

## **Chapter 2 -- GROUNDWATER COORDINATION**

The Groundwater Coordinating Council (GCC) is directed by s. 160.50, Wis. Stats., to "advise and assist state agencies in the coordination of non-regulatory 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." To assist in this work, the GCC is authorized to create subcommittees on "the subjects within the scope of its general duties...and other subjects deemed appropriate by the Council." Additionally, the GCC is directed to "advise the Secretary of Administration on the allocation of funds appropriated to the Board of Regents of the University of Wisconsin under s. 20.285(1)(a) for groundwater research."

The purpose of this chapter is to describe the activities of the Council and its Subcommittees during FY 09. Coordination with the Wisconsin Groundwater Research and Monitoring Program is an important function of the GCC. Through these activities, the GCC continues to play an important role in ensuring agency coordination, increasing efficiency and facilitating the effective functioning of state agencies in activities related to groundwater protection and management. Ultimately groundwater is better protected, which protects public health and preserves Wisconsin's natural resources for future generations.

### **GROUNDWATER COORDINATING COUNCIL**

The GCC consists of the heads of all state agencies with some responsibility for groundwater management plus a Governor's representative. The agency heads have appointed high-level administrators with groundwater responsibilities to sit on the Council. The state agencies include the DNR, Commerce, DHS, DATCP, DOT, WGNHS, and the UW System. The GCC has created four subcommittees to assist in its work. The subcommittees are composed of members of the GCC, employees of state and federal agencies, university researchers and educators, representatives of counties and municipalities and public members. Since the creation of the GCC, the DNR has provided staff support in the form of a permanent position with at least half of its responsibilities related to coordination of the GCC.

The GCC took an active role in many groundwater issues and activities during FY 09, several of which are highlighted and summarized here.

#### **Addressing Long-Term Groundwater Management Needs**

In October 2001, the GCC facilitated an event called "Wisconsin's Groundwater Summit." A broad spectrum of groundwater users and stakeholders discussed groundwater issues and developed solutions to better protect Wisconsin's groundwater. Representatives from over 50 organizations, including environmental, conservation, and agricultural groups, industrial users, water utilities, local and tribal governments, planning agencies, state and federal agencies, and university researchers and educators attended the summit. Recommendations from the Summit are summarized in: *Sharing Our Buried Treasure: A Summary of the 2001 Groundwater Summit* available at <http://dnr.wi.gov/org/water/dwg/gcc/SOBT.pdf>

The recommendations from the summit continue to guide the GCC's activities.

#### **Implementing a Statewide Groundwater Monitoring Strategy**

In 2004 a Groundwater Monitoring Strategy was developed by a groundwater monitoring workgroup composed of representatives from the DNR, DATCP, USGS, WGNHS, and UW

Stevens Point. The objective of the monitoring strategy is to coordinate groundwater monitoring between all state agencies that regulate groundwater to assess groundwater quality and quantity in the state. In FY 06 and FY 07 a process for prioritizing wells for addition to the Wisconsin Groundwater Observation Network was developed. In FY 07 the Groundwater Monitoring Workgroup used this process to propose additions to the network. In FY 08 the strategy was integrated into DNR's overall water monitoring strategy. Other agencies will also continue to make improvements in their monitoring efforts based on the comprehensive strategy. The components of the strategy may change over time according to needs of the different agencies.

### **Information and Outreach Activities**

To complement the 2008 publication, Protecting Wisconsin's Buried Treasure booklet, the UW-Madison Water Resources Institute (WRI) completed two of a series of four fact sheets on Wisconsin's most important groundwater resource issues: nitrate, arsenic, groundwater quantity, and pathogens. The booklet, and fact sheets on nitrate and arsenic in groundwater are available at: <http://aqua.wisc.edu/publications/productslist.aspx?CategoryID=38&sel=6>. These publications are being completed in collaboration with the GCC Education Subcommittee.

The WRI is also continuing to update its website ([www.wri.wisc.edu](http://www.wri.wisc.edu)) providing access to summaries of GCC-facilitated groundwater research and cataloging all WRI research reports into WorldCat and MadCat, two library indexing tools that provide both worldwide and statewide access to this research.

Climate change continued to be the focus of outreach and education efforts sponsored by the UW-Madison WRI during FY 09. The WRI cosponsored "Water Matters: A Lecture Series" as part of the October 2008–January 2009 "Mami Wata: Arts for Water Spirits in Africa and its Diasporas" exhibit at the UW-Madison Chazen Museum of Art. Designed to enhance public awareness and understanding of water resources issues in the context of a changing climate, the series attracted 295 attendees, of whom 71 percent reported that they gained new insights as a result of the lecture they attended.

The WRI also helped support "Climate Change in the Great Lakes Region: Starting a Public Discussion," a seminar series featuring eight climate-effects experts who discussed what is known, what is predicted and what can be done to adapt to a changing climate. An 80-page summary report and DVD featuring video and the PowerPoint® presentations from all eight seminars were published (available at: <http://aqua.wisc.edu/publications/productslist.aspx?CategoryID=33&sel=2>). To date, 760 copies of the printed summary report and 50 copies of the DVD have been distributed, and the online PDF of the report has been downloaded 2,129 times.

Climate change in the form of "Wisconsin's Changing Water Resources" was the theme of the American Water Resources Association-Wisconsin Section's annual conference March 5-6, 2009, in Stevens Point. Sponsored by the WRI, UW-Stevens Point Center for Watershed Science and Education (CWSE), WDNR, WGNHS, and the USGS Wisconsin Water Science Center, the conference's plenary session topics included global effects of climate change, effects of climate change on Wisconsin lakes and future implications of climate change to Wisconsin. About 170 water managers and scientists from throughout Wisconsin attended the conference, which featured more than 60 oral and poster presentations on a wide range of related water resources topics.

For the ninth year in a row, three groundwater workshops for teachers were taught jointly by staff from the DNR, WGNHS and the Center for Watershed Science and Education (CWSE) at UW Stevens Point. The workshop leaders instructed teachers on using a groundwater sand-tank

model and provided additional resources to incorporate groundwater concepts into their classroom. Educators from 24 different schools attended the workshops and received a free model for their school. With funding from a U.S. Environmental Protection Agency (EPA) grant, over 200 groundwater models have been given to schools or nature centers since 2001 and nearly 400 educators have received hands-on training in using the model effectively.

UW-Extension staff continue to offer drinking water education programs that provide communities across Wisconsin the opportunity to have their private wells tested. In FY 2009, nearly 1,200 private well owners in 10 different counties took part in this educational opportunity.

Attendants of this year's Farm Technology Days had an opportunity to bring in a private well water sample and have it tested for nitrate at the UW-Extension Drinking Water Quality display. The DNR and Dept. of Commerce had additional displays focused on well water issues, well construction, water treatment devices and backflow prevention.

A series of press releases was distributed to local media outlets to promote Groundwater Awareness Week March 8-14, 2009. The issues covered in those releases included groundwater quality, quantity and water conservation. In addition, the WRI arranged for Stephen Ales and Kevin Masarik to discuss groundwater and drinking water concerns on Wisconsin Public Radio's Larry Meiller show.

The Department of Natural Resources recently launched a web page entitled "What's Wrong with My Water?" The resource provides information for well users to find information to help diagnose water quality problems. It also assists well users in finding information concerning water testing and treatment.

### **Coordination of Groundwater Research and Monitoring Program**

The GCC, the University of Wisconsin System (UWS), and the Groundwater Research Advisory Council (GRAC) again collaborated on the annual solicitation for groundwater research and monitoring proposals as specified in a November 2002 Memorandum of Understanding (MOU) (Details are found later in this chapter in the section on *Wisconsin's Groundwater Research and Monitoring Program*). The GCC approved the FY 10 Joint Solicitation for Proposals in August of 2008 (see *Appendix D*). In January 2009, members of 2 GCC Subcommittees reviewed the research and monitoring proposals and made their recommendations to the agencies and the GRAC. In March 2009 the GCC unanimously approved the proposed UWS groundwater research plan as required by s. 160.50(1m), Wis. Stats. and a letter to this effect was sent to the UWS president and the Department of Administration.

In FY 07 the GCC worked with DNR and UWS on monitoring and research priorities for manure management. This led to four out of fifteen projects funded in FY 08 by UWS and DNR being related to manure management. In FY 08 the GCC further recommended that the agencies use the recommendations from a report on manure management in carbonate bedrock (Northeast Wisconsin Karst Task Force February 9, 2008) areas when setting their monitoring and research priorities for the FY 10 solicitation.

### **Other Coordination Activities**

The GCC continued to promote communication, coordination and cooperation between the state agencies through its quarterly meetings. The meeting minutes are included in Appendix B. In addition to the activities listed above, the GCC received briefings, heard presentations, and or discussed:

- The Water Resource Institute education/outreach project which resulted in 2 completed fact sheets on nitrate and arsenic in groundwater and work on two more facts sheets on

groundwater quantity and pathogens in groundwater.

- UWS and agency activities for Groundwater Awareness Week (March 8-14) including an appearance by GCC member Dr. Henry Anderson and DNR Hydrogeologist Steve Ales on the Larry Meiler radio show to discuss groundwater issues.
- FY 10 joint solicitation for groundwater proposals
- UWS FY 10 groundwater research plan
- The creation of a new WGNHS outreach program focused on developing more digital information available on an interactive website.
- Research on rapid movement of water and contaminants through soil cracks.
- New, streamlined meeting format for GCC meetings.
- Research on virus presence and pathways into deep municipal wells in Madison
- DNR's Water Use Program and the Great Lakes Compact
- Research on causes of low flow in the Little Plover River
- Impacts of State budget cuts on groundwater programs
- Research on thermal remote sensing of stream temperature and groundwater discharge and its applications to groundwater policy

## ***SUBCOMMITTEE SUMMARIES***

The GCC is directed to "serve as a means of increasing the efficiency and facilitating the effective functioning of state agencies in activities related to groundwater management." The Subcommittees of the GCC carry out this charge by regularly bringing together staff from over 15 different agencies, institutions and organizations to communicate and work together on a variety of research, monitoring and data management, planning and mapping, educational and local government issues.

In addition, numerous contacts and informal conversations are generated both at meetings and through email communications among Subcommittee members, leading to better communication across agency lines on a variety of groundwater-related issues. These activities regularly create efficiencies and provide numerous benefits to Wisconsin's taxpayers.

### **Research Subcommittee**

The purpose of the Research Subcommittee is to assist the GCC in establishing priorities for groundwater research and monitoring activities and to review proposals submitted through the Wisconsin Groundwater Research and Monitoring Program. Many subcommittee members participated in the review of the UWS and DNR monitoring and research priorities for FY 10. The subcommittee also met with the Monitoring and Data Management Subcommittee in January 2009 to review proposals that were submitted in response to the FY 10 solicitation. Subcommittee members made recommendations that were used by the UWS and DNR in deciding which groundwater-related proposals to fund for FY 10. The projects to be funded in FY 10 are listed in Table 2.

### **Monitoring & Data Management Subcommittee**

The goal of the Monitoring & Data Management Subcommittee is to coordinate groundwater monitoring and data management activities of state agencies to maximize efficiency and prevent duplication of efforts. In FY 09 the subcommittee met three times and continued to be a forum for information exchange to and increase the utility of monitoring data. Key monitoring and data management items included making a new DATCP well construction report search tool available to other agency staff, addressing monitoring needs in groundwater management areas, DNR's new requirements for reporting high cap well pumping and inventory, and implementing the groundwater monitoring strategy.

Subcommittee members also evaluated and discussed the 18 proposals received in this year's solicitation at their annual meeting with the Research Subcommittee. Subcommittee members made recommendations that were used by the UWS and DNR in deciding which groundwater-related proposals to fund for FY 10.

The subcommittee also identified and prioritized ongoing efforts, contextual items, and near-term projects to focus future activities.

### **Education Subcommittee**

The Education Subcommittee's mission is to review public information and education materials, coordinate educational messages among agencies, and serve as a forum to identify groundwater education needs, ideas and concerns in Wisconsin. At each meeting, representatives share information about current agency activities related to groundwater and discuss current and future ideas for informational needs and educational activities.

The subcommittee met four times during FY 09. The members of the subcommittee were involved in a number of collaborative efforts related to groundwater education (See Information and Outreach Activities section of this report). This year the subcommittee provided input into a few new issue-related fact sheets, revisions to existing groundwater brochures and content for the DNR's web page entitled "What's Wrong with My Water?". The subcommittee also participated in a one-day discussion centered on technology-based solutions to enhance well water quality outreach education. Lastly, the subcommittee made an effort to promote Groundwater Awareness Day in Wisconsin by providing a series of press releases to local media outlets and participating in a discussion of well water and groundwater on the Larry Meiller Radio Show. During the next year the subcommittee will continue to identify and respond to educational needs on emerging groundwater issues in the state.

### **Local Government and Planning Subcommittee**

The Local Government Subcommittee was formed in 1993 to promote communication between local governments and the state government regarding groundwater issues. At its February 2004 meeting, the GCC combined the Local Government Subcommittee with the planning function of the former Planning and Mapping Subcommittee to create the Local Government and Planning Subcommittee. Both Subcommittees had been addressing planning issues for some time, so it made sense to combine these two subcommittees. The Subcommittee did not meet in FY 09 but several members began exploring webcam technology to facilitate virtual meetings to minimize travel time for future meetings.

## ***WISCONSIN'S GROUNDWATER RESEARCH AND MONITORING PROGRAM***

The GCC provides consistency and coordination among state agencies in funding groundwater monitoring and research to meet state agency needs. Approximately \$15.2 million has been spent through FY 09 on approximately 369 different projects dealing with groundwater or related topics (see *Appendix C* for a complete listing). The four programs, collectively called the Wisconsin Groundwater Research and Monitoring Program, have different sources of money and purposes, which are summarized as follows:

1. DNR Management Practice Monitoring – Except for FY 05, the DNR has had at least \$125,000 available each year since FY 86 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 identify appropriate

management practices to reduce the impacts of potential sources of contamination. The money comes from the Groundwater Account of the Environmental Fund (which is funded by various fees). Additional funds have been available in some years through various Federal and State sources, enabling the DNR to fund additional projects. Through FY 09, the DNR has spent approximately \$7 million on 206 monitoring projects. Several of these projects have been co-funded with DATCP, Commerce and/or UWS.

2. UWS Groundwater Research - The UWS, through its UW-Madison Water Resources Institute (WRI), has received funding since FY 90 for groundwater research. Projects may be of a fundamental or applied nature on any aspect of groundwater research in the natural sciences, engineering, social sciences or law. Through FY 09, the UWS has spent \$5.9 million on 160 groundwater research projects. Several projects have been co-funded with DNR, Commerce and/or DATCP and 13 were co-funded with WRI through the U.S. Geological Survey.
3. DATCP Pesticide Research - Since 1989, DATCP has had up to \$135,000 available annually to fund research on pesticide issues of regulatory importance. The money comes from fees paid by pesticide manufacturers to sell their products in Wisconsin. Starting in FY 03, these funds have not been available for new research. Through FY 09, DATCP has spent about \$1.8 million on 42 pesticide projects. Several of these projects have been co-funded with DNR and/or UWS.
4. Department of Commerce Private Onsite Wastewater Treatment System (POWTS) Research - Due to budget shortfalls, Commerce has not been able to fund research projects since FY 02. Through FY 09, DILHR/Commerce has spent approximately \$600,000 on eight projects. Two projects were co-funded with DNR and UWS.

### **Solicitation and Selection of Proposals**

The UWS, DNR, DATCP and Commerce annually participate in a joint solicitation for research and monitoring proposals dealing with groundwater, pesticides and/or onsite wastewater treatment systems.

In 1988, the GCC requested that the UWS create a Groundwater Research Advisory Council (GRAC) to establish a long-range groundwater 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. During the summer of 1990, the GRAC and GCC developed and endorsed a plan to coordinate the solicitation of projects for funding in FY 92 and subsequent years. The joint solicitation provides for only one submittal of project proposals, rather than four as had been the case. The intent of the joint solicitation is to determine the most appropriate funding source for a particular project.

Statutory language requires that there be agreement between the UWS and the GCC on the use of the UWS research funds before the funds can be released by the Department of Administration (s. 160.50(1m), Wis. Stats). To expedite this agreement, a Memorandum of Understanding (MOU) was signed in 1989 and 1991 by representatives of the GCC, GRAC, and UWS on use of the UWS groundwater research funds. This MOU was reviewed and updated in November 2002. The MOU spells out the procedures for establishing priorities and selection of projects for funding of UW groundwater research. The MOU recognizes that the GCC has a substantive role in establishing research priorities and an advisory role in project selection to minimize overlap and duplication.

*FY 2009 Groundwater Coordinating Council Report to the Legislature*

FY 09 Proposal Solicitation. The Solicitation for Proposals (SFP) for FY 09 was distributed in September 2007. A total of 15 project proposals were submitted in response to the SFP. To assist in the review process, a joint meeting of the Monitoring & Data Management and Research Subcommittees of the GCC was held in January 2008 to review and rank the projects that were submitted for funding. As a result of the subcommittee meeting, the GRAC meeting in March, and review of the proposals by agency staff, nine new projects were selected for funding; three by DNR and six by UWS. Eight ongoing projects were carried over into FY 09. A total of 17 projects were funded through the joint solicitation at a cost of approximately \$560,000 (see Table 1). DATCP and Commerce did not fund projects in FY 09.

FY 10 Proposal Solicitation. The SFP for FY 10 was distributed in October 2008 for funding in FY 10. The SFP package (see *Appendix D*) contained a listing of the monitoring and research priorities for each of the agencies, as determined by agency staff, the GRAC, and members of the GCC Monitoring & Data Management and Research Subcommittees. The deadline for proposals was November 17, 2008.

As was done in the FY 09 solicitation, the entire submission and review process was conducted online through a secure Web site administered by the WRI. A total of 18 proposals were submitted, requesting a total of \$1,061,076 in funding. A minimum of three external peer reviews were solicited for each proposal from experts within the field. Most proposals received four to five reviews, and two proposals received six reviews. GCC Subcommittee members and agency staff also reviewed the proposals and met in January 2009 to rank the proposals. In addition, the GRAC met in February 2009 to select projects to recommend to the GCC for UWS funding.

A total of five new projects were selected for funding by UWS. Including continuing projects the UWS will fund eight projects during FY10 for a total of \$286,356. DATCP, DNR and Commerce will not be funding projects in FY 10. With the assistance of Federal (USGS) dollars leveraged through the Water Resources Institute, all of the continuing UWS projects that began in FY 09 will be funded through FY 10. The projects to be funded in FY 10 are listed in Table 2.

State budget shortfalls have limited the number of new projects that were selected for funding during recent years. Commerce has been unable to fund new projects since 2001; DATCP, since 2003. The UWS budget was cut by 10% in FY 04 again in FY 05 and by 4.5% in FY10. DNR's state groundwater funding for projects has been cut significantly starting in FY 02 (see Table 3) but through addition of Federal Wellhead Protection and Clean Water Act monies, and State Act 310 Groundwater Quantity funds the DNR Groundwater Monitoring and Research program has been able to survive. One consequence of the change in funding sources is that only projects related to the objectives of the Wellhead Protection, Clean Water Act and State groundwater quantity programs can be supported with those funds. DNR selected no projects for FY10 due to State budget shortfalls but plans to renew its commitment to groundwater research and monitoring when funds are again available.

Continued cuts in support will hamper the state's ability to address critical groundwater monitoring and research needs in the future. Research and monitoring can be extremely cost-effective in that pollution prevention strategies cost less than groundwater cleanup. Without adequate funding for research and monitoring, the best prevention strategies cannot be identified. The GCC will continue to encourage its member agencies to maintain adequate resources for groundwater monitoring and research and to seek partnerships to leverage additional funds.

### **Coordination with Other Research Programs**

The GCC compiles information about other groundwater research programs within Wisconsin. For example, many groundwater-related research projects are funded through the Wisconsin Fertilizer Research Council (<http://www.soils.wisc.edu/frc/>). Staff from the GCC also work with the Research Committee of the Wisconsin Water Association (WWA), the state affiliate of the American Water Works Association (AWWA).

Also, the GCC is actively involved in efforts to use state-funded research projects to leverage federal funds, through the USGS, U.S. EPA, and the Centers for Disease Control (CDC). Proposals submitted to Wisconsin's Groundwater Research and Monitoring Program are occasionally forwarded to these federal partners or re-worked to meet the specific needs of the funding source.

### **Distributing Project Results**

Final reports are required for each project funded through Wisconsin's Groundwater Research and Monitoring Program. Reports from UWS-funded projects are kept in the UW-Madison Water Resources Library. DATCP, Commerce, and DNR funded reports are kept on file with the respective agencies, but many are provided to the Water Resources Library for public distribution as well. All project investigators must submit a two-page Project Summary upon completion of the final report. These summaries are made available on the WRI web site as they become available (<http://www.wri.wisc.edu/Default.aspx?tabid=69>). The database includes more than 330 entries for previous projects and more than 70 summaries and final reports that are viewable online. Summaries from older reports are printed in *Wisconsin Groundwater Research and Monitoring Project Summaries* (DNR PUBL-WR-423-95 and DNR PUBL-WR-205-90), both of which are available from the Water Resources Library or the DNR.

In FY08, the WRI website ([www.wri.wisc.edu](http://www.wri.wisc.edu)) was rebuilt to make it easier and faster for visitors to find information about WRI research projects and publications. One of the goals of the website redesign was to provide the public with a real-time link to information about current groundwater research. In a related effort, Wisconsin's Water Library has been cataloging all WRI research reports into WorldCat and MadCat, two library indexing tools that provide both worldwide and statewide access to this research. By having this information permanently indexed, the research results are easily available to other scientists throughout the state as well as the nation and the world.

The Water Resources Library has also partnered with UW Libraries' Digital Collections Center to digitize and post WRI and DNR final project reports. As a result of this partnership, full-text reports are also available through the University of Wisconsin Ecology and Natural Resources Digital Collection at <http://digital.library.wisc.edu/1711.dl/EcoNatRes.Groundwater>. In FY 09 work has continued to digitize and post more project summaries and final reports on the WRI website.

Projects funded through Wisconsin's Groundwater Research and Monitoring Program have provided valuable information regarding the Wisconsin's groundwater resources, helped evaluate existing regulatory programs, increased the knowledge of the movement of contaminants in the subsurface, and developed new methods for groundwater evaluation and protection. Chapter 5, *Benefits from Monitoring and Research Projects*, highlights some of these projects and illustrates how agencies have used the project results to improve the management of the state's groundwater resources.

<b>Table 1: Groundwater Research and Monitoring Projects Funded in FY 09</b>					
<b>Agency</b>	<b>Code</b>	<b>Title</b>	<b>Investigators</b>	<b>University</b>	<b>Cost</b>
UWS*	08-BEP-03	Transport and Survival of Pathogenic Bacteria Associated With Dairy Manure in Soil and Groundwater	Li , Yang	UW-Milwaukee	\$31,790
UWS*	08-CTP-01	Is phosphorus-enriched groundwater entering Wisconsin streams?	Browne (Kraft)	UW-Stevens Point	\$33,885
UWS**	08-CTP-03	Occurrence and generation of nitrite in ground and surface waters in an agricultural watershed	Stanley	UW-Madison	\$33,901
UWS*	08-OSW-01	Monitoring Septic Effluent Transport and Attenuation using Geophysical Methods	Fratta and Hart	UW-Madison	\$15,920
UWS**	08-SAM-03	A thermal remote sensing tool for mapping spring and diffuse groundwater discharge to streams	Loheide	UW-Madison	\$34,190
UWS*	08-WLA-03	Controls on methylation of groundwater Hg(II) in hyporheic zones of wetlands.	Shafer and Babiarz	UW-Madison	\$44,400
UWS*	08-WLA-02	Influence of wetland hydrodynamics on subsurface microbial redox transformations of nitrate and iron	Bahr and Roden	UW-Madison	\$39,869
UWS	09-SOS-01	Use of the 2009 Behavioral Risk Factor Surveillance Survey to Assess the Safety of Private Drinking Water Supplies	Knobeloch	UW-Madison and DHS	\$23,250
UWS	09-REM-01	Combination of Co-Precipitation with Zeolite Filtration to Remove Arsenic from Contaminated Water	Li	UW - Parkside	\$9,960
UWS	09-CTP-02	Assessing Levels and Potential Health Effects of Endocrine Disrupting Chemicals in Groundwater Associated with Karst Areas in Northeast Wisconsin	Bauer-Dantoin, Fermanich, Zorn	UW – Green Bay	\$43,063
UWS	09-BEP-01	The lethal and sublethal effects of elevated groundwater nitrate concentrations on infaunal invertebrates in the Central Sand Plains	Stelzer, Eggert, and Muldoon	UW - Oshkosh	\$17,769
<i>The total cost of all projects funded through the UWS (including fringe benefits and USGS contribution) through the FY09 Joint Solicitation for proposals was \$343,591 (\$275,500 without USGS -- including 6% administration)</i>					
*	Continuing project				
**	UWS continuing project funded with USGS 104 B funds				

<b>Table 1 (Continued): Groundwater Research and Monitoring Projects Funded in FY 09</b>					
<b>Agency</b>	<b>Code</b>	<b>Title</b>	<b>Investigators</b>	<b>University</b>	<b>Cost</b>
DNR *	08-HDG-05	Water Balance Modeling for Irrigated and Natural Landscapes in Central Wisconsin	Lowery and Bland	UW-Madison	\$44,426
DNR *	08-HDG-01	Understanding the Effects of Groundwater Pumping on Lake Levels	Kraft, Clancy and Mechenich	UW-Stevens Point	\$34,853
DNR *	08-BEP-01	Assessing the Potential of Hormones from Agricultural Waste to Contaminate Groundwater	Hemming, Landreman and Hedman	UW-Madison	\$25,461
DNR	09-HDG-01	Drawdown in the Northeast Groundwater Management Area (Brown, Outagamie, and Calumet Counties, Wisconsin)	Luczaj	UW – Green Bay	\$40,863
DNR	09-CT P-04	Human viruses as tracers of wastewater pathways into deep municipal wells	Bradbury, Borchardt and Gotkowitz	UW - Extension	\$52,037
DNR	09-SAM-02	Development and Validation of a PCR-based Quantification Method for <i>Rhodococcus coprophilus</i>	Long	UW -SLH	\$35,560
<i>The total cost of all projects funded through the DNR in FY 09 through the Joint Solicitation for proposals was \$233,200</i>					
*	Continuing project				

<b>Table 2: Groundwater Research and Monitoring Projects Funded in FY 10</b>					
<b>Agency</b>	<b>Code</b>	<b>Title</b>	<b>Investigators</b>	<b>University</b>	<b>Cost</b>
UWS*	09-SOS-01	Use of the 2009 Behavioral Risk Factor Surveillance Survey to Assess the Safety of Private Drinking Water Supplies	Knobeloch	UW-Madison and DHS	\$26,750
UWS**	09-REM-01	Combination of Co-Precipitation with Zeolite Filtration to Remove Arsenic from Contaminated Water	Li	UW - Parkside	\$10,954
UWS**	09-BEP-01	The lethal and sublethal effects of elevated groundwater nitrate concentrations on infaunal invertebrates in the Central Sand Plains	Stelzer, Eggert, and Muldoon	UW - Oshkosh	\$15,649
UWS	10-BEP-02	Fecal Source Tracking Using Human and Bovine Adenovirus and Polyomaviruses	Pedersen, McMahon, Long	UW-Madison	\$ 49,907
UWS	10-GCP-01	Predicting Mercury Methylation: Testing the Neutral Sulfide Speciation Model in a Groundwater-Dominated Wetland	Shafer	UW-Madison	\$ 42,717
UWS	10-WSP-01	Assessing the Effect of Pleistocene Glaciation on the Water Supply of Eastern Wisconsin	Grundl	UW-Milwaukee	\$ 50,000
UWS	10-HDG-02	Forecasting Impacts of Extreme Precipitation Events on Wisconsin's Groundwater Levels	Gotkowitz	UW-Extension	\$ 39,582
UWS	10-SAM-01	DTS as a Hydrostratigraphic Characterization Tool	Bahr and Hart	UW-Madison	\$ 36,094
<p><i>The total cost of all FY 10 UWS –funded projects selected through the joint solicitation (including fringe benefits and USGS contribution) proposals is \$286,356 (\$259,753 without USGS, and incl. 6% administration)</i></p>					

FY 2009 Groundwater Coordinating Council Report to the Legislature

<b>Table 3: Groundwater Research and Monitoring Projects FY99 - FY09</b>										
Fiscal Year	Total		DNR		UWS		DATCP		Commerce	
	#	\$	#	\$	#	\$	#	\$	#	\$
<b>New projects</b>										
1999	17	438,689	5	186,766	8	160,333	4	91,590	0	0
2000	16	327,338	6	115,321	9	196,266	1	15,751	0	0
2001	20	578,895	8	276,090	7	165,924	4	78,881	1	58,000
2002	22	626,068	9	281,259	10	252,619	3	92,190	0	0
2003	8	180,621	2	17,864	6	162,757	0	0	0	0
2004	13	375,918	4	124,495	9	251,423	0	0	0	0
2005	8	130,502	0	0	8	130,502	0	0	0	0
2006	18	482,471	9	246,363	9	236,108	0	0	0	0
2007	10	250,930	7	175,478	3	75,452	0	0	0	0
2008	15	545,415	7	288,195	8	257,220	0	0	0	0
2009	9	306,771	3	128,460	6	178,311	0	0	0	0
<b>Continuing Projects</b>										
1999	9	237,900	3	102,360	5	121,647	1	13,893	0	0
2000	11	321,171	5	186,221	4	87,000	2	47,950	0	0
2001	9	179,441	2	60,623	7	118,818	0	0	0	0
2002	12	234,913	5	155,026	4	37,077	3	42,810	0	0
2003	14	311,237	4	110,198	7	121,039	3	80,000	0	0
2004	3	15,170	0	0	3	15,170	0	0	0	0
2005	9	256,280	3	92,580	6	163,700	0	0	0	0
2006	4	43,485	0	0	4	43,485	0	0	0	0
2007	11	332,429	4	139,828	7	192,601	0	0	0	0
2008	5	121,957	3	101,544	2	20,413	0	0	0	0
2009	8	254,426	3	104,740	5	149,686	0	0	0	0
<b>All Projects</b>										
1999	26	676,589	8	289,126	13	281,980	5	105,483	0	0
2000	27	648,509	11	301,542	13	283,266	3	63,701	0	0
2001	29	758,336	10	336,713	14	284,742	4	78,881	1	58,000
2002	34	860,981	14	436,285	14	289,696	6	135,000	0	0
2003	22	491,858	6	128,062	13	283,796	3	80,000	0	0
2004	16	391,088	4	124,495	12	266,593	0	0	0	0
2005	17	386,782	3	92,580	14	294,202	0	0	0	0
2006	22	525,956	9	246,363	13	279,593	0	0	0	0
2007	21	583,359	11	315,306	10	268,053	0	0	0	0
2008	20	667,372	10	389,739	10	277,633	0	0	0	0
2009	17	561,197	6	233,200	11	327,997	0	0	0	0
<b>Total</b>	<b>251</b>	<b>6,552,027</b>	<b>92</b>	<b>2,893,411</b>	<b>137</b>	<b>3,137,551</b>	<b>21</b>	<b>463,065</b>	<b>1</b>	<b>58,000</b>
2001 DNR figures do not include 71K from Federal 106 funds applied toward FY02 projects										
2001-09 UWS figures do not include matching USGS funds (approximately \$60,000 per year)										