



Wisconsin Ground Water Association Newsletter

INSIDE THIS ISSUE:

President's Message	1
Matt Walton Obituary	2
2004 WGWA Conference Registration Form	3
Conference Abstracts	4
Calendar of Events	6
American Water Works Association Events	6
Susceptibility of Five Strains of Cryptosporidium	6
Presidential Youth Awards	7
Volunteers Needed for a Study Focusing on the Water Quality in Your Community	7
"OUT-OF – BOUNDARIES" Mars: A Water World? Evidence Mounts, But Scientists Remain Tight-Lipped	8
Mars Rover Finds Evi- dence of Water	11
Groundwater Guardian Committee's Corner	13
WGWA Board Meeting	20
Treasurer's Report	21

President's Message

It's nearly May as I write this. Lots of good things are happening and are about to happen. The wild asparagus will soon be poking through the grasses on Wisconsin's roadsides, and it will be time for me to go out and begin the annual harvest. There's nothing better than sitting down to a huge bowl of the stuff, steamed to perfection and treated with a bit of salt, more than a bit of dill, a lot of butter, and... oh, wait a minute...that's right...this message is supposed to be about WGWA!

Like the wild asparagus, more than 600 fifth graders from around the state poked up their little heads in Waukesha recently to participate in the WGWA co-sponsored 2nd Annual Groundwater Festival. As you can see from the article in this issue, the Festival, put on by Lee Trotta and his Wisconsin Groundwater Guardian colleagues, was a rip-roaring success. Personally, I think this and other outreach efforts are the single most valuable thing that our organization does. And although it is a lot of work, if you talk to the leaders of the effort, they will confirm to you that it is a rewarding experience, one that is well worth the effort.

But we have other things cooking, too. Most notably, this includes the annual WGWA Conference on Friday, May 14, in Wisconsin Dells. WGWA President-Elect, Dave Nemetz, has put together a very nice mix of papers, submitted by professionals, grad students, and undergrads. The papers are listed elsewhere in this issue, and the abstracts are found on the WGWA web site: www.wgwa.org.

In addition to the submitted papers, three invited speakers will grace us with their presence: State Sen. Neil Kedzie; DNR Director of the Drinking Water and Groundwater Bureau, Jill Jonas; and UW Prof. Steve Born. They are all coming to discuss the new High Cap well legislation, recently passed by the legislature and signed into law by Gov. Doyle. Sen. Kedzie, along with Rep. DuWayne Johnsrud, led the legislative effort to get this done. Jill Jonas is in charge of that part of DNR which will be in charge of the programs that the

(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; Web site: <http://www.wgwa.org>. The deadline for submissions to the third quarter newsletter is June 12, 2004.

(Continued from page 1)

legislation will create. Jill also was a key participant in the special committee put together by the legislative Council, chaired by Sen. Kedzie and Rep. Johnsrud, which negotiated the terms of the bill with a whole raft of interested stakeholders. Then there's Steve, one of my grad school advisors back there somewhere in the Pleistocene, and now the closest thing Wisconsin has to what we might call a water management statesman, leader, and historian. Steve will give us the benefit of his analysis of what the passage of this bill means, in all those contexts.

And it is well that he should do this. If you haven't been paying attention, note that the High Cap well bill has to do with a whole lot more than simply making life difficult for bottled water companies based in Switzerland! Simply put, the bill is the beginning or a new regulatory initiative in Wisconsin.

You are probably aware that, in 1983 the legislature passed what we, today, call the The Groundwater Law, Chapter 160, Wis. Stats. Among other things, it spawned NR140, the NR 700 series, and is the primary reason why, of the approximately \$12 billion spent nationally to clean up LUST sites, nearly \$1.5 billion has been spent right here in Wisconsin!

But Chapter 160 is all about groundwater quality. It has nothing to do with regulating groundwater quantity. But groundwater quantity regulation is what the new legislation is all about. Can you imagine the new doors this is going to open?

So, come to the conference, learn, eat, drink, and be merry! It should be a memorable occasion!

*Boyd Possin, President
Wisconsin Ground Water Association*

Matt Walton Obituary

It's with deepest regrets to have to tell you that past MGS Director, Matt Walton has passed away. In April of 2002, Matt Walton was awarded the first MGWA Outstanding Service Award *"in recognition of your distinguished service to the citizens of the State of Minnesota and the science of ground water."*

Walton, Matt Savage St. Paul Age 88

Born September 16, 1915 in Lexington, Kentucky, son of Matt Savage Walton and Lilius Oleno Wheeler. Matt received his B.A. from University of Chicago in 1936, his M.S. from Columbia University in 1946, and his Ph.D. from Columbia University in 1951. He was a member of Yale University faculty from 1948 to 1965, worked summers with New York State Geological Survey between 1948 and 1956, lectured at UCLA in 1970/71, was a consulting geologist in Denver from 1972 to 1973, and was Minnesota Geological Survey Director and University of Minnesota Professor from 1973 until 1986. He was active with St. Paul community groups, including Old Town Restorations and Summit Hill Association. Matt passed way on February 25. He is lovingly remembered by wife Kay Ann Thorson, children Matt Savage III, Kate Johns, Lisa Baar, Anne Elizabeth, and Owen Hardwick. A Memorial Service will be held March 13th at the St. Paul College Club Inc., 990 Summit Ave., St. Paul, from 11:00 to 1:00 PM.

WGWA Annual Meeting
May 14, 2004
Howard Johnson Hotel and Conference Center
Wisconsin Dells, Wisconsin

REGISTRATION FORM

Conference fee pays for the facility, lunch and breaks. Please send in your registration today to:

WGWA 2004 Annual Conference
Wisconsin Ground Water Association
P.O. Box 8593
Madison, WI 53708-8593.

Pre-Registration must be received by May 7, 2004

Pre-Registration Fee	On-Site Registration Fee
_____ WGWA Member (Professional)... \$40	_____ WGWA Member (Professionals)... \$50
_____ Nonmember (Professional)... \$50	_____ Nonmember (Professional)... \$60
_____ Students ... \$20	_____ Students ...\$25

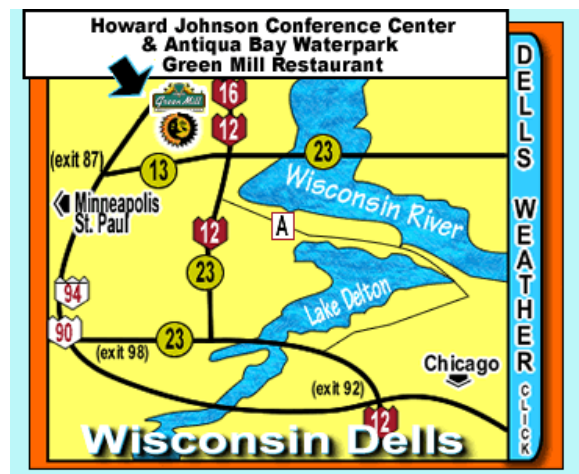
Name: _____ Phone: _____
Affiliation: _____
Mailing Address: _____
City: _____ State _____ Zip Code _____
Email address: _____

DIRECTIONS TO CONFERENCE SITE:

Howard Johnson Hotel and Conference Center,
655 Frontage Road, Wisconsin Dells, WI 53965
800-543-3557

<http://www.antiquabay.com/html/index.htm>

Interstate Highway 90/94 to Wisconsin Dells, exit 87 (Wis Highway 13) west. You will see the Howard Jonson and the affiliated Antiqua Bay Water Park on your left (north), immediately after getting off the interstate. (Note: the Howard Johnson used to be the Holiday Inn.)



2004 WGWA CONFERENCE ABSTRACTS

INVITED SPEAKERS

Sen. Neal Kedzie (R)

Elkhorn, WI

Jill Jonas

Director

Bureau of Drinking Water and Groundwater

Wisconsin Department of Natural Resources

Prof. Steve Born

Department of Urban and Regional Planning

UW-Madison

STUDENT PAPER ABSTRACTS

Selected Wisconsin Groundwater Contaminants Exceeding EPA Standards and Factors Contributing

Steve Hagedorn, Paul Schueller and Justin Van De Hey (Dr. William Bajjali)

Department of Biology and Earth Science

University of Wisconsin-Superior, P.O. Box 2000, Superior, WI 54880

Development of Database and Interactive Website for Pike River Water Quality Monitoring Program, Kenosha, Wisconsin

Allan J. Ingraham, Rachel Nehmer, and John D. Skalbeck

University of Wisconsin-Parkside, Kenosha, Wisconsin 53141

Assessment of a Seasonal Wetland at Chiwaukee Prairie from Hydrologic Data Collection, Pleasant Prairie, Wisconsin

Jamie Lambert and John D. Skalbeck

University of Wisconsin-Parkside, Kenosha, Wisconsin 53141

Modeling Aquifer Storage Recovery for a Representative Setting in Wisconsin

C.S. Lowry and M. P. Anderson

Department of Geology and Geophysics

University of Wisconsin-Madison, 1215 W. Dayton St., Madison, WI 53706

Development of a Water-table Map and Well Constructors' Report Database for Elkhart Lake, Wisconsin

Macholl, J.A. and M.A. Muldoon

Department of Geology, University of Wisconsin Oshkosh

Applying a Health Behavior Theory to Understand Responses to an Arsenic Well Testing Program in the Arsenic Advisory Area

D. G. Severtson and L. C. Baumann, RN PhD

School of Nursing

Gaylord Nelson Institute of Environmental Studies

UW-Madison

R. L. Shepard, PhD

UW-Madison Life Sciences Communication & UW-Extension

(Continued on page 5)

PROFESSIONAL PAPER ABSTRACTS

No Purge Sampling Techniques using Diffusion Bag Samplers and the HydraSleeve®

Nova Clite, PG,
Sr. Hydrogeologist/Project Manager, T N & Associates, Inc.

West Campus Cogeneration Facility

Surface Water Use Mitigation

Jaeckels, Jeff M. P.E., Principal and Kucher, Jan C., P.E. Senior Engineer
BT2 Inc. 2830 Dairy Drive, Madison, WI 53718

Over Pumping the Sandstone Aquifer; Where's the Water Coming From?

John Jansen, P.G., Ph.D.
Senior Geoscientist
Aquifer Science and Technology, W233N2080 Ridgeview Parkway, Waukesha, WI 53188-1020

Snowmelt Export of Sediment and Nutrients from Agricultural Sub-watersheds in Southwest Wisconsin

R. M. Mentz, University of Wisconsin-Platteville
Pioneer Farm, Platteville, WI 53818, mentzr@uwplatt.edu
M. R. Penn, University of Wisconsin-Platteville
Department of Civil and Environmental Engineering, Platteville, WI 53818,
mrpenn@uwplatt.edu
S. Jonnala, University of Wisconsin-Platteville
Pioneer Farm, Platteville, WI 53818, jonnalas@uwplatt.edu
D. W. Owens, US Geological Survey
8505 Research Way, Middleton, WI 53562, dwowens@USGS.gov

The City of Stanley Northwest Well field – Hydrogeology of an Alluvial Aquifer

Darrell Reed, P.G.
Senior Hydrogeologist
SEH Inc., 421 Frenette Drive, Chippewa Falls, WI 54729

Great Lakes Water Use Following the Ecosystem Improvement Principles of Annex 2001

Kathi Ried
CH2M HILL

What you missed by not volunteering for the 2004 Wisconsin Groundwater Festival

Lee Trotta
Wisconsin Groundwater Guardians

Calendar of Events

· Wednesdays April 21-June 23: Dane County Wednesday Watershed Walks, 6:30pm. For more Information, contact: Nancy Schlimgen, Naturalist, Saint Benedict Center, at 836-1631 ext.159, www.sbcenter.org or Jennie Nuese, Coordinator, Token Creek Watershed Association, at 334-8941, www.tokencreek.org, or <http://www.wisconsinyearofwater.org/calendar/index.html>

· May 14: Wisconsin Ground Water Association Annual Meeting, location TBD. For more information, contact Boyd Possin, boydpossin@wgwa.org or visit www.wgwa.org.

· May 18: Wisconsin Groundwater Guardian 4th Annual Meeting, UWSP University Center Rm. 115, Stevens Point, 9:30am-3pm.

· June 2-4: Best Education Practices (BEPs) for Water Outreach Professionals Symposium, The Pyle Center, Madison, WI, 4:30pm Wed.-2pm Fri. Cost: \$95 before 3/31 and \$115 after (includes desert, 2 continental breakfasts, 2 lunches). More info at www.uwex.edu/erc/waterbeps.

May 4 - 5

Ultraviolet and Membrane Technologies Seminar
Silver Spring, MD

May 6

Water Reuse Seminar
Salt Lake City, UT

American Water Works Association Events

May 11 - 12

Vulnerability Assessments (RAM-W™) Seminar
Minneapolis, MN

May 25 - 26

Contamination Monitoring Technologies Seminar
Richmond, VA

May 26 - 27

Security Hardware Seminar (FREE)
San Antonio, TX

June 13 - 17

AWWA Annual Conference and Exposition
Orlando, FL

Susceptibility of Five Strains of *Cryptosporidium Parvum* Oocysts to UV Light

Source: e-Journal AWWA

Ultraviolet (UV) light technology is gaining ground as an effective and inexpensive disinfectant for control of *Cryptosporidium* in drinking water. Previous researchers examining the effects of UV have focused only on UV inactivation of Iowa strain oocysts. However, to accurately assess the technology's efficacy and applicability to drinking water treatment, more information was needed on the UV dose-response of other *Cryptosporidium* strains infectious to humans.

This study investigated the effect of UV doses ranging from 5 to 40 mJ/cm² on five strains of *C. parvum*-Iowa, Moredun, Texas A&M University, Maine, and Glasgow. Results indicated that all five strains of *C. parvum* were highly susceptible to low levels of UV light. A UV light dose as low as 10 mJ/cm² achieved at least 4-log₁₀ inactivation for all strains evaluated, and most strains were susceptible at even lower UV doses, e.g., 2-5 mJ/cm². With the promulgation of new regulations by the US Environmental Protection Agency, UV is moving ahead as a best available technology for controlling *Cryptosporidium* oocysts in drinking water supplies. The results of this study give utility managers a greater understanding of and increased confidence in UV treatment for inactivation of a variety of *Cryptosporidium* strains.-MPM

By:

Jennifer. L. Clancy, Marilyn M. Marshall, Thomas M. Hargy, and Dick G. Korich

Presidential Youth Awards

President's Environmental Youth Awards

If you know one or more students who have done their part to protect the environment, or are interested in doing more, tell them about EPA's President's Environmental Youth Awards (PEYA) program. Kids of any age - from kindergarten through high school - can enter as individuals or as a group. All students who complete an environmental project and submit an application will receive a signed certificate from the President of the United States in recognition of their accomplishments. One outstanding project from each of the ten EPA regions will be presented with a Presidential plaque at an EPA sponsored award ceremony.

Information about the program in general, the entry process, judging criteria, and regional contacts is available at <http://www.epa.gov/enviroed/awards.html>. The deadline for applications is July 31. The Groundwater Foundation also has a limited number of posters describing the program available. E-mail jennifer@groundwater.org or call 1-800-858-4844 to request a copy.

As always, feel free to give us a call if you have any questions or concerns. Thank you to everyone for submitting your 2004 entries in a timely manner! Here's looking forward to a great year!

Jennifer Nelson
Program Manager

Newsletter Advertising Rates

2.5" x 3.5" (business card)
\$20/issue \$60/annual

3.5" x 5" (quarter page)
\$35/issue \$100/annual

5" x 7" (half page)
\$65/issue \$175/annual

7" x 10" (full page)
\$125/issue \$320/annual

Volunteers Needed for a Study Focusing on the Water Quality in Your Community

Researchers at the Johns Hopkins Bloomberg School of Public Health (JHSPH) are seeking volunteers nationwide to obtain groundwater and surface water samples for a study concentrating on the fate and behavior of pharmaceuticals and personal care products in the environment.

Many household chemicals in municipal and residential wastewater can pass through wastewater treatment plants and contaminated national water resources. The fate of these chemicals following introduction into surface waters is largely unknown. Recalcitrant chemicals, such as polychlorinated aromatic disinfectants may pose a potential health risk to populations using contaminated drinking water resources.

For a nationwide study focusing primarily on antimicrobial compounds, our laboratory is seeking volunteers across the United States who are willing to obtain water samples in their communities and mail them to JHSPH for analysis by liquid chromatography mass spectrometry (LC/MS) and gas chromatography mass spectrometry (GC/MS). In return for their efforts, we will provide each participating community with a summary report detailing the concentrations of pharmaceuticals and antimicrobial compounds detected in local drinking water resources.

Interested individuals should send their contact information including full mailing address and phone number to the study coordinator, Mr. Jochen Heidler, M.S. (jheidler@jhsph.edu). Mr. Heidler will contact volunteers to discuss sampling locations of interest and to coordinate mailing of sampling containers and supplies provided by JHSPH for this study. We are looking forward to working with you on this project.

Regards,
Rolf Halden, PhD, PE
Center for Water and Health
Johns Hopkins Bloomberg School of Public Health
615 North Wolfe Street, Suite W6001
Baltimore, MD 21205-2103
Tel: 410-955-5000 Fax: 410-955-1234
www.jhsph.edu

“OUT-OF –BOUNDARIES”

Mars: A Water World?

Evidence Mounts, But Scientists Remain Tight-Lipped

PASADENA, California -- Evidence that suggests Mars was once a water-rich world is mounting as scientists scrutinize data from the Mars Exploration rover, Opportunity, busily at work in a small crater at Meridiani Planum. That information may well be leading to a biological bombshell of a finding that the red planet has been, and could well be now, an extraterrestrial home for life.



rock outcrop -- has also proven to be a scientific bulls-eye. The robot is wheeling about the crater that is some 70 feet (22 meters) across and 10 feet (3 meters) deep.

It is also apparent that there is a backlog of scientific measurements that Mars rover scientists working Opportunity have pocketed and kept close to their lab coats.

There is a palpable buzz here at the Jet Propulsion Laboratory (JPL) in Pasadena, California that something wonderful is about to happen in the exploration of Mars.

There is no doubt that the Opportunity Mars rover is relaying a mother lode of geological data. Using an array of tools carried by the golf cart-sized robot -- from spectrometers, a rock grinder, cameras and powerful microscopic imager -- scientists are carefully piecing together a compelling historical portrait of a wet and wild world.

Where Opportunity now roves, some scientists here suggest, could have been underneath a huge ocean or lake. But what has truly been uncovered by the robot at Meridiani Planum is under judicious and tight-lipped review.

Those findings and their implications are headed for a major press conference, rumored to occur early next week -- but given unanimity among rover scientists and agreement on how and who should unveil the dramatic findings. Turns out, even on Mars, a political and ego outcrop hangs over science

Scientific bulls-eye

It is clear that Opportunity's Earth-to-Mars hole in one -- bouncing into a small crater complete with

For one, the rover found the site laden with hematite -- a mineral that typically, but not always -- forms in the presence of water. Then there are the puzzling spherules found in the soil and embedded in rock. They too might be water-related, but also could be produced by the actions of a meteor impact or a spewing volcano.

A few spheres have been sliced in half and their insides imaged. Patches of these spherules, or "berries" as some call them, have undergone spectrometer exam to discern their mineral and chemistry makeup. Close-up photos of soil and rock have also shown thread-like features and even an oddly shaped object that looks like Rotini pasta.

Brew of dissolved salts

There is speculation that the soil underneath the wheels of both Spirit and Opportunity rovers contains small amounts of water mixed with salt in a brine. That brew of dissolved salts keeps the mixture well below the freezing point of pure water, permitting it to exist in liquid form.

Opportunity has revisited select spots in the outcrop, drawn there, in part, to look for cross-beds -- sedimentary deposits that are formed in beach, river

(Continued on page 9)

(Continued from page 8)

and sand-dune environments. Using its Rock Abrasion Tool (RAT), the rover has carried out several cleaning and grinding sessions on exposed rock outcrop.

Cross-beds are patterns of curving lines or traces found within the strata of sandstone and other sedimentary rocks. Cross-bedding indicates the general direction and force of the wind or water that originally laid down the sediments.

Right around the corner

Opportunity's research is a "work in progress", said Ray Arvidson, deputy principal investigator for the Mars Exploration Rover (MER) project from Washington University in St. Louis. Data is being gathered to present "a coherent story", he said during a press briefing last Thursday.

"That story is right around the corner," Arvidson told *SPACE.com*. "But we need to finish this work in progress, finish the set of experiments, get the data down from the spacecraft, processed and analyzed. Then I think that the story will be known," he said.

Arvidson said multiple working hypotheses are still at play. Water is involved, but only on some of the hypotheses. Until coordinated experiments on the outcrop are completed, what the right hypothesis is remains unknown, he added.

Severing the umbilical cord

Mars exploration using the rovers has allowed on-the-spot "discovery driven science", said MER Deputy Project Scientist Albert Haldeman. He likened the Mars robot work now underway to deep ocean research using remotely operated submersibles.

"It turns out that the best way to explore rocks [on Mars] is go look at craters. Mobility buys us the ability to do that. It was the right fit for looking at rocks," Haldeman told *SPACE.com*. "The discovery from the Microscopic Imager and seeing those spherules and finding a larger population of spherules and seeing them in the rocks and the outcrop—that progression of discovery influences our thinking."

Haldeman said the next step will be severing the umbilical cord between Opportunity and the crater it's exploring. The robot would wheel itself out of that site and onto the expansive terrain of Meridiani Planum.

"That umbilical cord that's hard to break. It's more than even just a tension within the science team," Haldeman said.

Tantalizing hints

Scientists are carefully analyzing the rock data gleaned by the Opportunity rover. "We really want to understand that we've got those figured out right," Haldeman said. Up to now they have offered some "tantalizing hints", he said, that speak to a possible relationship with water.

Piecing together the story of what Opportunity has found involves great care and deliberation, Haldeman said, based on a wide-range of viewpoints and levels of expertise. "We want to be cautious," he explained.

More to the point, the science output from Mars must withstand scrutiny by experts outside the rover investigation teams.

"There are lots of geologists out there who are looking at these pictures and they are starting to drool," Haldeman said. "The American taxpayer that spent \$800 million on this deserves a thorough analysis," Haldeman said.

Slippery slope leading to life

One scientist eagerly awaiting the news from Mars, particularly from Opportunity, is Gilbert Levin. He is Chairman of the Board and Executive Officer for Science of Spherix Incorporated in Beltsville, Maryland.

Levin is a former Viking Mars lander investigator. He has long argued that his 1976 Viking Labeled Release (LR) life detection experiment found living microorganisms in the soil of Mars.

(Continued on page 10)

(Continued from page 9)

In 1997, Levin reported that simple laws of physics require water to occur as a liquid on the surface of Mars. Subsequent experiments and research have bolstered this view, he said, and reaffirms his Viking LR data regarding microbial life on Mars.

Levin detailed his Mars views in a *SPACE.com* phone interview and via email.

"It's hard to image why such bullet-proof evidence was denied for such a long time, and why those so vigorously denying it never did so by meeting the science, but merely by brushing it away," Levin said.

"Of course, now that it must be acknowledged by all that there is liquid water on the surface of Mars," Levin added, "this starts those denying the validity of the Mars LR data down the slippery slope leading to life."

Mars mud

Levin points to Opportunity imagery that offers conclusive proof of standing liquid water and running water on a cold Mars.

Other images show the rover tracks clearly are being made in "mud", with water being pressed out of that material, Levin said. "That water promptly freezes and you can see reflecting ice. That's clearly ice. It could be nothing else," he said, "and the source is the water that came out of the mud."

As for the spherical objects found at the Opportunity site, Levin has a thought.

"I wonder on Mars if it can rain upwards," he said. The idea is that subsurface water comes up through the soils and then freezes when it gets to the surface.

"Maybe these little spherules form just like raindrops form up above," Levin explained.

Levin said that brine on Mars is a code word for liquid water. He senses that great care is being taken by rover scientists because the liquid water issue starts the road to life.

"That's the monument that they are afraid to erect without real due process," Levin concluded.

By Leonard David
Senior Space Writer, SPACE.com

GEOPHYSICAL SERVICES

**Environmental - Geotechnical
Engineering**



651.450.1850 Tel
651.450.1851 Fax
info@3dgeophysics.com

MARS ROVER FINDS EVIDENCE OF WATER

Discoveries from Opportunity suggest that planet was habitable at one time

New York Times

Posted: March 2, 2004

Washington - Water is the elixir of life, and scientists reported almost certain evidence on Tuesday that the tiny crater that holds the Mars rover Opportunity was once soaked in it.

The finding greatly increases the likelihood that Mars was a much more hospitable planet early in its history, possibly even amenable to the rise of life.

The scientists do not know what kind of wet environment existed at the Opportunity landing site: perhaps groundwater percolating up through volcanic ash, perhaps a lake bed that dried up, perhaps something else.

Nevertheless, "we believe at this place on Mars for some period in time, it was a habitable environment," said Steven W. Squyres, a professor of astronomy at Cornell and the principal investigator for the mission.

"This is the kind of place that would have been suitable for life," he went on, but quickly added: "Now that doesn't mean life was there. We don't know that."

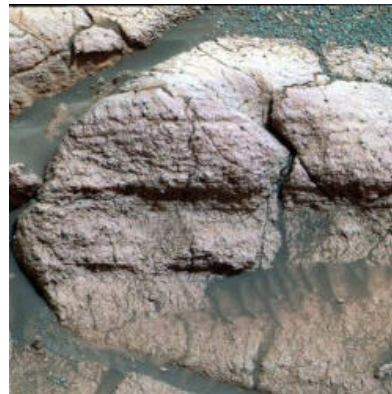
Squyres said he could not say when the area had been wet or how long it remained that way, except that the period was not recent. While ice still exists near the poles, most of Mars, including the equatorial region where the Opportunity set down, is devoid of water, liquid or frozen.

To highlight the significance of the findings, NASA did not hold Tuesday's news conference at the Jet Propulsion Laboratory in Pasadena, Calif., where the scientists have been working, but instead flew them to NASA headquarters in Washington.

"Our ultimate quest at Mars is to answer the age-old question, 'Was there life, is there life on Mars?'" Edward J. Weiler, NASA's associate administrator for space science, said at the news conference Tuesday afternoon. "Today's results are a giant leap toward achieving that long-term goal."

The surface of Mars is cold and arid, but persistent speculation, based on huge canyons and channels carved in parts of the surface, is that the atmosphere was once thick and warm enough to allow liquid water to exist on the surface. Another possibility is that Mars has always been cold, except for brief episodes of torrential rains after volcanic eruptions or meteor impacts.

The mission of the two rovers that NASA landed on Mars in January is to search for signs of past water. At least in a small crater on the flat plains of Meridiani Planum, the landing site of the Opportunity, scientists have succeeded.



A rock on Mars named "El Capitan" by NASA scientists is shown in this photo Tuesday from the rover Opportunity. Chemical and visual analysis of rocks near the rover show that water almost certainly was once there.

Suggestive hints in rock

Since its arrival on Jan. 25, the Opportunity has spotted suggestive hints of past water - fine layers in bedrock that might be sedimentary rock deposited at the bottom of a lake or sea and an iron mineral that usually forms in the presence of water. In both cases, however, there are plausible alternative explanations: The layers could be volcanic ash or sediments carried by wind, or the iron could have formed directly from lava.

But close examination of the bedrock, exposed along the rim of the crater that the Opportunity has been scooting around in, provided four lines of evidence.

The most compelling is large quantities of jarosite, a mineral that contains iron, sulfur and trapped water. "This is a mineral that you've got to have water around to make it," Squyres said.

Instruments also measured high levels of sulfur in the rocks, probably in the form of sulfur salts. "The only way you can form such large concentrations of salt on Earth normally is to dissolve it in water and have the water evaporate," said Benton C. Clark III, chief scientist of space exploration at Lockheed Martin Space Systems and a member of the science team.

Photographs also show holes in the rocks roughly the shape and size of pennies. The scientists believe these are places where minerals carried by water formed crystals that subsequently dissolved or fell out.

The final evidence is found in the curious round pebbles, nicknamed blueberries, that are scattered around the surface and are also embedded in the bedrock. The blueberries, the scientists said, are objects known as concretions that form within sedimentary rocks.

The scientists do not yet know whether the rocks formed in water, but as to whether water later altered the minerals in the rocks, "the answer to that we believe, definitively, is yes," Squyres said.

(Continued on page 12)

(Continued from page 11)

Promoting coming missions

NASA officials used their announcement to promote coming missions and the initiative that President Bush proposed in January to send astronauts back to the moon and eventually to Mars.

"These results from Mars are already laying the foundation for the new vision of robotic and human exploration of the solar system and beyond that was announced by our president from this very stage just six weeks ago," Weiler said.

The discoveries make Meridiani Planum a promising candidate for a future robotic mission, at least a decade away, that would bring pieces of Mars back to Earth for closer examination.

Christopher Chyba, an astrobiologist at the SETI Institute in Mountain View, Calif., who is not involved in the mission, said it was exciting to have solid evidence that liquid water once flowed on Mars.

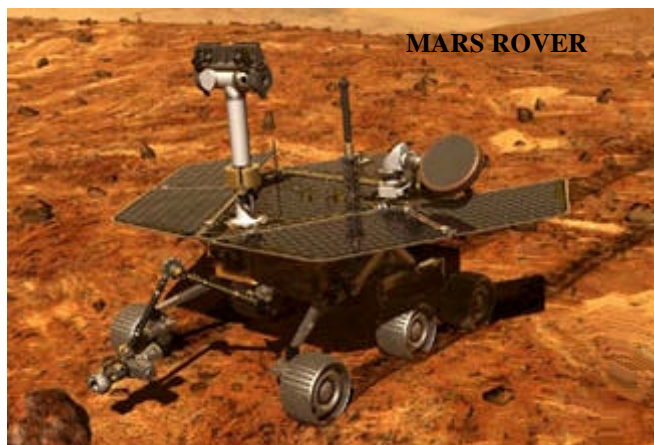
"People have been talking about wet Mars for a long time," he said. "There's nothing like actually having data. It's one thing to talk about it based on models and photographs. It's another thing to be on the surface and have evidence on the surface that Mars was wet. That's an exciting step."

Next, the Opportunity will cozy up to a section of the bedrock nicknamed Big Bend where scientists may find evidence that the rocks not only sat in water but also formed in water.

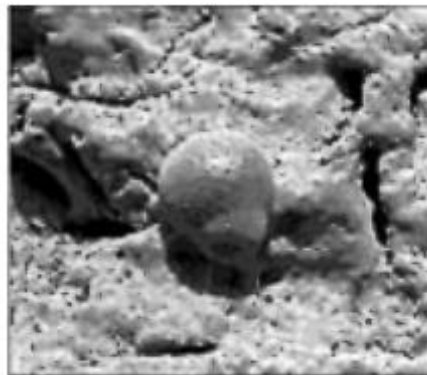
Louis Friedman, president of the Planetary Society, a space advocacy group, said evidence of water on Mars was one more piece in a giant puzzle for understanding life and its origins.

"This reminds us again why Mars is always interesting and a focus of our attention," Friedman said.

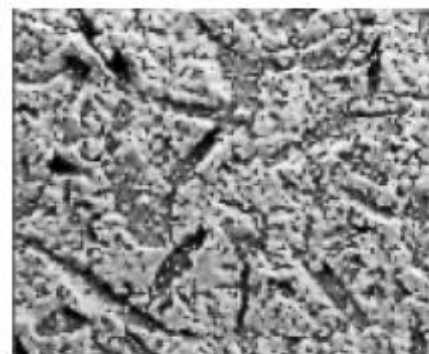
*From the March 3, 2004
editions of the
Milwaukee Journal Sentinel*



Microscopic examination by the rover. Opportunity of an exposed slice of bedrock in the Meridiani Planum has revealed evidence of water.



Sperules from accumulation of minerals in water-soaked rocks.



Indentations, called vugs, where salt crystals associated with water have eroded away.

Quotable

Our ultimate quest at Mars is to answer the age-old question, 'Was there life, is there life on Mars?'

**- Edward J. Weiler,
NASA associate administrator
for space science**

Groundwater Guardian Committee's Corner

Wisconsin Groundwater Festival: The 2nd Annual Wisconsin Groundwater Festival: Sparkling Waters--The Underground Connection was held Friday, April 23, 2004 at Waukesha County Expo Center. About 613 students rotated through 4 hands-on lessons. The knowl-



edge and energy of over 180 volunteers made the day a great success. Many WGWA members were among the volunteers and WGWA gave major financial support also. Of special note, the attending students planted a rain garden that will remain as a lasting mark from our event. A local 4-H group will maintain the rain garden after it's initial planting.

WIGG Annual Meeting: Mark your calendars...the 4th! Annual WI GG Meeting: Keeping the Momentum Going will be Tuesday, May 18th from 9am-3:30pm at UWSP in the University Center, Room 115. All are welcome to attend (GG team leads, GG team members, and any other person interested in the GG program). The special focus areas for the meeting are team membership, groundwater quantity legislation, and wellhead protection vs. development. As at past meetings, each GG team will have up to 10 minutes to share ROA/ROS projects. The WIGG Award Ceremony will occur just prior to lunch.

GG Community in the Spot Light - Milladore Area: Arnie Mancl saw the GG program as a way to get multiple municipalities in the area together to work on their groundwater concerns. Back in 1990, thirteen private wells in the Village of Milladore were contaminated with gasoline. This resulted in the Village of Milladore installing two municipal wells in 1995. Since this time, citizens have been concerned about the quality of their groundwater. The Milladore Area GG took on a well abandonment project as their team's first ROA. They worked with the DNR,

Wisconsin Water Issues

Groundwater Quantity Legislation: A Wisconsin groundwater quantity bill has passed! Learn more about what this bill entails by clicking here ([press release in file 3-10 H2O Bill passes](#)) *Best Education Practices for Water Outreach Professionals Symposium:* June 2 - 4, 2004, Madison, Wisconsin. This symposium will focus on how to move education to the forefront of water management strategies. Symposium participants will learn about research or practical experience in educating targeted audiences about water management. The BEP Symposium will engage national Extension water quality coordinators, outreach professionals, and key stakeholders in fine-tuning Water Outreach National Facilitation Project products and marketing strategy. Our purpose is to best assist natural resource professionals in meeting their water management education and outreach objectives. Symposium sessions will provide a mix of speakers, paper presentations, interactive events, poster sessions and networking opportunities. For more information, visit www.uwex.edu/erc/waterbeps.

Waters of Wisconsin Publications Available:

Wisconsin's Waters: A Confluence of Perspectives was edited by Curt Meine, Director of the Waters of Wisconsin initiative, and reflects the many viewpoints and pools of knowledge tapped by WOW. (See below for the table of contents). Authoritative but never dry, the book serves as the newest edition of Transactions, the Wisconsin Academy's peer-reviewed journal dating back to 1872. Copies are available now for you to order! Members of the Wisconsin Academy can get it free of charge. The volume may also be purchased for \$8.00 plus \$2.50 shipping and handling.

Table of Contents
Preface Curt Meine
Foreword Pat Leavenworth
Contributors

1. Waters of the World Al Miller
2. A Primer on Water Randy Hunt
3. Wisconsin's Waters and Climate: Historical Changes and Possible Futures John J. Magnuson, James T. Krohelski, Kenneth E. Kunkel, and Dale Robertson
4. The Public Trust Doctrine in the 21st Century: Challenges and Opportunities Paul G. Kent
5. Groundwater Policy in Wisconsin: Milestones and Future Directions Stephen M. Born
6. Managing Stormwater at the Source Kenneth W. Potter

(Continued on page 14)

(Continued from page 13)

7. Recreational Water: Microbial Contamination and Human Health Greg Kleinheinz, Colleen M. McDermott, and Reynee W. Sampson
8. Wisconsin Agriculture and Water Pete Nowak
9. Compensatory Mitigation for Damages to Wetlands: Can the Net Losses Be Reduced? Joy Zedler
10. Valuing Water Resources: An Elusive But Critical Input into Public Decision-Making David Marcoullier
11. A Native American Water Ethic: The Roots of Sustainability Glenn Reynolds
12. Earth, Air, Water&Ethics Michael Nelson

Waters of Wisconsin Report - still available. Order one with the new volume of Transactions. Copies are free to Academy members or can be ordered for \$10 plus \$2.50. To order a copy of either publication, email contact@wisconsinacademy.org call 608-263-1692 x17, or send payment to: Wisconsin Academy, 1922 University Ave, Madison, WI 53726.

Water Opportunities and Resources:

Wisconsin Water Policy Database: The online Wisconsin water policy database will be launched in April 2004. This searchable database provides access to Wisconsin's state water policies for all. This project was directed by Steve Born, UW-Madison, and Elisa Graffy, USGS; carried out with the assistance of graduate students in the Fall 2003 Water Policy and Institutions

course; and with the collaboration of the UW Water Resources Institute.

· *Rain Gardens:* A how-to manual for homeowners is a new 31-page color publication from WI DNR and UWEX. This manual provides homeowners and landscape professionals with information needed to design and build rain gardens on residential lots. Guidelines presented in this manual can also be used to treat roof runoff at commercial and institutional sites. To order a copy, call UWEX at 1-877-947-7827 and ask for UWEX GWQ037 or DNR WT-776 2003.

· *The Shoreland Connection:* Linking land water, and communities CD: This free educational CD is available by calling toll free 1-866-850-3866 or filling out a request form at www.theshorelandconnection.org. The CD contains information on topics such as: aquatic plant management, buffers, grants, native plant sources, public trust doctrine, shoreland restoration & management, exotic plants & animals, lawn & garden management, recreational use planning, and Wisconsin water law.

· "Searching" for Federal Grants? Here is a website that features information on all federal grant programs. The site, www.grants.gov, allows anyone to search federal grant listings, download and complete application forms, and apply for grants online. All 26 federal grant-making agencies have information on their grant programs available through the site.

State Senator Neal Kedzie addresses the Festival Crowd



Minutes of Groundwater Guardian Committee meeting of February 18, 2004

Attendees included Lee Trotta, Becky Caudill, Denise Kilkenny-Tittle, and Mary Adelmeyer.

Liaison Reports were dispensed with for this meeting. This is because Lee had not made contact with the Milladore Area Group since the last meeting and none of the other committee liaisons (Janis Kesy and John Jansen) were able to participate in tonight's meeting.

Position status reports began with Lee's report on fundraising. The largest recent donation was \$1000 from StaRite Pumps of Delevan. A \$100 donation came from Sam's Rotary Drillers. Joe got a \$100 donation from Waukesha State Bank. Becky is working on a donation from her employer and they have formed an internal decision group. Denise then listed her recent donation successes. These included \$250 each from Plover River Alliance, Wis. Center for Environmental Ed, and McCain Foods. Lee asked the contact at McCain (Suzanne Sieble) because he has been meeting with McCain and Trout Unlimited representatives about new groundwater legislation. Denise also mentioned a \$500 in-kind donation from the Center for Watershed Science & Education. Lee assured all that donations were keeping ahead of expenses, though a \$500 deposit was due soon to the Expo Center. Denise suggested Lee send an invoice to Joe to get a check for the Expo Center.

Denise then asked for volunteers to solicit food and supply donations from big chain stores in the Waukesha area. Becky volunteered to contact Walmart, Sam's Club, and a local bakery. Lee volunteered to contact McDonald's for drinks, cups, and straws (5 cases of Pepsi products have already been donated by Pepsi). Mary volunteered to contact Golden Guernsey for milk and was encouraged to ask for juice and ice cream also.

The next position status report was by Becky on the Teacher Resource Area. Not much other than plan-

ning and email communications has been done yet. Becky will visit Carroll College by next week to inventory available resources (Joe may have a list). We discussed the many resources available and Denise will send a list of last year's exhibitors. Becky and Lee explained the use of PowerPoint presentations on Rocks & Soils and the Environment at the Teacher Resource Area. These presentations were donated by Thomas Dueppen, Ozaukee County Environmental Specialist. Denise will investigate a CD on another subject. Lee mentioned his invitation to Dan Feinstein of the USGS to attend the Festival to explain the newly created website on the relation of groundwater to the Great Lakes. Internet connection at the Festival may be difficult, but a laptop can be loaded with captured website information.

Other Expo site logistics were discussed such as whether to plan one activity indoors just to allow a warmup on a chilly April day (ave. temp. 47 degrees). Much planning of area boundaries and fencing material is yet to be done, but there is still time.

The next position report was by Mary on Publicity. Mary notified many radio stations and all local newspapers. She has received no responses yet, however, and suspects some articles may be written closer to the time of the event. Lee indicated that his "to-do" list includes writing an article on the approval for our rain garden and that he will copy it to Mary for reminder distribution. Denise suggested sending her articles for submission to the Associated Press via UW-Stevens Point. Mary reported she has made no progress on the program, although many of the pieces are now in place. Lee said he'd help start contacting printers for quotes. Denise said that program layout can be contracted out to a professional and that a person at Stevens Point does that for \$25/hour. Mary also reported that the Waukesha Water Utility will be donating some money.

Leaders for the volunteer coordinator, rain garden lesson coordinator, and signage coordinator positions were not present. Denise asked if we should have a crafts session or not. Without input on Marilyn John's health or volunteers available, it was impossible to decide at this time. Discussion then went to Lee's remaining concerns – the Rain Gar-

(Continued on page 16)

(Continued from page 15)

den lesson plan and organizing a packet-stuffing party. Denise assured all that Suzanne Wade is organizing the Rain Garden lesson plan. When Lee writes his Rain Garden article, he will ask her help. He has already requested plant donations from some likely sources and has given Suzanne copies of the emails. Becky volunteered to help with the envelope stuffing for children's take-home packets. Lee will coordinate with her via email as to a date in early April to do this at Carroll College. He hopes that Joe Piatt and Kae Donlevy (or one of her coworkers) can also help. The RSVP group in Waukesha has been sewing water drop beanie babies for nearly a month already. Lee gave Denise their contact number to check if more material was needed.

The next meeting date was set for Wednesday, March 17th, at 6pm.

Minutes of Groundwater Guardian Committee meeting of March 16, 2004

The meeting started at 6pm and in attendance were Lee Trotta, Joe Piatt, Denise Kilkenny-tittle, Mary Adelmeyer, and Suzanne Wade. Rebecca Caudill was excused due to a conflicting meeting and will call Lee tomorrow to catch up.

Liaison Reports –

Joe and Mary reported that the activities of the Waukesha Group are currently taken up with Festival planning.

Lee reported that the Milladore Area Group is giving a presentation in Green Bay on their well abandonment success and has been sent information on a new potential project involving sampling wells for concentrations of pharmaceuticals under sponsorship of John Hopkins University.

Festival Position Reports –

Rain Garden Lesson:

Suzanne mentioned that Partnership for Rain Gardens is donating their rain-garden design services (value over \$250). Denise said that Tom Derolomo

(Friends of Portage County Lakes) wants photos of the rain garden site and needs the soil type too in order to make recommendations. Suzanne needs 2 instructors per 30-child group plus perhaps 5-9 at the garden site. Lesson rotations were discussed. Out of each 45-minute Rain Garden lesson, a 10-minute break for actual planting or tilling will be taken. This 10-minute period should be scheduled for each Pod in a staggered fashion, so that all groups don't show up at once. A rainy day will require rental of a tent near the rain garden (but none needed over the sidewalk leading there). Lee has requested a tent quote already. Suzanne will try reserving a time on Tuesday (the 23rd) to visit the Expo site and will let others on the committee know what results.

Festival Logistics:

Lee went over the two diagrams he had emailed to committee members of the Arena (rainy day) and outdoor (sunny day) scenarios. Mary caught a mistake on the Arena diagram, which incorrectly listed the color of Pod #3 (it should be blue). Lee will resend the sunny day diagram to Joe. A corrected version of the rainy day diagram will be distributed with the minutes to all committee members. Denise will email a list of tables and chairs needed to Lee and Suzanne. These tables are set in a "U" or square configuration to set the boundaries of the Pod. Therefore, we won't need separation ropes to outline Pods.

Signage:

In Kae's absence, Denise mentioned that most sponsor banners needed are already available electronically. Wooden stakes (24 tall ones & ~60 others) are available in the Carroll College storage area for putting up banners outside. The Festival banner must be redone with the correct theme and date. She wondered whether Kae would be charging for the banners she creates. Lee said he hadn't heard from Kae on Festival matters in awhile. Kae can obtain sponsorship levels from the funding updates Lee distributes periodically. He thought the Festival banner should be placed inside the Arena entry (with sparkly blue streamers hanging from it like a waterfall). The Expo Center will also list the Festival name on the marquee. Denise said panel

(Continued on page 17)

(Continued from page 16)

displays are also available for maps & signs. Each Pod should have a list of schools to be there in page size with a sheet protector. Lee will type up these lists.

Volunteers:

Joe has 52 volunteer forms in-hand. In addition, he expects 10 volunteers from Tri-County, 15 from Pacelli, 25 from Waukesha North, and 20 from Wisconsin River Academy). Perhaps a few from Sussex-Hamilton will volunteer too. That's over 120 volunteers and that may be enough to get by. Joe will accept additional volunteers, however.

Lesson Leaders:

Denise said all are taught to be leaders, but then some are assigned to be under another's leadership. Joe will teach the enviroscape lesson. Joe and Suzanne will teach the rain garden. Pacelli students will lead the groundwater model lesson. Tri-County will lead plume of contamination. Wisconsin River Academy will lead pucker effect and a few more leaders will be needed for that lesson. We need other volunteers to lead the Soil Tube Races (perhaps Waukesha North). Suzanne will bring an Enviro-scape model with her on her March 23rd visit to the Expo Center. Denise will secure the others. Joe went through his list of volunteers looking for lesson-leader types. Joe will ask lesson leaders to wear a colored shirt to match their Pod.

Treasury/Fundraising:

Joe reported 14 cash donations totaling \$5050 at Carroll College (a couple hundred is at UW-Stevens Point). The most recent was Waukesha Water Utility giving \$100. Denise went through a list of donations she expects to arrive soon. She asked if Lee had a list of planned expenses for comparison. Lee listed \$700 for entertainment, \$50 to \$100 for entertainment lodging, \$1093 for Arena and grounds lease, \$0.85 per chair, \$6.50 per table, and unknown amounts for tent rental, food, garden excavation, program printing, signage, and postage. He mentioned that Joe's cash list leaves out many in-kind donations from people like McDonalds (orange drink) and Applied Ecological Services (plants). Denise recommends contacting the Wau-

kesha area Lions Club, Elks, Moose, and Rotary. Denise will send the Lions Club contact. Mary will contact the Lions Club. Lee will contact the Moose Lodge. Lee will ask Becky if Walmart donated anything. Purchases of supplies for the lessons are dependent on that. Lee will send Joe the email for Ann Rowland. Joe will contact the entertainer about discounted lodging at the Select Inn.

Teacher Resource Area:

In the absence of Boyd and Becky, Lee reported that Dan Feinstein (USGS) will come to demonstrate groundwater interaction with Lake Michigan. Denise will bring a Groundwater Guardian display and reported there will be an "invasive species" exhibit. Suzanne will provide Rain Garden Education Kits for the teachers. Joe said, "Becky has not yet inventoried the materials in storage at Carroll College".

Publicity:

Mary just returned from a week away. We discussed press releases planned. Mary will submit releases on Ann Rowland, the Rain Garden, and Dan Feinstein's presentation on Lake Michigan interaction (with a release on the Governor's attendance pending). We should mention major sponsors (WGWA and Sta-Rite) in each press release. Mary will start getting quotes for printing of the program. Denise and Joe can make necessary contacts at their universities, if given quote details. Mary will provide those details based on the example quote Lee sent her (with possible options on page size and quantity). Lee will send Mary the Rotation Schedule for possible use in the program.

Discussion of open tasks –

Denise will be at the Festival in spite of her tentative length of stay in Wisconsin and will bring remaining supplies with her to the Arena on Thursday, April 22nd. Denise will print evaluations for students, teachers and lesson leaders. Lee and Becky will insert proper number of student evaluations and one or two teacher evaluations in each teacher packet (to be distributed the day of the Festival) during their packet stuffing party.

(Continued on page 18)

(Continued from page 17)

Denise will ask Glen Rasmussen to coordinate the food pickup and setup. Not as much food will be needed at the Arena for breakfast as the group from Stevens Point will be fed on the bus.

It was decided that no crafts session will be offered.

Joe will ask for a blowhorn from his Athletic Department to signal rotation times.

Handling of the Governor's invitation –

Lee will call the Governor's staff to get the protocol on how to formulate the invitation and then proceed with the invitation in that manner. The invitation will request that he use the Groundwater Festival stage for the signing of new groundwater legislation (Assembly Bill 620). The co-authors of the Bill (Senator Neal Kedzie and Representative DuWayne Johnsrud) will probably be invited also. This media event is anticipated to use a total of 15 minutes of the entertainment session and the Governor can decide at which end of the session (2:20 to 3:20pm) he'd like it to occur. Joe will seek a still photographer and a video camera person for Festival activities from among Carroll College students/teachers.

Liability insurance for the event –

A certificate of proof of insurance is needed when submitting the Expo contract. Lee will contact WGWA about obtaining a "Special Event Coverage" rider on their insurance policy.

NEXT MEETING –

Scheduled for Tuesday, April 6th at 6:00pm.

Minutes of Groundwater Guardian Committee meeting of April 13, 2004

Meeting began at 6pm. Lee Trotta, Mary Adelmeyer, Denise Kilkenny-Tittle, and Becky Caudill were in attendance.

Joe Piatt had sent in his Treasurer and Volunteer reports earlier and both areas look good. He had also spoken with Suzanne Wade and the Rain Garden preparations are on-track

Lee mentioned progress on arranging for volunteer nametags for helping keep the Festival area secure. Teacher confirmations are done and no schools have dropped out.

Mary asked Lee to bring his camera for her to use at the Festival. Mary will help pack lunch bags with the help of RSVP volunteers beginning at about 9:45 am.

Denise said the rock buckets should be available for pickup by Tuesday, April 20th. Lee will store them until Thursday, April 22nd, for reuse as water buckets at the Festival. She mentioned the most recent donations might not yet be recorded: both Stevens Point Education Foundation and AWRA gave \$250 each.

Becky said the Teacher Resource Area is under control. She has not heard from Boyd. MMSD just delivered a box of info. The challenge will be finding room for all handout materials. Lee mentioned technical help available from Dan Feinstein and Tom Duepper. Lee will check with Joe on bullhorn availability from Carroll College (for announcing of Dan's presentation, etc.)

Denise mentioned that breakfast will be provided for the 60 volunteers coming from Stevens Point; so don't buy for 120. Lee is negotiating with Cousin's Subs to provide sandwiches for lunch at a discount. Lee will arrange for ice and try to get all food items to the Festival on time. Lee's wife, Beth, will serve the food and will welcome any help available.

Mary sent out the press release on schools attending to their local news outlets. Lee suggested she send the PDF file of our program as a reminder to other area media. Final program copy has been sent to the printer (Interstate Printing). Mary will check the hard copy for

(Continued on page 19)

(Continued from page 18)

approval before printing. Lee warned we should ready a press release in case the Governor confirms his attendance. Arrangements with the Milwaukee Journal Sentinel reporter have not yet been made, but a message has been left.

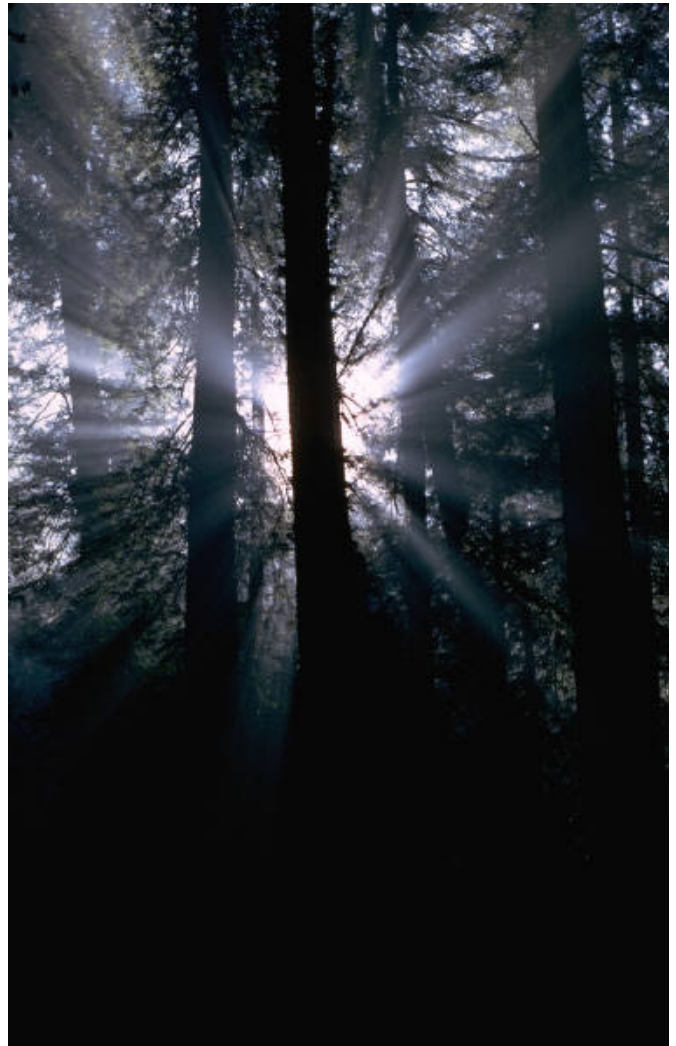
Lee mentioned that Joe is getting the signage prepared and Kae Donlevy will later install it. Lee asked how the silver curling ribbon gets attached to the main Festival banners. Denise said one could use tape or staples. Denise will bring a staple gun. Denise said the paint sticks are handles for hand-held signs to be carried by Pod guides. The guides will lead children out of the Arena with them. The chairs where the children were seated will remain there permanently throughout the day (except for a few that might be moved on a rainy day to make room for Red Pod activities). Denise said that (whether indoors or outdoors) the Groundwater Model lessons (lesson A on festival maps) would not need chairs. These lessons are done standing up. That reduces the number of chairs we will be charged for by about 30 in each Pod (150 total).

Lee will send Teri Adlam (Expo manager) a copy of these minutes as notification.

Denise mentioned that after the Festival the Stevens Point volunteers will warm up pizzas in the Expo oven for their ride home. She could use a few donated cookie sheets for this effort. Denise will clean them. Lee will ask his son, who works in pizza delivery, if he has access to cheap pizza pans.

The NEXT MEETING will be in the Arena building at the Waukesha Expo Center on Thursday, April 22nd. The Arena will open for our use from 8am to 4:30pm. Come help with preparations anytime during that period, if you can. Bring everything you have that will be needed for the Festival and place it in the appropriate spot in the Arena building (Fox River Room for storage, Teacher Resource Area, or kitchen). Lee will be there all day from 9am until about 3:45 pm (except for brief pickup duties). Denise will arrive around noon. Let's get ready to party!!!!

*A cubic mile of fog is
made up of less than a
gallon of water.*



(Continued on page 14)

WGWA Board Meeting, March 29, 2004 (Conference Call)

Persons present: Boyd Possin, Marilyn Weiss, Tom Riewe, Janis Kesy, Dave Nemetz, and Lee Trotta

I. Call to order about 7:00 pm.

II. Last meeting minutes (January 26, 2004)- Minutes motion to adopt minutes by Marilyn, seconded by Dave. Minutes are posted on website.

III. Treasurer's Report – Account balance at the beginning of 2004 was \$12,989.57. Account balance as of March 29, 2004 is \$17,695.04. Marilyn to get a credit card for Dave.

IV. Membership Report – As of March 29, 2004, 193 members. Nine are new members; one student member, 128 corporate members and remainder are individual memberships.

V. Old Business

- Education Committee – Brian Hahn not available for call. Brian reported to Boyd that he has called some professor regarding their students presenting papers. Overall nothing has been occurring at college level. Anything WGWA can do for colleges? Boyd to follow up with Brian. K-12 education – Groundwater guardians busy with Groundwater Festival planning.
- Newsletter – Lee Trotta reported next newsletter to be published early May. Lee could use one to two more technical articles. Discussed possible articles – comparison of WI and MN newsletters and membership (article was in MN newsletter). Groundwater legislation. Tom mentioned special casing depth issues/ arsenic boundaries.
- Groundwater Festival – April 23, 2004 at the Waukesha Expo. Lee busy with planning. About 120 volunteers so far. Expect approximately 600 5th graders to be attending. Funding – raised about \$5000 (\$2000 from WGWA,

over \$1000 from Starite pump). Need about \$7000. Board discussed WGWA donating additional money. Marilyn made motion to donate another \$1000 to the Groundwater Festival. Janis seconded motion.

- WGWA Spring conference – May 14, 2004 in Wisconsin Dells. Still looking for Keynote speaker. Discussion on potential speakers. Boyd attending a thank you luncheon for those whom participated as advisors to the GW legislative committee on March 30 in Madison. Boyd will check on potential speakers at luncheon. Dave to prepare a WGWA notes reminder of conference and deadline for papers. Boyd to prepare conference registration form. Need presenters. Discussion for future conference dates. May is a bad month for colleges, look to put conference back in April.
- Fall field trip – Dave followed up with MGWA. At this time may not be a potential to team on trip. Discussion on location of trip to SW WI karst area. Dave to do further checking.

VI. Next board meeting Monday May 3, 2004.

VII. Boyd motioned to adjourn meeting at 8:05 p.m., Marilyn seconded motion.

News from the Treasurer

Marilyn M. Weiss

For Transactions Between: 1/1/2004 and 3/31/2004

Account Name	Withdrawals	Deposits	Balance
Beginning Balance		\$12,989.57	\$12,989.57
Membership			
Dues	\$30.00	\$5,375.00	\$5,345.00
Mailings	\$113.68	\$0.00	(\$113.68)
Newsletters			
Production	\$400.00	\$0.00	(\$400.00)
Board Meeting			
Phone Charges	\$94.65	\$0.00	(\$94.65)
General			
Misc.	\$10.00	\$0.00	(\$10.00)
Misc. Meetings			
Phone Charges	\$33.90	\$0.00	(\$33.90)
Other	\$17.30	\$0.00	(\$17.30)
Web			
Want Ads	\$0.00	\$30.00	\$30.00
TOTALS	\$699.53	\$18,394.57	\$17,695.04

The 2004 Board, Committee, and Area Coordinators

President

Boyd Possin
Environmental Compliance Consultants, Inc.
Phone: 920.434.5023 Fax: 920.434.6381
boydpossin@eccinow.com

President-Elect

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

Secretary

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

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

Past President (2002-03 President)

Margy Blanchard
Montgomery Watson Harza
Phone: 608.231.4747 x233; Fax: 608.231.4777
Margaret.C.Blanchard@mwhglobal.com

At-Large Board Members

Thomas Riewe
Wisconsin Dept. of Natural Resources
Phone: 608.266.8697; Fax: 608.267.7650
RieweT@mail01.dnr.state.wi.us

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

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

Nova Clite, PG
T N & Associates, Inc.
Phone: 414.607.6727; Fax: 414.777.5892
nclite@tna-inc.com

Web Site

Joan Viney
Phone: 608.279.9598
jviney@charter.net

Education Committee

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

Groundwater Guardian Committee

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

(Continued on page 23)

(Continued from page 22)

Area Coordinators

We are looking for coordinators in many of the following areas. If you are interested, please contact Boyd Possin.

Western Area

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

Southern Area

(Madison and surrounding area)

John Tweddale

BT²

Phone: 608-224-2830 and 608-224-2839

jtwweddale@bt2inc.com

North Central Area

(Stevens Point, Wisconsin Rapids, Wausau, Rhineland, surrounding area)

Tod Roush

Maxim Technologies

Phone: 715.845.4100; Fax: 715.842.0381

troush@maximusa.com

Mark Strobel

Earth Tech, Inc.

Phone: 715-342-3022; Fax: 715-341-7390

mark.strobel@earthtech.com

Northeast Area

(Green Bay, Appleton, Oshkosh, Fond du Lac, surrounding area)

Position Open.

Southeast Area

(Milwaukee, Sheboygan, Racine, Kenosha, surrounding area)

Scott Brockway

Tetra Tech EM

Phone: 262.821.5894 X232; Fax: 262.821.5946

brockws@ttemi.com

Judy Fassbender

Applied Environmental Solutions, Inc.

Phone: 414-507-5571; Fax: 262.560.1963

gofish@globaldialog.com





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.