



# Wisconsin Ground Water Association Newsletter

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## President's Message

Although I'm sure we have some summer left, the recent relief from the heat reminds us that fall is not all that far away! Not only are there Badger and Packer games to look forward to, but the **Annual WGWA Fall Field Trip** as well, which has been gaining steadily over the years in its reputation. And it's much easier to get "tickets" for the field trip than the football games!

We are again teaming up with the AIPG Wisconsin chapter and this time they are taking the lead in field trip plans. Brian Hahn, Boyd Possin, and Paula Richardson of WGWA have been hard at work on the field trip committee to produce another memorable time. As of now, the itinerary begins Friday October 14 at noon in Wausau and will end by late afternoon on Saturday. Trip highlights will include the Anderson/Johnson red granite quarry, Grandfather Falls and the hydroelectric plant, jellyfish fossil quarry near Mosinee, Rib Mountain, Holtz-Krause landfill,



*The spectacular view from Rib Mountain.*



*Jellyfish fossils are seen at the left center edge and top right (AP)*



*The observation tower at Rib Mountain.*

*(Continued on Page 2)*

The newsletter is published four times per year. If you have any suggestions or submissions, please contact us at: Wisconsin Ground Water Association, c/o Marilyn Weiss, WGWA Treasurer, P.O. Box 8593, Madison, Wisconsin 53708-8593. Email: [wgwainfo@wgwa.org](mailto:wgwainfo@wgwa.org); Web site: <http://www.wgwa.org>. The deadline for submissions to the 4th quarter of 2005 newsletter is November 15, 2005.

(Continued from page 1)

Dells of the Eau Claire, lunch on both days, and dinner at Hereford and Hops Friday evening. A block of rooms will be available at the Plaza Hotel in Wausau. How can you go wrong?!! Registration information will be coming shortly.

Lastly, the 2006 officer positions of President-Elect and Treasurer will be up for election later this fall. Now is a great time to consider running for one of these positions. We are also looking to have a membership director to facilitate contacting present, potential, and former members so that WGWA can remain healthy, viable, and relevant long into the future. Any of these roles provides a great chance to give back and serve others, so that the mission of WGWA can continue. It's useful to periodically reflect on the reasons why WGWA exists. As stated in the by-laws, objectives include to:

- 1) Promote the understanding of scientific, technical, legal and public policy aspects of ground water.
- 2) Provide a forum for exchange of information among ground water professionals and other interested parties on all aspects of ground water resources.
- 3) Disseminate information to governments, schools, and civic and professional organizations, and educate the general public regarding ground water resources.
- 4) Promote professional awareness and technical skills among ground water professionals.

With knowledge comes responsibility. We have a duty to ensure that knowledge doesn't stay with just ourselves but that it is shared for the greater good of all. Keep in the flow!

Dave Nemetz, P.G.  
WGWA President

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## WGWA Announces Two New Board Members Corey Pagels and Ken Wade

### Corey Pagels

Corey graduated from the University of Wisconsin, Stevens Point in 1998 with a B.S. in Hydrogeology, and minors in Geology and Soil Science. He has been a Hydrogeologist with Leggette, Brashears & Graham, Inc. in Madison since 1998. Besides being very excited to be on the WGWA board and looking forward to the challenge of involving many new members, he has been a high school swim coach for the past 8 years and enjoys triathlons and mountain climbing.

Corey Pagels  
Hydrogeologist/Project Manager  
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### Kenneth Wade

Kenneth graduated from the University of Wisconsin – Madison in 1974 with a BS in Secondary Education. He received a Masters in Geology at Colorado State and returned to the University of Wisconsin for graduate study in ground-water modeling. A hydrogeologist with the Wisconsin Department of Natural Resources and now the Wisconsin Department of Transportation, his interests include public service (Town Board Chair, Town of Middleton, Dane County, 1989-1990) and restoration ecology (ongoing prairie, oak-savanna, wetland restoration in conjunction with “The Prairie Enthusiasts” on 226 acres of land in western Dane County). Ken has extensive outdoor experience including: mountaineering and rock climbing, winter camping, bicycling, and kayaking.

Kenneth S. Wade, P.E., P.G.  
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## ANNOUNCEMENT!!!!

The 2005 Annual Joint Wisconsin Ground Water Association and American Institute of Professional Geologists – Wisconsin Section Fall Field Trip is almost set to go!

Dates: Friday October 14<sup>th</sup> and Saturday October 15<sup>th</sup>, 2005

Location: Wausau Area

Hotel: Plaza Hotel, Wausau (if you call now for a reservation, please mention the field trip to get a special group rate).

Details are in the process of being finalized, but we wanted to let everyone know that we have a great field trip lined up for this year. The trip will kick off with a bang at noon on Friday, after we meet at the Plaza Hotel and hop on a deluxe coach bus for a ride through the beautiful Fall colors of central Wisconsin. Stops on Friday will include a visit to the Grandfather Falls area of the Wisconsin River near Merrill, with a tour and discussion of the history of the hydroelectric plant at the site, plus viewing the geology of the area and of course a view of the falls themselves. We will also stop at the Granite Heights Granite Quarry near Brokaw, and see active quarrying, cutting and polishing of the Wisconsin State Stone. Also on Friday we will stop at the Holtz-Krause Landfill in Wausau.

Dinner Friday night will be at the Hereford and Hops Brew Pub in Wausau, with a lavish buffet (and of course, lots of good beer!). Saturday morning we will hop back on the bus for more stops including Rib Mountain State Park, the Dells of the Eau Claire County Park, and the Krukowski Stone Quarry near Mosinee, site of the famous fossilized jellyfish!

PK Creations LLC, Wausau, will cater lunches on both Friday and Saturday.

This promises to be both a beautiful and interesting field trip you won't want to miss!

Watch for more details to arrive shortly, including a registration form. Meanwhile, if you have any questions, contact either Jayne Englebert at 608-355-8860 (or email at [jayne@msa-ps.com](mailto:jayne@msa-ps.com)) or Brian Hahn at 715-845-8000 (or email at [bhahn@becherhoppe.com](mailto:bhahn@becherhoppe.com)).



Rock formation at Rib Mountain State Park



Grandfather Falls Recreation Area

## 50th Annual Midwest Ground Water Conference

**50th Annual Midwest Ground Water Conference Coming to the Holiday Inn Urbana, Illinois  
November 1-3, 2005**

For its golden anniversary, the Annual Midwest Ground Water Conference returns to Champaign-Urbana, Illinois, where it all began 50 years ago.

### Who Should Attend

Hydrogeologists, ground water engineers, geologists, planners, water regulators, environmental consultants, water resources professionals, students, and any other professionals with an interest in ground water resources and protection.

### Session Topics

#### Ground Water Quality and Monitoring

- Pesticide metabolites and their potential health effects
- Arsenic
- Contaminated site characterization and remediation
- Karst issues
- In-situ ground water chemistry
- Combined hydrologic and biologic monitoring
- Wetlands hydrology and restoration

#### Ground Water Quality

- Aquifer characterization, modeling and visualization tools
- Ground water management issues and strategies
- Ground water/surface water interactions
- Water supply sustainability

#### Water Use

- Quantification of public and domestic use

#### Government Data

- Poster session about what is available and how to access it

#### History of Hydrogeology

For more conference information, go to

[midwestgroundwater.org/](http://midwestgroundwater.org/).

The Lobby at the Plaza Hotel



## Government Budget Woes Underscore Importance of Organizations like WGWA

(WGWA editorial staff intro to article published by the Minnesota Ground Water Association)

As the Federal and most state governments grapple with ballooning budget deficits, it is only logical that government spending relevant to our profession may be threatened. As the following article illustrates, one area that is likely to fall under the axe is spending on general public education related to water supply issues. The attached article illustrates the problem. It describes how the Governor of Minnesota has chosen to veto over \$6.8 million in proposed spending on ground water-related education programs in response to the recent budget crisis that temporarily shut down part of the Minnesota State government.

While it is easy to criticize this as short-sighted given the growing importance of properly managing water supplies, we need to keep in mind that we also have responsibilities to constrain or reduce government spending. We are going to have expect less government assistance in explaining the importance the work we perform as ground water

professionals. In reaction to circumstances, the WGWA could become a main forum for educating the public on ground water and the importance of carefully managing ground water supplies. This means shifting to an external rather than an internal focus.

We tend to think of WGWA as a professional organization intended to serve the interests of its membership. After all, how many of us joined because we thought it might somehow enhance our careers. However, perhaps it is time to expand or change our vision to see WGWA as a means to provide a service to the general public. While WGWA has always done some of this, maybe we need to make it more of a primary focus. Ultimately, this will come back to benefit us professionally. After all, if they do not see the value in managing ground water, they will not see the value in what we do. As an organization we have the ability to help fill a hole left by government cutbacks and better serve our fellow citizens.

*(Continued on page 5)*

# GEOPHYSICAL SERVICES

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## **Pawlenty vetoes education, research projects**

Tom Meersman, Star Tribune July 2, 2005

The bill that kept the gates open in Minnesota's state parks has closed the doors on \$6.8 million in projects for environmental education, alternative energy and climate change research. Gov. Tim Pawlenty used his authority to line-item veto those and other items before signing the agriculture, environment and jobs bill late Thursday. Many of the projects were appropriations from the state's environment and natural resources trust fund, which includes proceeds from the state lottery.

In a letter to legislative leaders, Pawlenty said the projects did not fully meet state constitutional requirements that the trust fund be used "for the public purpose of protection, conservation, preservation and enhancement of the state's air, water, land, fish, wildlife and other natural resources."

Brian McClung, the governor's spokesman, emphasized that Pawlenty wants to ensure that money allocated from the lottery proceeds does not begin to "creep away from the original intent" of the fund. But environmental leaders disagreed and were upset. "These are very sound conservation and energy projects that would have better protected the water and clean up the air," said Ron Kroese, executive director of the Minnesota Environmental Partnership, which represents 90 conservation and environmental groups. "The vetoes are a real insult to the people of Minnesota."

Among the vetoed projects:

\* \$150,000 for the Science Museum of Minnesota to create exhibits and a different group to train Twin Cities high school students and teachers in environmental problem-solving.

\* \$250,000 for climate change research on aquatic

systems by the University of Minnesota's Natural Resources Research Institute in Duluth.

\* \$350,000 to install vegetated roofs on four buildings in Roseville and Falcon Heights to monitor their effects in reducing runoff and improving water quality.

\* \$295,000 to upgrade and overhaul the Blue Heron, a research vessel used by the University of Minnesota to study the Great Lakes.

\* \$500,000 to establish a revolving loan fund in Aitkin, Cass and Crow Wing counties to improve land management and wildlife habitat.

\* \$250,000 to help Hennepin County map and prioritize natural areas that need to be protected or restored.

\* \$466,000 to plant 1,000 acres of trees as part of a biomass power plant project in northern Minnesota.

\* \$900,000 to the Phillips Community Energy Cooperative in south Minneapolis to help build a district energy system fueled by wood waste.

\* \$450,000 for the Legislative Commission on Minnesota Resources, a group of 10 senators and 10 representatives who evaluate projects to be funded by the lottery proceeds and recommend finalists to the Legislature. Pawlenty and others want to replace the commission with an 11-member citizen group.

The governor also vetoed \$2.4 million for the Minnesota Conservation Corps, a nonprofit group that was slated to receive money from a different fund and that works on environmental improvement projects. Former Gov. Jesse Ventura also vetoed three lottery-funded environmental projects in 1999 and two in 2001, but in at least one case, the Legislature reappropriated the money the next year.

Tom Meersman is at [meersman@startribune.com](mailto:meersman@startribune.com).

## **“Groundwater Guardian” Rain Garden To The Rescue**

### **A New Rain Garden At Warner Park Will Keep Pollutants From Running Into The Lake.**

#### **Wisconsin State Journal**

**Friday, July 1, 2005**

**Dean Mosiman Wisconsin State Journal**

They're calling it "a rain garden on steroids."

The city of Madison, using a \$100,000 donation from the Graham-Martin Foundation, on Thursday unveiled a new rain garden designed to keep fuel, oil and other pollutants seeping from parking lots at Warner Park into Lake Mendota.

"This is one of what we hope to become 1,000 new rain gardens in the city," Mayor Dave Cieslewicz said. "Not just at public facilities, but private homes, too."

Bill Graham, founder of Agrecol, a major grower of native plants and grasses in the Great Lakes Region, and Sandy Martin, through the Graham-Martin Foundation, are making the donation to develop rain gardens at Warner, Olin-Turville and Brittingham parks.

Hopefully, the donation will generate interest in rain gardens, an effort "all citizens can be involved in to clean up the lakes," Graham said.

The concept of rain gardens is relatively simple. Landscaped areas are planted with native plants and grasses that trap pollutants and help cleaner water soak into the ground.

Most rain gardens at private homes handle relatively clean runoff from rooftops. But the system installed at Warner Park, planted with prairie blazing star, native iris and other plants, is designed to handle polluted runoff from parking lots -- a rain garden on steroids.

The rain garden, which will take about two years to become fully established, will be a great educational tool because hundreds of thousands of people visit Warner Park, Cieslewicz and city Parks Superintendent Jim Morgan said. The modest area will be protected during Rhythm & Booms this weekend.

The systems work, Cieslewicz said. A new U.S. Geological Survey that studied two other Madison rain gardens found absorption to be 11 times higher than regular turf lawns, he said.



# Model Speak

## A Case Study of Surface/Ground Water Interaction

### INTRODUCTION

It's been awhile since my last Model Speak writing and it's good to be back. I thought that a recent Infiltration and Inflow Study (I&I Study) I completed for the City of Rock Island, Illinois would be of interest to some as it involved surface water/groundwater relationships, which are getting more water supply attention these days, as well as some of the very basic data collection and assessment methods we use in our profession.

The I&I Study consisted of an evaluation of the effects of Mississippi River (river) stage on inland groundwater levels at select locations within the City of Rock Island (City) to identify potential causes for higher inflows to the City's Mill Street Wastewater Treatment Plant (WWTP) during high river stage. During past high river stage events, the dry weather flow rate to the WWTP has increased from the average 5 million gallons per day (MGD) to as much as 16 MGD, which is the capacity of the WWTP. The cause of the flow increase is assumed to be from river inflow and groundwater infiltration, but the significance of each source's contribution to the flow volume increase is not fully understood.

**Data analysis and conclusions are summarized here, while the full report may be accessed by clicking [FULL REPORT](#).**

### Water Level Measurements

The study used a 9-well network installed along two river transects (Figure 1) whereby groundwater measurements were collected by either automatic data loggers or measured daily by the City. The greatest changes in water levels for the data collection period occurred at wells MW-1 (2.8 feet), MW-5D (2.7 feet), and MW-5 (1.92 feet). In all monitoring well cases, the measured groundwater elevation was higher than the nearest sewer invert elevation and usually at an elevation to totally submerge the sewer pipe. However, there was no clear correlation between the highest-measured river stage (April 14) and when the highest-measured groundwater elevation for the monitoring wells occurred. As expected, the best correlations of rising river stage with rising groundwater levels occurred at well locations

nearest the river. The sewer system also appeared to act as a sink to depress the water table in the vicinity of MW-1 and -5, and somewhat in the areas of MW-4 and -6.

### Groundwater Flux

An estimate of the groundwater flux (Q) for a particular river stage and across a specified aquifer area (A) with a known hydraulic conductivity (K) and hydraulic gradient (I) can be estimated using Darcy's Law [  $Q = KIA$  ], which was used to estimate the groundwater flux from the river during the highest river stage in the study period (12.42 feet stage on April 14 2005) and for a historical river stage of 16 feet. As such, the total groundwater flux on April 14, 2005 was shown to be approximately 70,000 gallons for the entire north interceptor sewer line that trends along the river shoreline (11,295 feet in length) using the hydraulic gradient between the river and MW-1 along the 18<sup>th</sup> Street well transect, a 30-foot section of predominantly bedrock aquifer contributing to sewer infiltration, and a bedrock hydraulic conductivity 100 times greater than measured. Similarly, the total groundwater flux on April 14 was shown to be approximately 430,000 gallons for the entire north interceptor sewer line using the hydraulic gradient between the river and MW-5 along the Mill Street WWTP well transect, a 30-foot section of unconsolidated deposit aquifer contributing to sewer infiltration, and a bedrock hydraulic conductivity approximately 10 times greater than measured. In comparison, these groundwater fluxes are 0.6% and 3.9%, respectively, of a historical 11 MGD flow increase to the WWTP that occurred during a 16-foot river stage. When calculating groundwater fluxes using an assumed hydraulic gradient during the 16-foot river stage, the fluxes are 1.2% and 5.3%, respectively, of the historical 11 MGD flow increase to the WWTP.

### CONCLUSIONS

Based on the collected dataset and analyses of groundwater measurements from the City's nine-well groundwater monitoring network, the following conclusions were made:

*(Continued on page 8)*

### City Groundwater Elevations and Sewers

- Data measurements in all cases showed groundwater levels to be above the nearest sewer invert elevation and often at levels that totally submerged the sewer. This implies that there is likely some constant contribution from groundwater to WWTP flow, including dry weather periods

### City Groundwater Elevations and River Stage

- The hydraulic gradient and direction of groundwater flow within unconsolidated deposits was, in all cases, towards the City (south/southeast) during the study period. However, the direction of groundwater flow in bedrock was not always towards the City along the 18<sup>th</sup> Street well transect, even during periods of rising river stage. In addition, high river stage did not always correlate with the highest measured groundwater elevations.

### Extent of River Stage Influence on City Groundwater

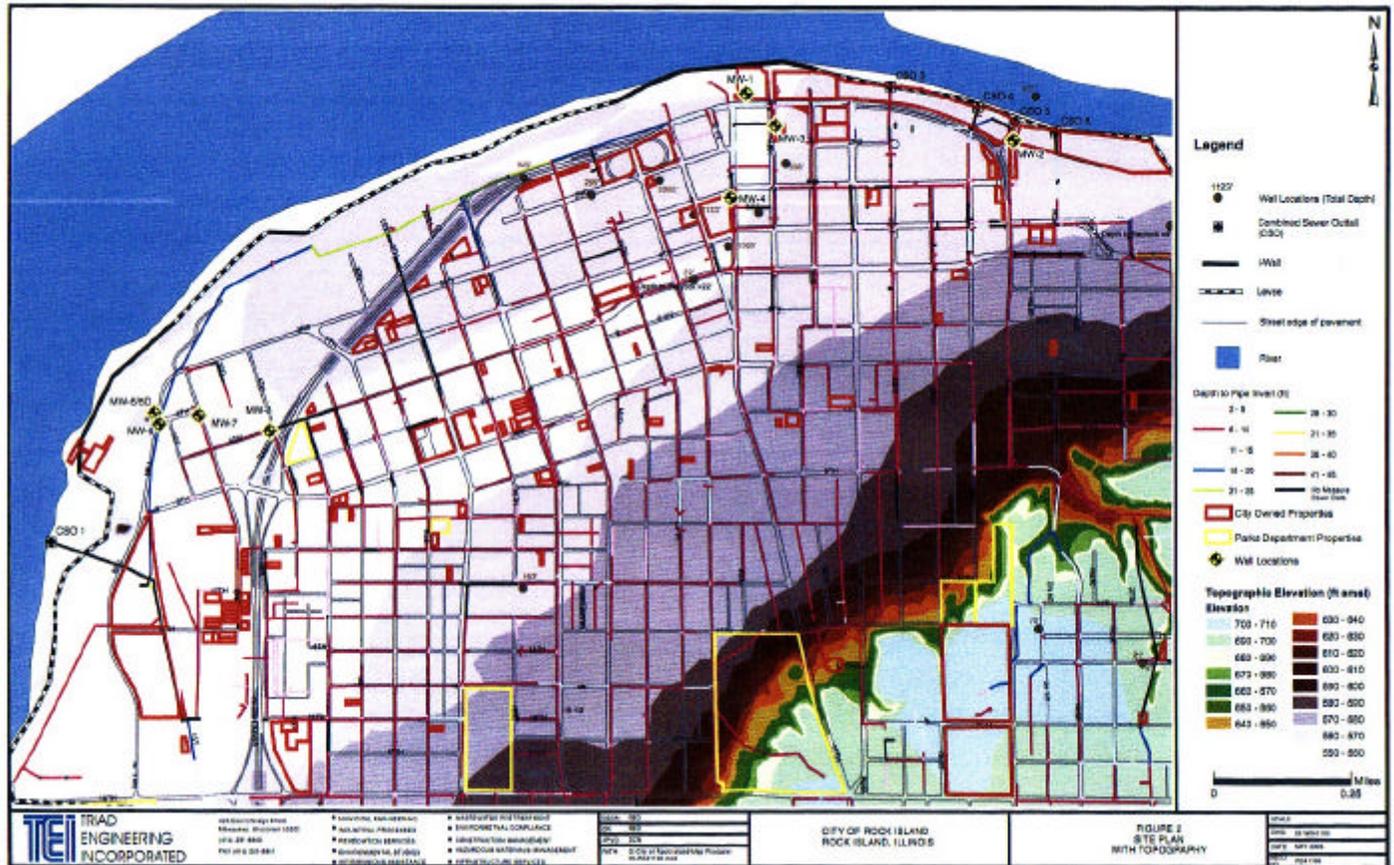
- Based on the study data, the extent of the river's influence on City groundwater levels appeared to be within 1,000 feet for the bedrock aquifer and within 750 feet for the unconsolidated aquifer.

### Significance of Groundwater Contribution to Sewer Flow Volume

With respect to the uncertainty and lack of data related to the hydraulic properties of underlying bedrock, the groundwater flux during the highest river stage for the study period was calculated to be less than 4% of the total sewer flow increase to the WWTP during a historical 16-foot river stage. As such, it appears that the majority of increases in sewer volume during high river stage are caused by inflow sources other than groundwater.

By Dave Nader, Triad Engineering

Figure 1



# Outagamie & Winnebago Counties

## Arsenic in Drinking Water

*A “Special Well Casing Depth Area” has been established by the WI Department of Natural Resources (DNR) for all of Outagamie and Winnebago Counties. This is due to naturally occurring arsenic contamination problems affecting many wells in these two rapidly growing counties. Concentrations of arsenic began showing up in area wells in the late 1980s. As the rural areas began to develop rapidly, more and more cases of arsenic-contaminated wells were being detected. Samples from some wells contained arsenic in thousands of parts per billion, some of the highest concentrations ever found in the world.*

### **Arsenic in Drinking Water Where is it?**

Arsenic is a naturally occurring element found throughout the world, and it is especially concentrated in this part of north-eastern Wisconsin. Arsenic is associated with the bedrock aquifers of this area, primarily the St. Peter Sandstone and the Prairie du Chien Dolomite, both of which are tapped by many water wells in this area. The arsenic is released to well water at high concentrations when it is exposed to air, primarily through the well drilling process and through the lowering of the regional water table.

Over the last two decades, thousands of new wells have been drilled in Outagamie and Winnebago counties. Increased groundwater pumping and the use of these wells has lowered the water table, exposing the arsenic-rich rock to the air at some locations. Fluctuating water levels and the introduction of air accelerates the chemical reactions that release arsenic, and other associated metals, into the groundwater. Arsenic may contaminate well water at lower, but still unhealthy, concentrations even without the introduction of air.

### **Health Effects of Consuming Water with Arsenic – What is the risk?**

Consuming water containing high concentrations of arsenic has been shown to pose a significant hazard to human health. Arsenic is recognized as a carcinogen (a cause of human cancer) by the EPA. The increased risk of developing cancer from consuming water over a lifetime that contains arsenic above 10 ppb is about three in one thousand. The most common types of cancer associated with consuming arsenic contaminated water are skin, bladder and lung.

Other non-carcinogenic health effects of arsenic ingestion include blood vessel damage, hypertension, nerve damage, diabetes, anemia, digestive problems, and changes in the color and texture of the skin. Those who have consumed arsenic, even at concentrations less than 10 ppb, have also reported higher incidences of depression.

### **Original “Arsenic Advisory Area”**

To deal with this growing problem, the DNR established an “Arsenic Advisory Area” (AAA) in 1993. This AAA was a

ten-mile wide strip that extended southwest to northeast through both counties. Within this area special well construction methods were recommended, especially deeper casing depths for new wells. In the 11 years since these voluntary guidelines were developed, few wells have been constructed to the more stringent standards, in part because of the expense of deeper casing. During this time, the arsenic problem has continued to worsen.

### **New “Special Casing Depth Area”**

To proactively prevent further worsening of this problem, the DNR created a “Special Well Casing Depth Area” which includes all of Outagamie and Winnebago counties. As of October 1, 2004 all new wells drilled within these counties must now be constructed, grouted, and disinfected according to more stringent standards. The DNR established this ‘area’ under the provisions of Section NR 812.12(3) of the State Private Well Code in order to:

**Reduce the possibility that new wells would become contaminated with concentrations of arsenic that exceed the EPA Drinking Water Standard of 10 ppb. Help protect the bedrock aquifers of this area.**

### **New Well Construction Requirements**

The new law spells out specific standards for the construction of new wells. Any private well constructed within this “Special Well Casing Depth Area” must be constructed with cement-grouted steel casing extending at least to the top of the Cambrian Sandstone, the major bedrock aquifer that lies much deeper than the St. Peter Sandstone. Specific depths will vary across the counties, and can be found on Township-level maps that show minimum depths by quarter-section (see diagram A). In some eastern portions of these counties property owners have the option of constructing shallower wells, however they must be shallow enough to terminate in the aquifer above the sulfide mineral layers (see diagram B).

The deeply-cased wells must be drilled using rotary mud circulation or cable-tool methods. These methods are preferred because less air is introduced to the subsurface. Drilling with rotary-air methods is not permitted in this region.

In addition, specific cement grouting methods must be used, and the grout must be mixed according to stringent DNR specifications.

Once wells are completed they must be disinfected using a liquid bleach solution having a low chlorine concentration and a short contact time to help prevent oxidation of the sulfide minerals.

Specific details for well construction are found at [www.dnr.state.wi.us/org/water/dwg/arsenic/casingrequire.htm](http://www.dnr.state.wi.us/org/water/dwg/arsenic/casingrequire.htm)

*(Continued on page 10)*

(Continued from page 9)

## Well Compensation

Wisconsin's Well Compensation program provides financial assistance to owners of contaminated wells, including those contaminated with arsenic.

In order to be eligible, the arsenic concentration must be at or exceed 50 ppb (five times the Drinking Water Standard). There are also income eligibility criteria an owner must meet to be eligible. (Note: the IRS considers Well Compensation grant awards as income.)

If eligible, an owner can receive a grant to help pay for the costs of any of the following:

**A new well meeting the more stringent construction specifications.**

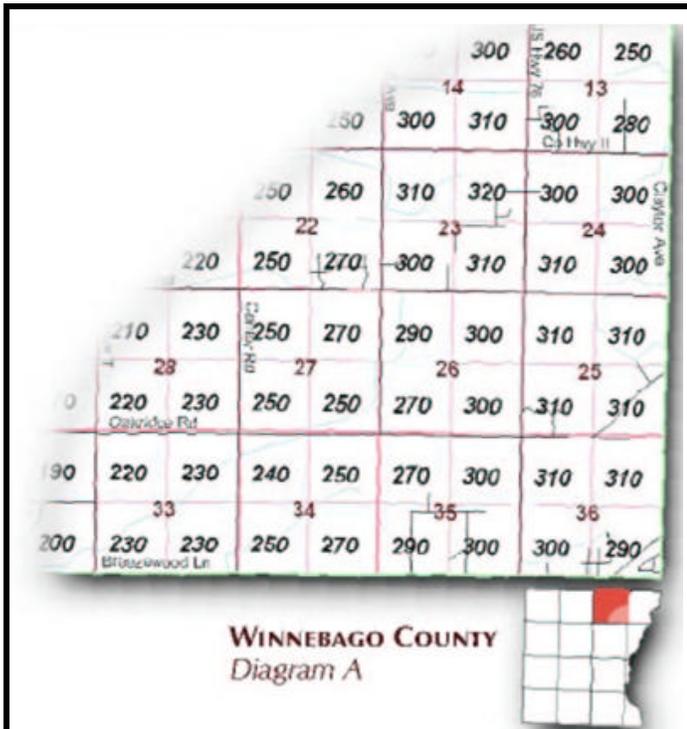
**Reconstruction of an existing well.**

**Connection to a nearby complying private well.**

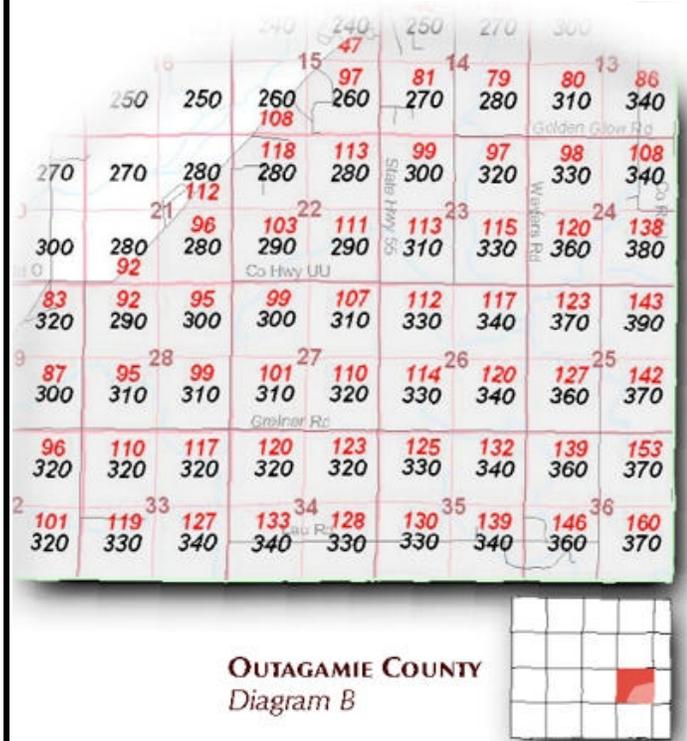
**Connection to a community water supply.**

**Or, if none of the above alternatives are feasible, installation of a treatment system to remove the arsenic.**

(Continued on page 11)



WINNEBAGO COUNTY  
Diagram A



OUTAGAMIE COUNTY  
Diagram B

### Be an informed home builder or buyer!

The best way to ensure you will have safe drinking water is to build or buy where municipal water is provided. If you buy an existing home with a well, have it tested for arsenic annually. If you are building your new home, new wells must be constructed to stringent DNR standards. Ensure that your well driller is using the required drilling methods.



(Continued from page 10)

## Summary

In all portions of Outagamie and Winnebago Counties well drillers and property owners are required to meet the well construction and disinfection specifications of this new "Special Well Casing Depth Area." In some areas where the shallow aquifer yields sufficient water (shown in gray in diagram B) a property owner may be able to get by with a shallow well. Outside these gray areas, owners must obtain a variance prior to drilling a shallow well.

Well depth requirements differ across the counties, depending on the depth to the bedrock layers. This will affect the cost of your well. Table A outlines various options and costs for domestic water supplies.

## Where to get more information

For more information on arsenic in drinking water, contact your county Extension office. For health effect questions and testing, contact your local health department. For questions regarding the Special Casing Zone and well drilling specifications, contact your local Department of Natural Resources office.

## References & other resources:

DNR Arsenic website:

[www.dnr.state.wi.us/org/water/dwg/Arsenic/Index.htm](http://www.dnr.state.wi.us/org/water/dwg/Arsenic/Index.htm)

"Arsenic in Drinking Water." 2000. DNR publication PUB-DG-062-00.

[www.dnr.state.wi.us/org/water/dwg/arsenic/arsbroch.pdf](http://www.dnr.state.wi.us/org/water/dwg/arsenic/arsbroch.pdf)

"Arsenic in Well Water: Understanding your test results". 2001. Dept of Health and Family Services.

[www.dnr.state.wi.us/org/water/dwg/arsenic/AsNewsNov01.pdf](http://www.dnr.state.wi.us/org/water/dwg/arsenic/AsNewsNov01.pdf)

"Well Chlorination in Arsenic Sensitive Areas: Too much of a good thing?". 2002. DNR.

[www.dnr.state.wi.us/org/water/dwg/WellChlorination.pdf](http://www.dnr.state.wi.us/org/water/dwg/WellChlorination.pdf)

Outagamie County Public Health Division website:

[www.co.outagamie.wi.us/publichealth](http://www.co.outagamie.wi.us/publichealth)



## **“Out-of-Boundaries” Tool Use a Family Tradition in Dolphin Clan, Researchers Say**

*Courtesy Proceedings of the National Academy of Sciences and World Science staff*

Scientists are studying an extended family of dolphins in Western Australia who use tools, and have concluded that the behavior is a family tradition.

The bottlenose dolphins break marine sponges off the seafloor and wear them over their snouts to probe into the seafloor for fish.

It's well known that chimpanzees and orangutans use tools. Scientists have recently come to define this activity as animal “culture” because it is transmitted through generations, and takes different forms in different animal groups.

Now, researchers say the same should be said of dolphins.

However, theirs might not be an equal-opportunity culture: “sponging” seems to be almost exclusively a female job.

It in fact appears to be a cultural behavior passed from mother to daughter, said the researchers, led by Michael Krützen of the Anthropological Institute and Museum at the University of Zurich, Switzerland.

They described the findings in a paper in the early online edition of the *Proceedings of the National Academy of Sciences*, a research journal, this week. The spongers are a group of wild dolphins in Shark Bay, Australia. Krützen and colleagues proposed that because almost all are related, they likely descend from one “sponging Eve” who invented the technique.

It is not clear why so few males do it, as they spend as much time with their mothers as females do, the researchers added.

The scientists analyzed DNA from 13 spongers, only one of which was male, and 172 non-spongers. Bottlenose dolphins in Shark Bay have previously been spotted used nearly a dozen different tactics for food foraging, though none of the other methods involve tools. Sponging has been seen in 15 of 141 known mothers in the Shark Bay bottlenose dolphin population, the researchers wrote.

They rejected two alternative explanations for the sponging that wouldn't involve a tradition or culture: a genetic, and a so-called ecological explanation.

The genetic explanation proposes that sponging is due to a “sponging gene” or genes, rather than because of tradition or learning.

This is unlikely, the researchers said, because because genes tend to be passed down in specific patterns, depending among other things on which chromosomes they are in. None of the known patterns matched the documented one for sponging, in which mostly females, but at least one male, engaged in the activity.

The ecological explanation would state that particular features of the dolphins' environment are, by themselves, enough to stimulate sponging. This is also improbable because both spongers and non-spongers shared the same feeding and foraging areas, the researchers reported.

The rejection of both the genetic and ecological explanations leaves only one, cultural transmission, they argued.

“A behavioral trait is considered to vary culturally if it is acquired through social learning” and is “transmitted repeatedly within or between generations,” the researchers wrote. “Bottlenose dolphins are highly imitative and capable of social learning, both in the wild and in captivity.”



## County Line Student Announced *Clean Waterways Campaign* Announces Logo Design Contest Winner

Fifth-grader Jacalyn Schubring from Germantown County Line Elementary School was announced the winner of the Washington County Area Clean Ways for Waterways Logo Design Contest at an awards ceremony hosted by Germantown Village President Charles Hargan and Village Trustee Al Vanderheiden, County Board Chair Ken Miller and County Board Supervisor David Radermacher on Thursday, April 21<sup>st</sup> at 4:00 pm in Germantown Village Hall. Nine other area youth were also honored at the ceremony for their submissions to the contest before the professionally design-enhanced version of Jacalyn's winning entry was unveiled. Supervisor Radermacher opened the ceremony by speaking about the importance of protecting area water resources and congratulating the youth present for their participation in the program. Also present at the awards ceremony were engineering, conservation, and administrative staff from Germantown, West Bend and Washington County who serve on the Clean Ways for Waterways organizing committee. All finalists and honorable mentions received a certificate and prizes generously donated by local business.

The logo design contest is part of a countywide effort to clean-up area waterways, led by Washington County, the Cities of West Bend and Hartford, and the Village of Germantown. The winning logo has been incorporated into the campaign website, an educational video about local waterways, and other campaign materials. The area's clean waterways campaign is part of a larger statewide effort to reduce the amount of pollution that is carried by stormwater runoff generated in urban areas to lakes, streams, creeks, rivers and wetlands.

Stormwater runoff is rain or snowmelt that runs into local waterways instead of being absorbed into the soil. As paved areas increase due to development, storm water runoff increases. Storm water runoff carries oil, grease, pet waste, garbage, leaves, sediment and lead, which pollute local waterways.



“We believe that this campaign can really bring our communities together to improve water quality, and teach citizens how they can make a difference,” stated the campaign committee, which includes engineering staff from each of the three participating communities and the Washington County Land Conservation Department.



## **Speak Out on Water "Responsibility" Pact before August 29!**

*This article was reprinted with permission from Biodiversity Project/Great Lakes Forever (Madison, August 2, 2005)*

Pipelines that would export water from the Great Lakes and companies that abuse our water resources right here in the region threaten the future of our drinking water and the special places we go to fish, swim and just plain enjoy. Although more than 40 million residents drink it every day, there is no plan that will ensure the long-term protection and sound management of our Great Lakes water. We're working to change this.

On June 30, 2005, the bi-partisan governors and premiers of the U.S. states and Canadian provinces that share the Great Lakes released a draft cooperative agreement for the future protection of our waters. The agreement, known as the Great Lakes Basin Water Resources Compact, calls for the responsible use and protection of Great Lakes waters. This binding "responsibility pact" sets rules for the withdrawal of Great Lakes waters and ensures that local communities will have a say on any future diversions of our water to areas outside of the Great Lakes basin. The draft agreement contains many important protections for our Great Lakes, but we must do better.

We all have a responsibility to protect, conserve, and restore the Great Lakes, not for a single interest, but for our families, wildlife and the future. The Great Lakes Water "responsibility pact" was released for 60 days of public comment ending on August 29, 2005. We cannot wait for disaster to happen. You can make a difference today . . .

Please consider a public hearing on the agreement in your state or province (details below.) Or, if you can't attend the hearing, please consider sending your comments via letter or email. Currently, we are asking people to write personal letters and emails because they are the most effective tool we have. In order to make letter writing easier for you, we've created a customizable comment letter online. Following our simple Web template, you can send personalized comments in less than ten minutes - either electronically or by printing and mailing your letter.

Please take a moment to send your comments now, it's easy and so important for the future of our Great Lakes!

Comments can be submitted through Council of Great Lakes Governors Website at [Annex2001@cglg.org](mailto:Annex2001@cglg.org), or mailed to:

David Naftzger, Executive Director  
Council of Great Lakes Governors  
35 East Wacker Drive, Suite 1850  
Chicago, IL 60601

## **Public Hearing and Testimony**

The Great Lakes Responsibility Act, a binding international compact which calls for responsible use and protection of local water resources in the Great Lakes, was released for a sixty day public comment period ending on August 29, 2005. This is our time to act.

**Please attend a public hearing or write a letter to Governor Jim Doyle.**

### **Attend a Public Hearing**

**When:** Monday, August 22

**Time:** 6:30-9:00 p.m

**Where:** West Allis, Wisconsin State Fair Park Youth Center, Governor's Banquet Room, 640 South 84th Street just south of I-94, West Allis. Enter Gate 5 - the Center and parking lot are on the left.

**Written testimony will be collected at the meeting. If you can't be there, please write a letter, share your story and address it to Governor Doyle:**

### **Letters should be sent to:**

The Wisconsin League of Conservation  
Voters Institute  
c/o Anjali Bhasin at 306 E Wilson Street #2E  
Madison, WI 53703

or

[anjali\\_bhasin@conservationvoters.org](mailto:anjali_bhasin@conservationvoters.org).

For questions, call 608-661-0845

or visit [www.greatlakesforever.org](http://www.greatlakesforever.org).

## News from the Treasurer

Marilyn M. Weiss

**For Transactions Between: 4/1/05 to 6/30/05**

<b>Account Name</b>	<b>Withdrawals</b>	<b>Deposits</b>	<b>Balance</b>
Beginning Balance			<b>\$13,929.88</b>
Membership			
Dues	\$0.00	\$1,065.00	<b>\$1,065.00</b>
Conference			
Registrations	\$0.00	\$1,340.00	<b>\$1,340.00</b>
Costs	\$1,578.60	\$0.00	<b>(\$1,578.81)</b>
Misc.	\$249.60	\$230.00	<b>(\$19.60)</b>
Awards	\$2,250.00	\$0.00	<b>(\$2,250.00)</b>
Newsletters			
Production	\$400.00	\$0.00	<b>(\$400.00)</b>
Board Meeting			
Phone Charges	\$125.85	\$0.00	<b>(\$125.85)</b>
General			
Educational Materials	\$115.00	\$0.00	<b>(\$115.00)</b>
Misc.	\$6.66	\$0.00	<b>(\$6.66)</b>
<b>TOTALS</b>	<b>\$4,725.92</b>	<b>\$2,635.00</b>	<b>\$11,838.96</b>

## The 2004 Board, Committee, and Area Coordinators

### **President (2005)**

Dave Nemetz  
Liesch Environmental Services, Inc.  
Phone: 608.223.1532 Fax: 608.223.1534  
dnemetz@madison.liesch.com

### **President-Elect (2006 President)**

Brian Hahn  
Becher-Hoppe Associates, Inc.  
Phone: 715.845.8000; Fax: 715.845.8008  
bhahn@becherhoppe.com

### **Secretary (2005-2006)**

Janis S. Keszy, P.G., Senior Technical Consultant  
Foth & Van Dyke and Associates, Inc.  
Phone: 920.496-6819; Fax: 920.497.8516  
JKeszy@foth.com

### **Treasurer/Membership (2004-2005)**

Marilyn M. Weiss  
Public Service Commission  
Phone: 608.266.1613; Fax: 608.266.3957  
marilyn.weiss@psc.state.wi.us

### **Past President (2004 President)**

Boyd Possin  
Phone: 920.434.5023 Fax: 920.434.6381  
boydpossin@earthlink.net

### **At-Large Board Members**

Kenneth Wade (2005-2007)  
Wisconsin DOT  
Phone: 262.548.6733 (Tu, W)  
Phone: 608.767.3111 (M, Th, F)  
kenneth.wade@dot.state.wi.us

Rebecca Caudill  
Natural Resources Technology  
Phone: 262.523.9000 Fax: 262.523.9001  
rcaudill@naturalrt.com

Corey Pagels (2003-2005)  
Leggette, Brashears & Graham, Inc.  
Phone: 608.833.5555; Fax: 608.833-5551  
Pagels@lbgmad.com

### **Committee Chairpersons**

#### **Newsletter**

Lee Trotta  
18905 Wilderness Court, Unit D  
Brookfield, WI 53045  
Phone: 262.641.9341  
lctrotta53072@yahoo.com

#### **Ground Water Sand Model Reservations**

Lori Rosemore  
Ayres Associates  
Phone: 715.834.3161; Fax: 715.831.7500  
rosemorel@AyresAssociates.com

Kathi D. Ried, P.G.  
CH2M HILL  
135 S. 84th Street, Suite 325  
Milwaukee, WI 53214  
Phone: 414.847.0464; Fax: 414.454.8818  
Kathi.Ried@CH2M.com

#### **Web Site**

Joan Viney  
Phone: 608.279.9598  
jviney@tds.net

#### **Education Committee**

Brian Hahn  
Becher-Hoppe Associates, Inc.  
Phone: 715.845.8000; Fax: 715.845.8008  
bhahn@bhassoc.com

#### **Groundwater Guardian Committee**

Vacant

#### **Area Coordinators**

*We are looking for coordinators in many of the following areas. If you are interested, please contact Dave Nemetz.*

#### **Western Area**

(LaCrosse, Black River Falls, Eau Claire, Chippewa Falls, surrounding area)  
Position Open.

*(Continued on page 17)*





**Join the Wisconsin Ground Water Association Today!**

**WISCONSIN GROUND WATER  
ASSOCIATION MEMBERSHIP  
APPLICATION/RENEWAL FORM**

Please take a few moments and become a member of, or renew your membership in, WGWA. Annual dues are \$15 for students, \$30 for individuals, and \$25 per person for corporate memberships of six or more. Dues are payable to "WGWA." Complete the following form and send, with check, to:

**Wisconsin Ground Water Association  
P.O. Box 8593  
Madison, WI 53708-8593**

**Individual Membership:** Regular Member: \_\_\_ \$30 Student Member: \_\_\_ \$15  
Name: \_\_\_\_\_ Title: \_\_\_\_\_  
Firm/Agency: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City, State, ZIP Code: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Fax: \_\_\_\_\_  
E-Mail: \_\_\_\_\_

Are you interested in participating in any WGWA Committees?

\_\_\_ Newsletter \_\_\_ Membership \_\_\_ Web Site \_\_\_ Legislation \_\_\_ Program & Education  
\_\_\_ Please check if you do not wish to be listed in a WGWA membership directory.  
\_\_\_ Please check if you don't have e-mail access and need to receive the *WGWA Newsletter* via regular mail.

**Corporate Membership Discount (six or more individuals):** \_\_\_\_\_ \$25/individual  
Firm: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City, State, ZIP Code: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Fax: \_\_\_\_\_  
Corporate Individuals (include each individual's e-mail address, if available. Attached additional page if necessary):

Name	Title	E-Mail
1.) _____	_____	_____
2.) _____	_____	_____
3.) _____	_____	_____
4.) _____	_____	_____
5.) _____	_____	_____
6.) _____	_____	_____

\_\_\_ Check here if your company does not wish to be listed in a WGWA membership directory.  
\_\_\_ Check here if you don't have e-mail, and need to receive the *WGWA Newsletter* via regular mail.