring and pesticide residue fate projects it has been agreed that solicitation and selection of projects will be conducted simultaneously with the University and the Wisconsin Departments of Natural Resources (DNR) and Agriculture, Trade and Consumer Protection (DATCP). However, this does not imply that projects will be jointly funded. Each agency program has its own mission and its own role to play and the differing roles and priorities will be outlined in a FACT SHEET which will accompany the joint solicitation. The only way in which the process will differ among agencies is in the solicitation of preproposals: only the University will solicit preproposals which will be used to check their objectives against the established research priorities and to allow feedback to investigators. The schedule of activities from preproposal solicitation to project selection will take 6.5 months. As required by the MOU, the GRAC will appoint an Oversight Committee with responsibilities to review the full proposals, rank the projects and report to the GRAC.

The following schedule of activities was agreed to:

ANNUAL SCHEDULE OF ACTIVITIES

Date	Activity
September 15	Solicit preproposals for UWS funds only; solicitations will include information on research priorities and the information required in the preproposal.
October 15	Deadline for receipt of preproposals. The preproposals will be reviewed by an Ad Hoc Subcommittee of the Oversight Committee. It will consist of the Academic Program Director of the Water Resources Center (currently G. Chesters) and the Research Subcommittee of the GCC which consists of two members from the University of Wisconsin System, one from the Wisconsin Geological and Natural History Survey, and one each from DNR, DATCP, and the Departments of Health and Social Services and Industry, Labor and Human Relations. An additional UWS representative will be added to provide a nine-member group which will determine the compatibility of the preproposal objectives with the stipulated groundwater research priorities and provide feedback to the investigators. This Subcommittee will report its findings directly to GRAC. Failure to submit a preproposal will not disqualify any investigator from preparing a complete proposal. If necessary FAX to 608-262-0591.

Date	Activity
November 15	Solicit full proposals for DNR/DATCP/University funding. The joint solicitation will include a FACT SHEET designating the role and priorities of each agency, the required format for proposal preparation and any budget constraints imposed by each agency. A written preproposal evaluation will be included with the solicitation package to principal investigators who have submitted preproposals.
January 15	Deadline for receipt of proposals. Proposals on IBM-PC compatible disks are encouraged. Projects for UWS funding will be reviewed by a process described below. Projects for UWS, DNR or DATCP support should be sent or will be referred to the appropriate organization. Investigators should send the project to only one organization or it will be reviewed by several different procedures. This may jeopardize its chances for funding.
April 1	Project selection announcement following approval of a Groundwater Research Program package by GRAC, information sharing between agencies and approval of total UWS/DNR/DATCP package by GCC.
July 1 or September 1	Funding and project commencement as determined by the principal investigator and the availability of funds.

REVIEW OF PROPOSALS

By February 15, each proposal will be reviewed by at least two qualified external reviewers selected by the Academic Program Director of the Water Resources Center and the Oversight Committee. Both will be from outside the UWS and at least one from out-of-state. A pool of appropriate reviewers is available through the national network of Water Resources Research Institutes. Ranking of proposals will be performed by a 10-member panel comprising members of the GRAC and other researchers. The panel will serve as the Oversight Committee described in the MOU and will be appointed by the GRAC.

Copies of all proposals and external reviews will be provided to each review panel member. For each proposal, a primary and secondary reviewer will be selected from the Oversight Committee. The primary reviewer will prepare a written review of each assigned proposal, including a synopsis, a critique and a recommendation, and present the decision of the 2-member subcommittee to the whole panel. Each proposal will be ranked by the panel (excluding members with potential conflicts of interest), with and without budget considerations, following the numerical system outlined in the MOU. A package of the Oversight Committee's recommendations, with the proposals ranked by each member in Category 1 (recommended for funding), 2 (considered for funding, if available) and 3 (not recommended for funding), will be provided to GRAC for approval. GRAC would then have the option to present the package, with or without modification, to GCC. Coordination of joint funding of new UWS, WDNR and WDATCP proposals will be an informal process and not an active goal of the respective agencies. All proposals recommended for funding will be submitted simultaneously to GCC for approval

DIRECTIONS FOR FUTURE GROUNDWATER PROTECTION

PRIORITY ISSUES THAT NEED TO BE ADDRESSED

The Coordinating Council recognizes that federal agencies as well as state agencies are involved in groundwater activities in Wisconsin. In order to avoid duplication of efforts, the Coordinating Council believes it is important to maintain communication with federal agencies and coordinate groundwater efforts wherever possible. To this end, the Coordinating Council took the following actions:

1. Federal agencies will be invited to meetings of the Council at least on an annual basis to share information.

2. Federal agencies were invited to be ex-officio members of any of the four subcommittees.

3. Federal agencies will receive copies of Council and subcommittee minutes, agendas and other information if they choose to keep abreast of GCC activities.

There has been extensive discussion at meetings of the Coordinating Council and the Monitoring and Data Subcommittee regarding the degree of accuracy for identifying locations at which monitoring occurs. The Subcommittee and the Coordinating Council agreed that the long-term goal for site location should be to provide accuracy to within 75 feet. The State Plane or Latitude and Longitude coordinate systems are most likely to be used.

One of the efforts of the Groundwater Coordinating Council which will gain more attention this year is information and education. A number of state agencies have been involved in the past in various groundwater information and education activities.

In the coming year, several education initiatives will be aimed at different audiences. For example, the DNR will provide teacher training for a new groundwater curriculum developed for middle school children. A number of agencies will co-sponsor a conference in early 1991 to look at local groundwater management issues; it will be targeted to local government officials. The UW-Extension and other agencies are developing a farmstead assessment system to allow farmers to evaluate groundwater pollution potential on individual farms. In the coming year, the Education Subcommittee will evaluate information and education needs and determine how best to meet those needs in a coordinated manner.

RESEARCH/MONITORING NEEDS

Monitoring and research projects related to groundwater are

currently being funded by the DNR, DATCP and the UWS. Because of the numerous monitoring and research projects being carried out in the state, there has been considerable interest in having an opportunity for researchers to share their findings periodically with interested individuals. The Coordinating Council recommends that a conference be held annually to allow groundwater researchers funded by state agencies to discuss the results of their monitoring or research projects. This would promote better communication among the varied parties with an interest in groundwater protection. The Coordinating Council recommends that the first such conference be held in the fall of 1991 for projects currently being funded by one of the state agencies.

AVAILABILITY OF APPENDIX MATERIALS

The Groundwater Coordinating Council met August 18, 1989, November 10, 1989, February 9, 1990, May 11, 1990, and August 10, 1990. The minutes of the first four Coordinating Council meetings and the agenda for the August tenth meeting are available as an appendix to this Report. For a copy, contact David Lindorff, Department of Natural Resources, Bureau of Water Resources Management, P. O. Box 7921, Madison, WI 53707 (608-266-9265).

Wisconsin Groundwater Coordinating Council

Report to the Legislature

August 1990
Appendices

APPENDICES

Wisconsin Groundwater Coordinating Council
Meeting Minutes
August 18, 1989

Members Present: Kevin Kessler for Lyman Wible (DNR); Ron Hennings for Meredith Ostrom (WGNHS); William Schmidt (DHSS); Sam Rockweiler for William Norem (DILHR); David Jelinski for O. R. Ehart (DATCP); Jack Metcalf (Governor's Representative); Ruth Robertson (UW); and David Veith for Ted Stephenson (DOT).

Others Present: David Armstrong and Don Peterson (UW), and Mike Lemcke and David Lindorff (DNR).

1. Introductions

Introductions were made.

2. Approval of minutes

The minutes of the April 21, 1989 Coordinating Council meeting were approved as written.

3. List of Subcommittee Members

David Veith (DOT) indicated that Thomas Reeves would replace Bob Patenaude on the Monitoring and Data Management Subcommittee. In addition, since the last Council meeting, Ruth Robertson has replaced Dallas Peterson as the UW GCC representative and Henry Anderson (DHSS) has replaced David Belluck on the Research Subcommittee. No other changes were indicated.

4. Annual Report to the Legislature

Sam Rockweiler (DILHR) made some minor editorial suggestions in the draft Report to the Legislature. The Council agreed to incorporate the suggestions. No other changes were proposed. The Report was endorsed unanimously. Copies of the publication, "Groundwater: Protecting Wisconson's Buried Treasure" were handed out and will be included in the Report to the Legislature.

5. Needs Assesment for WGNHS Drill Rig

Ron Hennings (WGNHS) provided a summary of a handout addressing the need for a new Survey drill rig. The Survey does a wide variety of drilling for state agencies as well as its own research needs. The drill rig is 22 years old and can't last much longer.

The Survey can't set aside money from year to year to purchase

a new drill rig and hasn't been able to purchase one through the UW budget. The WGNHS has explored several options without much success. There was discussion of alternatives. Although there is general support for a new rig, state agencies don't have extra money available to use as a down payment on a new drill rig. It was agreed that Ron Hennings would contact each state agency to help identify drilling needs for the future. Ruth Robertson (UW) agreed to talk with Ron about options within the UW system for lease or purchase of a drill rig.

6. 1990 Conference on Groundwater Policy

David Lindorff (DNR) reminded everyone that the GCC had endorsed a conference next year on implementation of the groundwater law at its April meeting and had agreed that each agency would identify a contact to help in the planning of the conference. Each agency should contact Doug Yanggen (UW) with the name of the agency contact so planning can begin.

7. Status of Monitoring/Research Projects - DNR, DATCP, UW

David Lindorff (DNR) summarized the process followed by the DNR in soliciting and selecting management practice monitoring projects for funding from the Groundwater Fund. From about 60 submittals, 17 were chosen for funding with a total cost of nearly $300,000. David handed out a sheet identifying the selected projects; contracts should be in place for all the projects by the end of August. Kevin Kessler (DNR) briefly outlined the Groundwater Fund, including how revenue is generated and how it is spent.

David Armstrong (UW) described the status of the UW groundwater research money from the biennial budget. There has been some screening of 45 pre-proposals for groundwater research which were submitted this spring. The Groundwater Research Advisory Council will meet next Thursday at 10:00 to discuss the next steps in the process for awarding contracts for the money in the budget. According to Ruth Robertson (UW), $200,000 will be available for this fiscal year and $300,000 for FY 1991.

Kevin Kessler (DNR) expressed a concern that the GRAC meeting will be at the same time as the Natural Resources Board meeting that Lyman Wible will have to attend as well as a hearing on amendments to NR 140 that he and David Lindorff will have to attend. No one from the DNR may be able to attend the GRAC meeting. He suggested that since the GRAC had not met for several months, there should have been adequate time to allow scheduling the meeting further in advance.

Kevin Kessler asked whether appropriate research proposals which the DNR received which were not funded could be

submitted to the GRAC for consideration along with the other pre-proposals which have already been submitted. Ruth Robertson and David Armstrong both agreed that, if they met the objectives outlined in the DIN, they could be considered by the GRAC with the other submittals.

David Jelinski (DATCP) handed out a one-page summary of the pesticide research proposals received and funded as part of their pesticide research process. Money to fund the research comes from pesticide fees. Because of a carryover of funds, about $200,000 is available this year. In the future, the research amount will be about $100,000.

Jack Metcalf (Governor's Representative) asked about research on the health effects of beef. Ruth Robertson and Don Peterson (UW) indicated that research was being done at the UW. Don agreed to get a summary of that research to the DNR for distribution to Coordinating Council members. David Jelinski said he would talk to Nick Neher about having Ken Rineer from DATCP talk to the Coordinating Council at its next meeting regarding sustainable agriculture.

8. Status of NR 140 amendments and NR 141

David Lindorff (DNR) summarized the proposed amendments being considered for NR 140. Public hearings will be held next week on amendments to add groundwater standards for 12 new substances, change standards for 6 substances, change total dissolved solids to an indicator parameter and add language to clarify the procedures for development, adoption and revision of groundwater standards. Kevin Kessler (DNR) indicated that we will soon be requesting information on additional substances for development of a new list of substances for standards development. Kevin also briefly summarized the standards setting process.

Kevin Kessler reported on the status of NR 141 dealing with monitoring well construction. It is scheduled for final adoption by the Natural Resources Board at its meeting next week. It will provide consistency in monitoring well construction at least for wells controlled by the DNR.

9. Groundwater Fund audit

Kevin Kessler (DNR) provided background on a audit of the Groundwater Fund to be held this fall by the Legislative Audit Bureau. The impetus to the audit was a concern by the Wisconsin County Code Administrators organization that the septic tank installation fee was not being used for septic tank research. It was explained that the Groundwater Fund was not intended for that purpose. The Audit Bureau will look at the septic tank fee plus the status of implementation of the

groundwater law (ch. 160, Wis. Stats.)

10. UW Center for Nutrient/Pesticide Management

David Jelinski (DATCP) handed out and summarized two recently completed publications entitled "Nutrient and Pesticide Best Management Practices for Wisconsin Farms." They were prepared by DATCP and UW-Extension with assistance from a number of agencies and organizations. Now the focus is on implementation of the best management practices (BMPs). Besides the Technical Bulletin, implementation will include information and education, research, cropland assessment, crop-specific BMPs and technical assistance.

Don Peterson (UW) described the University's efforts to implement the BMPs. A new center, the Center for Integrated Agricultural Systems (CIAS), has been created in the College of Agricultural and Life Sciences at UW-Madison. CIAS will coordinate BMP implementation. An important part of the implementation will be the Nutrient and Pesticide Management program, an educational program for farmers, cooperatives and agrichemical dealers. This effort will provide information to implement management practices which protect or improve the quality of surface and groundwater. About $1.1 million is available this biennium to start this important effort.

At the request of Jim Kaap from the U. S. Soil Conservation Service, David Lindorff handed out a copy of a watershed demonstration proposal for the East River watershed. Mr. Lindorff also handed out a copy of a letter to SCS from C. D. Besadny, Secretary of the DNR regarding this project. Kevin Kessler indicated that the DNR had some reservations about this project which were identified in Secretary Besadny's letter. David Jelinski reported that DATCP had reservations as well. Hopefully a cooperative agreement can be worked out. The concensus of the Council is that we encourage projects which involved federal money, but we also need as part of any such projects better coordination by all parties, both state and federal.

11. Agency reports

DNR - Kevin Kessler and David Lindorff indicated that DNR activities had already been covered in the agenda.

DOT - David Veith said DOT is implementing their salt storage and underground storage tank regulations.

DIHLR - Sam Rockweiler noted that substantial progress is being made on revisions to IHLR 10. Hopefully, public hearings will be held later this year.

DHSS - Bill Schmidt reported that David Belluck has left DHSS and hopefully will be replaced soon. DHSS hopes to hire an LTE to replace John Olson.

UW - Ruth Robertson indicated that she is very pleased with the MOU on UW groundwater research recently signed and appreciates the hard work by Dallas Peterson and others in putting it together.

DATCP - Dave Jelinski said that Nick Neher will probably be the new GCC representative from DATCP, since Bob Ehart is leaving.

WGNHS - Ron Hennings reported that well head protection is getting increased attention at the WGNHS and suggested an agenda item on well head protection at the next GCC meeting.

12. Next meeting

The next GCC meeting will be held in Madison on November 10, 1989. Jack Metcalf asked that we not schedule meetings on the third Friday of the month because of a conflict with another meeting. It was agreed that the first meeting in 1990 will tentatively be on February 9 and that the rest of the 1990 schedule will be agreed to at the November 10 meeting. The meeting was adjourned at 3:30.

Respectfully submitted,

David E. Lindorff
Groundwater Management Section
Department of Natural Resources

Wisconsin Groundwater Coordinating Council
Meeting Minutes
November 10, 1989

Members Present: Lyman Wible (DNR); Meredith Ostrom (WGNHS); Jack Metcalf (Governor's Representative); Ruth Robertson (UW); Michael Corry (DILHR); Ken Rineer for Nick Neher (DATCP); Henry Anderson for William Schmidt (DHSS); Ted Stephenson (DOT).

Others Present: Gary Jackson (UW); Ron Hennings and Ken Bradbury (WGNHS); Kevin Kessler, Michael Lemcke, Bruce Baker and David Lindorff (DNR); Bennette Burks (DILHR); Gary Jackson (UW-Extension); Gordon Chesters (UW); Robert Sommerfeld, Paul Stuiber and Jay Schmidt (Legislative Audit Bureau); Jim Krohelski (USGS).

1. **Introductions**

Introductions were made. Lyman Wible welcomed Michael Corry, new GCC representative from DILHR.

2. **Agenda Review and Changes**

It was agreed to reverse agenda items number four and five.

3. **Approval of Minutes**

The minutes of the August 18, 1989 Coordinating Council meeting were approved as written.

4. **Status of UW Groundwater Research**

Gordon Chesters (UW) described the status of the University of Wisconsin research process. The state budget allocated $200,000 for research in FY90 and $300,000 for FY91. Previous discussions between the GCC and the UW Groundwater Research Advisory Council (GRAC) have reached consensus on the importance of coordination of solicitations with DATCP and DNR. GRAC decided this fall to solicit proposals for groundwater research with an 18 month project length. Dr. Chesters hopes to begin coordination with DNR and DATCP on their project solicitation in the next biennium.

The UW has sent out approximately 500 solicitations for proposals to persons and Departments at all the UW campuses. Dr. Chesters hopes to start the research projects by January, 1990.

He handed out a letter he is sending to all those who submit proposals stating that all proposals will be made available to other agencies or organizations who may have funding available. This will avoid submittal of project proposals

to a number of agencies for funding.

Dr. Chesters proposed meeting with the GCC before making the final decisions on the research projects to be funded. Ruth Robertson (UW) indicated that the GCC approval will be needed before funds are released from the Department of Administration.

Dr. Chesters indicated that there are Federal, private and other funding sources available from which matching grants for some of the research money may be available.

5. **Sustainable Agriculture**

Ken Rineer (DATCP) discussed the Sustainable Agriculture Program of Wisconsin. The program funds projects which demonstrate the profitability, energy efficiency and environmental benefit of sustainable agricultural strategies on the farm. Over fifty projects have been funded; funds for the program come from past oil overcharges. The money is scheduled to run out in 1991/1992.

Mr. Rineer stressed the importance of cooperation between farmers, UW and state agencies on this issue. Work has begun on a memorandum of understanding between the UW and DATCP on sustainable agriculture.

Ron Hennings (WGNHS) commented that the Soil Conservation Service (SCS) is coming into the groundwater/agricultural arena with funding; we will need to determine how to coordinate with them.

6. **Groundwater Education**

Gary Jackson (UW-Extension) provided an overview of groundwater information and education (I&E). He indicated that the goal of information and education is to provide state residents with education and information dealing with groundwater. There is a need to build awareness.

There have been some I&E accomplishments since 1985. Educational institutions have combined forces in the development of "Wisconsin's Buried Treasure" magazine. The Farm Pollution Assessments are nearly completed. Doug Yanggen and Steve Born have scheduled a conference on groundwater policy for the fall of 1990.

Although we can be proud of our accomplishments, there is room for improvement. There is a need to incorporate groundwater education into school curriculum and public education. The Board of Vocational, Technical and Adult Education has expressed some interest in providing training

to farmers on how to implement best management practices (BMPs). The Farm Pollution Assessment provides education by an inventory of the potential pollution sources on each farm.

Mr. Jackson indicated that the SCS/UW-Extension East River project and Central Sands project should not be viewed as being in conflict with state programs. There is a need to develop procedures for better coordination between agencies.

Kevin Kessler (DNR) reported on the meeting with the Kellogg Foundation in St. Charles, Illinois on November 3. The Kellogg Foundation has funds for groundwater education in two areas:

1) general education
2) school education, especially primary and secondary

There was a consensus that we ought to pursue a proposal with the Kellogg Foundation for funding educational efforts. The Council decided to refer this issue to the Education Subcommittee. There can be further discussion at the next meeting of the Coordinating Council.

7. **Relationship Between Coordinating Council and Subcommittees**

David Lindorff (DNR) indicated that at the October 14, 1988 meeting of the Coordinating Council a committee had been established to evaluate the relationship between Coordinating Council and the Subcommittees. O. R. Ehart (DATCP) volunteered to chair the committee, but no meetings were held. Since Mr. Ehart has now left DATCP, it was decided that Mr. Lindorff would contact Mr. Nick Neher, Mr. Ehart's replacement on the Council, to discuss convening of the committee.

8. **Wellhead Protection**

Kevin Kessler (DNR) gave a brief background of the federal authority which requires the development of protection strategies for groundwater used for public water supplies. He also indicated the EPAs specific state guidance for FY89 was to develop a feasibility study for a wellhead protection program for new municipal wells. The recently completed feasibility study was handed out. Mr. Kessler indicated that the Bureau of Water Supply (DNR) is interested in incorporating the wellhead protection concept with their new municipal wells.

Ron Hennings (WGNHS) handed out a publication "Wellhead-Protection Districts in Wisconsin - An Analysis and Test Applications." He reported that the WGNHS had contracts with the Central Wisconsin Groundwater Center for two pilot

studies on wellhead protection (WHP). Those two studies are nearing completion. He emphasized that education is an important key in the overall success of wellhead protection.

Ken Bradbury - (WGNHS) described an EPA funded study to delineate of WHP areas in fractured rocks. The study had two test areas: Junction City where fractured granite exists and Door County where fractured dolomite exists. The WGNHS investigated various methods to determine a WHP area. The methods ranged from the simplistic fixed radius to the complex computer generated approach. The report will be published by the EPA around January 1990.

9. **Groundwater Fund Audit**

Kevin Kessler (DNR) reported that the audit of the Groundwater Fund has begun and introduced the staff of the Legislative Audit Bureau who were present.

Mr. Robert Sommerfeld (Audit Bureau) indicated an interest in the septic fees as part of the Groundwater Fund led to the audit by the Audit Bureau.

Robert said that the first phase of the audit has been completed. This phase is primarily the literature review. They are now in the process of talking with all of the agencies to get a better understanding of the groundwater program.

The audit does not have a focus as of yet but hopes that one will emerge as research continues. One early focus may be to look at what preventive action limits are and how they are implemented on a daily basis. He predicted that the audit will be completed between March and May of 1990.

10. **Meetings in 1990: February 9 at DATCP, May 11 in Dodgeville, August 10 at DNR and November 9 at DATCP**

Approved as proposed.

11. **Next Meeting**

February 9, 1990.

12. **Other agenda items**

Jack Metcalf (Governor's Representative) indicated that he likes the sustainable agriculture program, wellhead protection and education in primary and secondary schools on groundwater. He also commented that material spread on farms is not necessarily animal waste but a combination of

animal waste and other materials i.e. corn stalks or straw.

Ruth Robertson (UW) asked whether the Council wants to be involved in something related to Earth Day. The date is around April 20th. Lyman Wible (DNR) indicated that the DNR was planning Earth Day activities. The Groundwater Management staff will report back at the next meeting on DNR plans and possible Coordinating Council activities. We may want to set 1990 as Earth Year. We may want to set goals and establish the environmental agenda for the next 20 years. Meredith Ostrom (WGNHS) suggested that perhaps we should expand the sustainable concept to include mining, groundwater and water supplies.

Bennette Burks (DILHR) indicated that substantial progress was being made on revision of the administrative code dealing with large-scale septic systems.

The meeting was adjourned at 2:30.

Respectfully submitted,

David E. Lindorff
Groundwater Management Section
Department of Natural Resources

Wisconsin Groundwater Coordinating Council
Meeting Minutes
February 9, 1990

Members Present: Lyman Wible (DNR); Meredith Ostrom (WGNHS); Jack Metcalf (Governor's Representative); Ruth Robertson (UW); Bennette Burks for Michael Corry (DILHR); Nick Neher (DATCP); Henry Anderson for William Schmidt (DHSS); Ted Stephenson (DOT).

Others Present: Ron Hennings and Ken Bradbury (WGNHS); Kevin Kessler, Michael Lemcke, Alan Lulloff, Ken Hollenzer and David Lindorff (DNR); Gary Jackson and Patricia Koll (UW); Jeff Postle (DATCP); Jurgen Knirsch (PAN IRG); Lynda Knobiloch (DHSS); Robert Sommerfeld (Legislative Audit Bureau).

1. **Introductions**

   Introductions were made.

2. **Agenda Review and Changes**

   No additions or changes were made to the agenda.

3. **Approval of Minutes**

   The minutes of the November 10, 1990 Groundwater Coordinating Council meeting were approved as written.

4. **Status of UW Groundwater Research**

   Ruth Robertson (UW) handed out the UW proposal for funding groundwater research. Of 20 project proposals which were received, 19 of them fit into 5 priority areas and the other was unacceptable for this funding program. The UW proposes that all 19 projects be funded at a reduced level which will be possible by combining UW research funds with matching funds from the U.S. Geological Survey.

   Ruth Robertson moved that the Groundwater Coordinating Council recommend the endorsement of the groundwater research plan and the release by the Department of Administration of $200,000 for this fiscal year and $300,000 dollars for next fiscal year. Ted Stephenson seconded the motion.

   Discussion of the motion focused on concerns that the Memorandum of Understanding was not followed. There were also questions about decisions to reduce project budgets. Ruth indicated that all the provisions of the MOU had been followed with one exception. That exception related to the

MOU requirement that all projects be categorized as high, medium or low priority. The motion was called and was unanimously approved.

Discussion followed regarding the procedures for research project proposal review. A concern was expressed that the ranking of projects was not accomplished in part because the research oversight committee hadn't been formed or met.

Ted Stephenson moved to review the UW groundwater research review process and to complete a preliminary review by the May 11th meeting. It was seconded by Henry Anderson. The motion was unanimously approved. It was referred to the Research Subcommittee.

Ted Stephenson also requested that there be an agenda item at the next meeting on budget initiatives.

5. **Earth Day (April 22, 1990)/Earth Year Activities**

Ken Hollenzer (DNR) handed out materials and summarized the Departments activities for Earth Day and Earth Year. These include producing an Earth Year packet which is targeted for school age children and bringing in children from across the state to talk to organizations. Each of these activities promote conservation awareness across the state.

Ted Stephenson (DOT) highlighted the new DOT Adopt-a-Highway program. The purpose of this program is to get up to 80 groups to adopt various sections of highway for cleanup activities. It is hoped that the groups will have volunteered and the program to be in full swing by the end of April. The cost of this program will be approximately $300,000 for the first year.

Gary Jackson (UW) summarized the discussion of Earth Day/Year activities from the February fifth Education Subcommittee meeting. He commended the DNRs activities for Earth Year but suggested use of Earth News and Earth Seconds broadcasts to promote groundwater issues.

6. **Discussion of 1990 Groundwater Coordinating Council Report to the Legislature**

David Lindorff (DNR) handed out a draft outline of the proposed 1990 Report to the Legislature for comment. A number of useful suggestions were made. The DNR will prepare the first draft. This report is due in August.

7. **Coordination with Federal Agencies**

Nick Neher (DATCP) raised the issue of coordination with

Federal agencies since they are increasingly involved in groundwater efforts in Wisconsin. What type of policy should the Council have toward federal agencies and how should we get their input? The Council members agreed to invite representatives of appropriate Federal agencies to the next Council meeting to discuss their groundwater efforts.

8. **Subcommittee Reports**

The Council requested that each subcommittee review their internal goals and set goals for the future. These goals should be determined prior to the next meeting. In addition, each agency should review its subcommittee membership to assess potential needs for changes. This will be an agenda item for the next Council meeting. A copy of current subcommittee membership is attached to these minutes.

Research -

Ken Bradbury (WGNHS) reported that the Research Subcommittee met jointly with the Data Management subcommittee to prioritize groundwater monitoring needs for fiscal year 1991. It also met with the Groundwater Research Advisory Council to discuss the UWs groundwater research proposals.

Education -

Gary Jackson (UW) reported that the Born/Yanggen conference will occur late this year, at the earliest, and is looking for members to volunteer for its steering committee.

Gary indicated that, in the near future, the Kellogg Foundation may have funds available for groundwater information and education efforts and he would like the Council to appoint one person to keep in touch with the Foundation. The Council agreed that a sole contact person should be designated. Gary agreed to prepare a draft letter to the Kellogg Foundation on behalf of the Council.

Planning and Mapping -

Michael Lemcke (DNR) reported that this subcommittee has been inactive for over two years but that it will meet prior to the next Council meeting.

Monitoring and Data Management -

Michael Lemcke (DNR) reported that the subcommittee met jointly with the Research Subcommittee and set the time table and priorities for the DNR's fiscal year 1991 groundwater monitoring initiative.

Al Lulloff (DNR) reported that the subcommittee also discussed the need for uniformity in regards to locational coordinates for data management. Further discussion of this issue will occur at the next meeting of the subcommittee.

10. **Next Meeting**

The next meeting is in Dodgeville at the DNR's area office on May 11th at 10:00 a.m.

The meeting was adjourned at 2:25 p.m.

Respectfully submitted,

David E. Lindorff
Groundwater Management Section
Department of Natural Resources

Wisconsin Groundwater Coordinating Council
Meeting Minutes
May 11, 1990

Members Present: Lyman Wible (DNR); Meredith Ostrom (WGNHS); Jack Metcalf (Governor's Representative); Ruth Robertson (UW); Bennette Burks for Michael Corry (DILHR); Nick Neher (DATCP); Henry Anderson (DHSS); Bill Bordihn for Ted Stephenson (DOT).

Others Present: Gary Jackson and David Armstrong (UW); Ken Bradbury (WGNHS); Kevin Kessler, Michael Lemcke, Bruce Baker and David Lindorff (DNR); Linda Knobeloch and Jay Goldring (DHSS); Robert Sommerfeld (Legislative Audit Bureau); Jim Krohelski and Vernon Norman (USGS); Glenn Wittman (USEPA); Jim Kaap (SCS); and Donald Wachter (ASCS).

1. **Introductions**

Introductions were made.

2. **Agenda Review and Changes**

It was agreed to have the subcommittee reports after the federal agency presentations.

3. **Approval of Minutes**

The minutes of the February 9, 1990 Groundwater Coordinating Council (GCC) meeting were approved as written.

4. **Federal agency presentations**

At the last Coordinating Council meeting, the Council agreed to invite representatives of several federal agencies to discuss their groundwater activities to promote coordination between state and federal agencies on groundwater initiatives.

a. **U. S. Geological Survey (USGS)**

Jim Krohelski summarized the present groundwater activities of the USGS in Wisconsin. Their responsibilities include drilling and well installation, geophysical investigations, sampling of groundwater and surface water, aquifer testing and groundwater modelling. The Madison office will begin participation this fall in a new National Water Quality Assessment program to look at water quality in selected basins.

b. **U.S. Environmental Protection Agency (EPA)**

Glenn Wittman discussed the EPA groundwater protection program. Major focusses for the EPA are wellhead protection, groundwater protection plans, pollution prevention and state groundwater profiles. EPAs goal is for states to have responsibility for groundwater protection.

c. **U.S. Soil Conservation Service (SCS)**

Jim Kapp outlined SCS activities in the state. The agency has typically concentrated on helping farmers protect surface water, but now is also working on groundwater protection as well. SCS is currently involved in two studies in Wisconsin to promote best management practices, one in the East River Basin near Green Bay and the other in the Central Sands.

d. **Agricultural Stabilization and Conservation Service (ASCS)**

Don Wachter described the ASCS activities in Wisconsin relating to groundwater. They are contributing money to both the East River and Central Sands projects, as well as other projects in the state.

The Council discussed options for involving federal agencies in Council activities. It was agreed that, as a minimum, federal agencies should receive copies of minutes and agendas for Council and Subcommittee meetings so they can participate if interested. The Council was supportive of adding federal agency representatives to both Council and Subcommittees as ex officio members. The Council will make this recommendation as part of its annual Report to the Legislature. Bruce Baker (DNR) stressed the importance of having high level federal representation so that coordination between state and federal agencies can be accomplished.

5. **Kellogg Foundation Letter**

Gary Jackson (UW) summarized the May 10 meeting of the Education Subcommittee. Gary discussed a draft letter to the Kellogg Foundation requesting support to hire a person to work on groundwater education initiatives as well as work with the Coordinating Council. Council members can call Lyman with comments until May 18th; then the letter will be revised and sent.

Discussion followed on the need to coordinate the submittal of proposals to the Kellogg Foundation. It was decided that a meeting of interested parties would probably be useful to coordinate Wisconsin efforts.

6. **Research Subcommittee on GRAC Review Process**

Ken Bradbury (WGNHS) summarized the results of a meeting of the Research Subcommittee to review the UW groundwater research selection process followed by the UW Groundwater Research Advisory Council (GRAC) with respect to the Memorandum of Understanding (MOU) between the GCC, UW and GRAC. Ken reported that although the MOU was not followed exactly, the University DIN process worked well. The Research Subcommittee identified four areas in which the MOU had not been followed to the letter, recommended that the MOU be followed in the future and that procedures be developed to coordinate groundwater research and monitoring solicitation among state agencies.

Ruth Robertson agreed that these deviations from the MOU had occurred but indicated that the language used in item three of the MOU was vague and could have been misinterpreted. The Council decided that in the future it would like its Research Subcommittee to coordinate with GRAC to ensure that the research efforts continue to succeed. It also praised the efforts by the UW over the past year facilitating the use of funds provided by the DIN for groundwater research.

7. **Coordination of Project Solicitation and Selection**

David Armstrong (UW) discussed a proposed coordination process for future research/monitoring activities which will be funded by either the UW, DATCP or the DNR. The coordination process would involve a single solicitation for proposals regarding groundwater related projects stressing their scientific merit. This joint solicitation is scheduled to occur November 15 each year. The UW would request pre-proposals, although those not submitting pre-proposals would not be prevented from submitting a full proposal. There was strong support and approval of this process from the Council. GRAC will meet this summer to set specific priorities for the solicitation and also to consider membership changes.

Ruth Robertson (UW) indicated that the UW System budget will contain $300,000 as a continuing annual appropriation for groundwater research to be administered by the Water Resources Center.

A motion was made to accept the reports on the GRAC review process and coordination of project solicitation and selection. The motion passed unanimously. The Council also strongly endorsed the $300,000 annual appropriation for UW groundwater research.

8. **Subcommittee Reports**

The Council requested that prior to this meeting each subcommittee review its goals and review their membership to assess potential needs for changes.

Research -

Ken Bradbury (WGNHS) reported that the Research Subcommittee had met and determined that additional membership to the Subcommittee should be extended to USGS and a member of the consulting community. It also agreed on the following goals: review of research priorities, coordination of groundwater research/monitoring among state agencies, review of groundwater monitoring proposals for the DNR's monitoring program and dissemination of research findings.

Education -

Gary Jackson (UW) indicated that the Subcommittee revised it goal to be to "identify and promote education initiatives that provide state residents with the information they need to understand and participate in the management of Wisconsin's groundwater." The revised goal reflects the lack of staff to adequately promote information and education efforts. He also reported that the Subcommittee would like to seek a representative from the SCS to join its membership and potentially representatives of the USGS and ASCS as well.

Gary also briefly described the Farm Assessment System he and others have been working on. He is looking for funding to continue development of the system and demonstration use in certain counties. He asked for a resolution of support for the program. The Council unanimously endorsed a resolution in general support of the Farm Assessment System program.

Monitoring and Data Management -

Michael Lemcke (DNR) reported that the Subcommittee had reviewed its membership and decided that it was adequate but thought that Federal agencies should be allowed to attend future meetings. The Subcommittee also confirmed its present goals which are to develop an integrated groundwater monitoring plan that most efficiently uses available resources to provide the information needed to manage and protect groundwater resources and to establish a data management system

that ensures state agencies can access accurate, up-to-date information on the state's geology and groundwater resources.

The Subcommittee identified as a concern the lack of funding for researchers to assure fund availability to do long term studies. Ron Hennings (WGNHS) and Byron Shaw (UW) will lead a discussion on this issue at the next council meeting.

The Subcommittee also recommends that the GCC endorse the use of a standardized locational coordinate system which will insure the ability to locate a data point within the state to within 75 feet. The Council requested the Subcommittee to specify the coordinate system or systems which they should endorse and incorporate this information into the Annual Report to the Legislature.

Planning and Mapping -

Dave Lindorff (DNR) reported that this Subcommittee met and agreed on the same goal: to be the coordinating body for planning and mapping activities conducted by state agencies. They also agreed that USGS participation in Subcommittee activities was important, especially for mapping activities.

Dave indicated that, in the short term, the Subcommittee would work on developing guidance on standard formats for maps so that information can be related to other maps. Meredith Ostrom (WGNHS) suggested working with the Land Information Board.

9. **Membership on Subcommittees**

There was agreement that a letter would be sent to the four federal agencies requesting names for the GCC and the subcommittees as ex officio members. State agencies and subcommittee chairs have until June 1 to contact Lyman Wible with the names of any changes in subcommittee membership. A list of current membership is attached for reference.

10. **Budget Initiatives**

Nick Neher said they are requesting staff and money for a pilot study on pesticide containers. They are also continuing the joint effort with DNR looking a mixing and loading sites. DATCP is also developing rule language to regulate the use of atrazine; they don't have the staff to be able to adequately regulate atrazine use.

Meridith Ostrom (WGNHS) reported that the Survey will be looking for expertise in Paleozoic geology to help in identifying resource potential in relationship to groundwater. The Survey will also look to expand its groundwater specialist staff; there currently isn't sufficient staff or financial resources to do all the county studies for which there are requests.

He also mentioned that this would be his last GCC meeting as he will be retiring early this fall. He stated that there have been great advances in the protection and understanding of the environment over the last few decades and the key to its success was keeping the pressure on through cooperation and coordination between the agencies.

Bennette Burks (DILHR) indicated that they will ask for 12 new positions to implement ILHR 10 (underground storage tanks) rules. Computerization of locational coordinates for new underground storage tanks and septic tanks will also be a focus for the future.

Henry Anderson (DHSS) said that there are no new initiatives for groundwater protection planned presently but there has been interest in funds for local aids.

Bill Bordihn (DOT) stated that he was not aware of any new groundwater initiatives for DOT.

Ruth Robertson (UW) informed the Council that the UW is requesting a DIN of $750,000 to support air and water quality projects.

Lyman Wible (DNR) reported that the Department has received federal funding for 36 new positions for work related to underground storage tanks. These positions will be located in various Department offices around the state. A project to set up pilot environmental management agencies in selected counties has also begun. Other initiatives, funding and staff requests for 1991-1993 were summarized.

The Council agreed to discuss budget initiatives again at its next meeting.

11. **Closing Remarks**

Lyman Wible (DNR) extended the Council's thanks and praise to Meridith Ostrom for all the years of work and effort he has given to the environmental community.

12. **Next Meeting**

The next meeting is in Madison at the DNR's GEF II building

in room 511 on August 10th at 12:00 p.m.

The meeting was adjourned at 2:50 p.m.

Respectfully submitted,

David E. Lindorff
Groundwater Management Section
Department of Natural Resources

Agenda

GROUNDWATER COORDINATING COUNCIL MEETING

Noon on August 10, 1990

Location: Room 511, Gef 2 Building, 101 S. Webster Street, Madison

1. Introductions
2. Agenda review and changes
3. Approval of minutes from May 11, 1990 meeting
4. Report to the Legislature - Kevin Kessler
5. Report on the UW Nutrient and Pesticide Management Program - Larry Binning
6. Report on the Central Wisconsin Groundwater Center - George Kraft
7. Long-range research - Ron Hennings/Byron Shaw
8. Atrazine briefing - Jeff Postle
9. Education Subcommittee report - Gary Jackson
10. Resolution of appreciation for Meredith Ostrom
11. Budget initiatives
12. Next meeting November 9 at DATCP