

Minnegram

Water Resources Center

UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

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June 2010

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The Water Resources Center is affiliated with the College of Food, Agricultural and Natural Resource Sciences and University of Minnesota Extension.

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Canadian ambassador to the U. S. speaks to WRS water policy class about international water agreements

Canada and the United States share water resources, watersheds, and the challenges and opportunities posed by their geographical juxtaposition. On March 25, Canadian Ambassador Gary Doer visited WRC co-director Deb Swackhamer's Water Resources Science (WRS) Water Policy class, offered jointly with the Humbert H. Humphrey Institute of Public Affairs, to discuss these challenges and opportunities. Water has a high emotional, symbolic, and financial value for a nation. The United States and Canada share many water resources, necessitating formal agreements between the two countries. Doer spoke about the logistics of crafting water-sharing agreements, using the Red River Basin as an example. Operating on the basic principle that there should be no diversion of



Photo credit: Sobpia Giris

Canadian ambassador Gary Doer spoke about transboundary water policy at Deb Swackhamer's WRS water policy class at the University of Minnesota Humphrey Center's Cowles Auditorium on March 25.

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"Women and Water Rights: Rivers of Regeneration" symposium panel discussion brings together artists and water professionals



Photo Credit: Sean Smuda

The Restoring Balance sculpture by Liz Dodson and James Brenner evokes the feminine quality of water restoring balance to the Earth.

Motivated by the belief that the earth is facing a water crisis and that two thirds of the world's population may live in areas facing moderate to severe water stress, organizers created "Women and Water Rights: Rivers of Regeneration," an art exposition and symposium that ran from February 23 through March 25 at the Katherine E. Nash Gallery at the University of Minnesota.

Along with artwork by national and international artists, a two-day symposium, "Global Policy-Local Action," brought together local and international experts in areas such as legislative policy, agricultural practices, and industrial regulations, to discuss accountable water guardianship and water as a basic human right. WRC co-director Deb Swackhamer moderated the sessions as panel members presented their views of the connections between women and water and viable change in the way that water resources are managed.

"We heard from women who are state leaders on water issues, as well as from international water activists--and two clear messages emerged: that women have the potential

Water rights, continued on page 5



We've had an early spring in Minnesota. The peonies have come and gone, and I've harvested three rounds of rhubarb. We seem to be keeping pace with the frantic pace of Mother Nature at the Water Resources Center – we're in the final phase of the Minnesota Water Sustainability Framework, we're embarking on a joint project with the UM Libraries to make some of our older and less available books and reports accessible on-line, we have several newly funded research and outreach projects, and we've survived another round of budget cuts.

The eight technical teams of the Minnesota Water Sustainability Framework are wrapping up their work, and their white papers identifying gaps and framing needs around water use, policy, education, and economics are nearly ready. We developed three foundational white papers on *Minnesota's Water Supply*, *Minnesota's Water Use*, and *Minnesota's Water Quality*. All of these papers will be posted over the next month on our website, wrc.umn.edu/framework. We thank the more than 200 people who contributed to this important part of the Framework. The next phase of the project will develop the recommendations to address these needs, and put them into a framework that comprehensively addresses water quantity and quality, as well as human and ecosystem needs, and that includes priorities, timelines, measures of efficiency, and effectiveness of implementation. This part of the project will be done by the Synthesis Team, a newly formed group of water leaders from the public, private, academic, and non-governmental sectors, along with informed citizens. We will meet about every other week through the summer and into the fall, and will seek feedback on the draft Framework sometime in the fall. Our final Framework will go to the Legislature in January of 2011.

Our project with the UM Libraries will make our older holding at the Center more accessible. This summer our student workers will scan our older non-electronic reports and "gray" literature acquired over the years from purchase or from donations of faculty and staff – these documents will go to the UM Library as part of the Digital Conservancy Library project. Anyone will be able to access them and search them online. We are very excited to make this "hidden" literature available to our students, faculty, staff, and to anyone else interested in water resources.

Like all other universities around the country, we have been hit by severe budget cuts, affecting state general allocations, state Extension funds, and Agricultural Experiment Station allocations. The WRC is very fortunate to have a diverse portfolio of funding, and thus has more flexibility and cushion to help weather the severity of these cuts. We will continue to analyze our strategic directions, opportunities, and priorities so that we will be as effective in programming and impact as possible.

On a more upbeat note, let me finish by congratulating this year's Water Resources Sciences graduates – kudos and best wishes to Jenna, Jake, Charlie, Bill, Sheila, Andrea, Bridget, Jonathon, Shannon, Larry, Marian, Brittany, Candice, Bruce, Eric, Caitrin, Scott, Kara, Christine, E.J., Caitrin, Tim, and James.

Enjoy your summer,

Deb Swackhamer, WRC co-director

Professor shares lessons learned while at NSF

Professor Bob Sterner, EEB, WRS graduate faculty, recently returned from a two-year stint as Division Director of Environmental Biology at the National Science Foundation (NSF). *Minnegram* asked him about his experience in Washington DC.

What motivated you to go to NSF for two years?

It was an opportunity to influence environmental research funding, to make the case for increased research in environmental biology, and to align new funding with emerging priorities such as climate change and reduced biodiversity. Changing "hats" was interesting. For years, I was the one lobbying proposals "over the wall," hoping for funding. This was a chance to be on the other side of the wall, and to participate in the management side of science policy formation.

This is a different experience from a research sabbatical, and longer; what did you get from the experience?

In a single word, perspective. I was forced to think very broadly and look outward at the bigger policy picture rather than focusing inward, on my own research. The process of creating a budget forces you to set priorities to determine what gets funded.

I also relished the opportunity to connect biology to its sister sciences of geology and sociology. NSF is structured into traditional disciplines but there are many activities that cut across these fields. I worked often on activities that brought biology, geology, and the social sciences together. An example is the NSF activity called Multi-scale Modeling, which combines biology and geology.

What advice do you have for faculty at UM who might apply for NSF grants through the Division of Environmental Biology?

Be persistent. Be optimistic. The nature of science funding has changed. The days of a funding model based primarily on a single researcher submitting a single investigator proposal are behind us. Group proposals are very common. Science is done more and more in teams. This means individuals submit more proposals than they used to, and the chance of any individual being funded in any one year is higher than the chance of any one proposal getting funded.

Read the RFP directions closely; funders are very precise about what they want to see in a proposal. Creating a proposal from a concept is a rigorous exercise, and you can tell when a researcher has put in the effort to describe the excitement she feels about the project. Those are the proposals that float to the top.

Be concise and clear. Be interesting.

Would you encourage other faculty to consider these kinds of opportunities?

Yes I would. To have an opportunity get outside of academia for a different view is a privilege. It is a little scary to separate yourself from the familiar and from home.

What did you miss most about Minnesota?

DC was interesting. It is full of ambitious, temporary residents, working hard at making the most of their time there. But Minnesota is home. I missed my students and lab mates. It felt great to come home.

Focus groups provide participants with an opportunity to learn about conservation drainage techniques

One hundred years ago, Minnesotans were industriously digging ditches and installing sub-surface clay tiles to establish major artificial drainage systems. Their motivation was to improve public health as well as to create more farmable land. They were very successful, creating a massive, largely invisible infrastructure across much of our state. Artificial drainage is essential to the state's agricultural economy, so not surprisingly, new drainage activities are still common, sometimes to the detriment of the surrounding environment. Ann Lewandowski, Research Fellow with the Water

total and peak flow and woodchip bio-filters to reduce nitrogen losses; storage practices such as impoundments, which slow down the release of water after a heavy rainfall; and alternative system designs such as culvert sizing and two-stage ditches.

Dittrich and Lewandowski conducted a total of nine focus groups across the state, three with each of three stakeholder groups: engineers and agencies, farmers and contractors, and drainage regulation authorities. Meetings were held in the northwest, west central, and southern regions of Minnesota. Partici-

group. Gary Sands, UM BBE, spoke to engineers and agency members about innovative, low- impact drainage plans.

One of the messages heard repeatedly from focus group participants was the importance of personal relationships – among the landowners within a community, and between landowners and the various technical assistance providers and government staff. The quality of these relationships facilitates meeting multiple goals. Another common message was the importance of site-specific approaches: none of the proposed practices and designs is appropriate for every situation, and any of them can fail or be harmful if poorly implemented or badly maintained. Good relationships between landowners and technical assistance providers facilitate effective site-specific approaches.

Some of the proposed practices – such as buffers and side inlets – are fairly well-understood and participants had observed their benefits. However, Lewandowski noted, “For some of the other practices, we need to have a lot more discussion and research before they are ready for prime time.” These other practices include two-stage ditches and culvert sizing for short-term water storage. “We’ll need to address concerns about different options for each region and for each stakeholder group,” Lewandowski added.

A full report of the results is expected this summer. For more information, contact Ann Lewandowski, alewand@umn.edu, 612-624-6765. For more information about conservation drainage, visit: mda.state.mn.us/protecting/conservation/practices/consdrainage.aspx.

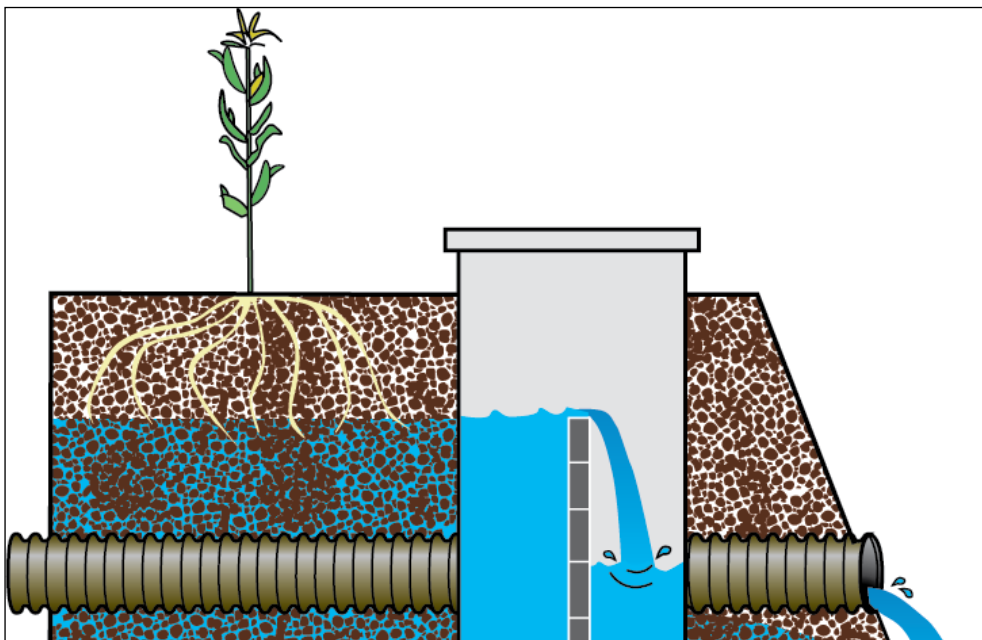


Illustration: Purdue University Extension

This illustration shows how using a water control structure in a pipe regulates water flow. Here, the outlet has been raised to store water for crop use in midsummer.

Resources Center, and Mark Dittrich, senior planner with the Minnesota Department of Agriculture, hope to educate stakeholder groups about new drainage technology research called conservation drainage, which minimizes environmental impact.

Conservation drainage is a suite of designs, structures, and practices that provide the benefits of artificial drainage while minimizing negative environmental impacts. It includes field-scale practices such as controlled drainage (also called drainage water management) to reduce

participants were asked about the feasibility of various drainage approaches and what they understood about impacts of drainage. “We realized we needed to listen first to the people who are actually making the decisions about how drainage gets done,” says Lewandowski. “We wanted to know what alternatives they thought would work and that they could implement.”

Each focus group also heard a presentation from a speaker chosen specifically to address the concerns of that particular

Winter-hatching midges: tiny indicators of the impacts of climate change

Tiny insects that live in the cold waters of trout streams could prove to be key predictors of the effects of climate change on Minnesota's rivers and streams, according to Leonard Ferrington, UM Entomology professor and member of the WRS graduate faculty.

Ferrington leads the Chironomidae Research Group, a team that includes entomologists as well as students in the Water Resources Sciences graduate program. They have developed a rapid biological assessment protocol involving the winter-hardy family of aquatic insects called Chironomidae. Chironomidae are extremely sensitive to temperature changes and highly affected by temperature swings, and that, Ferrington says, makes them a tiny but important indicator of climate change.

Dressed in parkas and insulated chest waders, the researchers begin in late November to collect larvae in the water and adult flies living on the snow along stream banks. With colorful names like *Diamesa nivica-*

ernicola (dweller of snow caves), *Diamesa cheimatophila* (lover of winter), and *Diamesa chiobates* (one that walks on the snow), winter-hatching chironomidae, commonly known as midges, are a welcome sight to a Minnesota entomologist's eyes. "Most people can't believe Minnesota has insects in the winter, but we sure do," says Ferrington, who, like the insects he studies, thrives in cold weather. "In fact, winter-hatching midges provide Minnesota with some of the best winter fly fishing spots in the Upper Midwest."

Ferrington's WRC-related research focuses on winter-hatching midges living in and along Minnesota's most celebrated trout streams, such as the Vermillion River in Farmington, Hay Creek near Red Wing, and Trout Brook near Cannon Falls.

Midges are mosquito-sized, non-biting aquatic flies found all over the world. They're rich in diversity—over 200 species in Minnesota alone—and tolerate a wide range of environments, from the most pris-

tine to the highly degraded. But the insect's claim to fame is its role in fly-fishing—pop culture has immortalized them on the kitschy fishing hats of cabin-loving grandfathers everywhere.

Ferrington's team tests the adults and larvae for temperature sensitivity in their environmental laboratory on the St. Paul campus by using tiny thermal probes to monitor their internal temperature. Climate change is predicted to have a greater impact in colder regions, and consequently it could have a dramatic impact on the organisms that live in cold environments like midges and the trout that eat them.

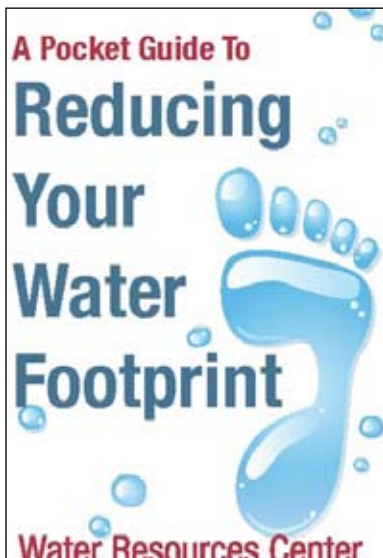
"Anthropogenically-induced climate change will likely result in range shifts and extinctions leading to alterations in the composition and structure of aquatic insect communities," says Ferrington. "Our research will improve the knowledge of how climate change impacts cold-adapted species in cold habitats."

WRC's water saving pocket guide simplifies conservation

Whether on a radio interview or talking before a group of volunteers, Water Resources Center co-director Deb Swackhamer often gets a receptive response from the public on the topic of Minnesota's water. "I'm constantly impressed by the number of people who ask me what they can do to help conserve and protect our water resources," she said. "And often, people are looking for answers to very basic stuff—like whether bottled water is safer to drink than tap water or how rain gardens work."

Scheduled to speak before the Annual Women's Breakfast sponsored by the Minnesota Center for Environmental Advocacy, Swackhamer consulted with her staff to create something beyond the

typical who-we-are-and-what-we-do fact sheet. "We wanted something a little more playful, yet useful, something people might actually hang onto after the presentation," she said.



Inspired by the Monterey Bay Aquarium's Seafood Watch pocket guides, the Water Resources Center developed "A Pocket Guide to Reducing Your Water Footprint." The guide, which is downloadable at wrc.umn.edu, aims to make conserving water simple—

something all of us can do each day, whether in the kitchen, in the bathroom, or out shopping for dinner.

Based on the idea that lots of small changes can make a big difference over time, the guide explains the concept of a water footprint and offers simple, consumer-friendly ways to make smart water choices on a daily basis. The guide offers simple tips like keeping a bottle of drinking water in the refrigerator to avoid running the tap for cold water, or choosing a commercial car wash that recycles water over washing your car in the driveway. It also busts popular myths on the topics of tap versus bottled water and antibacterial soap versus plain soap and water.

So far, the guides have proven very popular. "I had several people ask if they could take a handful, they wanted them for their offices. And just about everyone had folded one up and tucked it in her purse."

Large Lakes Observatory to “Glide” Across the Great Lakes

By Marie Zhuikov

In 2007, the UMD’s Large Lakes Observatory (LLO) used a grant from the National Science Foundation to purchase a Webb Electric Glider that collects temperature and conductivity data. After testing in inland lakes in 2008, the glider was deployed in Lake Superior in 2009 through funding from the Great Lakes Observing System (GLOS), a project supported by the National Oceanic and Atmospheric Administration that provides access to data for the Great Lakes and St. Lawrence Seaway system.

In 2010, LLO researchers will deploy the glider in the western arm of Lake Superior, probably off the coast of Two Harbors and along the South Shore. With additional GLOS funding, it will be deployed in lakes Michigan (near Milwaukee) and Huron as well. The LLO hopes to use the glider to conduct research that will, for instance, aid fisheries managers to develop a better understanding of the physical environment where fish live.

Although gliders have been used in saltwater oceans for many years, the Webb’s 2009 deployment was the first time one was used in fresh water. Jay Austin, Assistant Professor of Physics with the LLO, Water Resources Science faculty member and glider coordinator, likened the deployment

of the \$74,000 piece of equipment off the decks of the LLO’s research vessel to sending a kid off to kindergarten. “It was nerve-wracking,” Austin said.

The glider moves by actively controlling its effective buoyancy taking on and releasing water, causing it to rise or fall and “fly” using its wings. A compass and onboard navigational computer helps it navigate and

communicate via satellites. The glider dives to depths of 200 meters, and surfaces every few hours to receive new instructions or to transmit data. It also stores data for downloading once it completes its mission.

The glider measures water temperatures and conductivity. Additional funding from GLOS will allow researchers to add chlorophyll, turbidity, and dissolved oxygen sensors to the glider. The batteries that power it can last longer than 30 days, allowing for sustained, high-resolution measurements at a relatively low cost compared to other sampling devices.

Austin is careful to keep the glider out of harm’s way. “The areas where we deploy it are chosen to stay out of the way of fishermen, fishing nets, shipping lanes and other sorts of things,” Austin said.

“The glider itself doesn’t take any fundamentally different measurements relative to other sampling devices like a mooring buoy or an instrument towed behind a boat,” Austin said. Rather, it provides high-resolution cross-section views of temperature and depth profiles, like an MRI does for body parts.

It’s also cheaper. “With a boat, you can’t afford to stay out there for two weeks when it costs thousands of dollars per day,” Austin said. “That is what makes this a real game-changer as far as how we’re studying the lake.”



Photo Credit: Marie Zhuikov

Jay Austin, WRS graduate faculty, UMD, displays the Webb Electric Glider that the Large Lakes Observatory will deploy to gather information to aid in research about the lake environment’s effect on the fish living there.

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to improve water management and to play a more important role, as they are often closer to the daily use and provisioning of water, especially in developing countries, and that environmental literacy is essential for kids, and needs to be integrated into the education of girls and boys,” said Swackhamer.

Lead event coordinators Liz Dodson, Women’s Caucus Art board member,

Marilyn Cuneo, Minnesota Metro Women’s International League for Peace and Freedom, and Diane Katsiaticas, UM professor, Department of Art, designed the project to address global water shortages and the role that women should play in planning for the future of water provision and management. “Woman and Water Rights: Rivers of Regeneration” was sponsored by the UM Department of Art, Twin Cities, the Hubert H. Humphrey Institute of Public Affairs, the

Institute on the Environment, UM Consortium for the Study of the Asias, UM Office of International Programs, the University Women’s Center, the Women’s Caucus for Art, the Women’s International League for Peace and Freedom, the Puffin Foundation, the Center for Science, Technology, and Public Policy, and the River Life Program.

Community News

William Arnold (WRS graduate faculty, CE) received a National Science Foundation project, “Using triclosan and polyhalogenated dibenzo-p-dioxins to elucidate the importance of natural and anthropogenic sources of OH-PBDEs in fresh and estuarine waters.”

Valerie Brady (WRS graduate faculty, NRR), and **Larissa Herrera** (WRS), received a grant of \$48,000 for 2010–2011 from the Minnesota Lake Superior Coastal Program for “Developing a diagnostic tool for assessing excessive sediment harm to stream communities.”

Mark Edlund (WRS graduate faculty, St. Croix Watershed Research Station) presented a keynote lecture, “Mongolia under the microscope” summarizing his and that of collaborators Avery Shinneman (Geology), **Jim Amendinger** (WRS graduate faculty, SCWRS) and **Len Ferrington** (WRS graduate faculty, Entomology) last 15 years of research results on biodiversity and environmental change in Mongolia at the first international conference on the topic “Survey of Mongolian Aquatic Ecosystems in a Changing Climate,” held April 7–10, 2010, in Ulaanbataar, Mongolia.

Les Everett (WRC) participated in an April 8, 2010, national meeting at the McKnight Foundation headquarters in Minneapolis, MN, to revise the foundation’s framework for reducing agricultural pollution in Minnesota, Wisconsin, Iowa and Illinois where those four states border the northern half of the Mississippi River. The framework focused on reducing nitrogen and phosphorus runoff.

Len Ferrington (WRS graduate faculty, Entomology), **Mark Edlund** (WRS graduate faculty, SCWRS), and **Toben Lafrancois** (SCWRS) were awarded a National Park Service grant, “Mapping and Biological Studies of Shoreline Rock Pools in Three Lake Superior National Parks,” to investigate water quality and insect, invertebrate, and algal diversity in rock pools at Isle Royale, Apostle Islands, and Pictured Rocks. Entomology student Alex Egan will use the study as the basis of his master’s work.

Paige Novak (WRS graduate faculty, CE) and **Deb Swackhamer** (WRS graduate faculty, WRC Co-director) received an

NSF grant to hold a workshop on contaminants of emerging concern at the Johnson Foundation Wingspread Conference Center in Racine, WI, May 23–26, 2010.

Faye Sleeper, WRC co-director, presented “The Lake Pepin Total Maximum Daily Load (TMDL) Process: Intersection of Policy, Social and Natural Sciences,” April 28, 2010 at the Soil, Water, and Climate departmental seminar in Borlaug Hall on the St. Paul Campus.

Deborah Swackhamer (WRS graduate faculty, WRC co-director) was selected the Ada Comstock Distinguished Women Scholar awardee for the fall of 2010. Swackhamer will give a University-wide lecture in November. This award is sponsored by the Women’s Center, along with three co-sponsors: the Office of the Senior Vice President for Academic Affairs and Provost, The Graduate School, and the UM Libraries. **Swackhamer** was also the keynote speaker at the annual Walter Winchell Undergraduate Research Symposium, April 24, 2010, at the University of St. Thomas in St. Paul, MN. The symposium is sponsored by the Minnesota Academy of Science. **Swackhamer** was the invited speaker for the Fourth Annual Women’s Breakfast of the Minnesota Center for Environmental Advocacy, May 6, 2010, at McNamara Center in Minneapolis, MN. Her topic was “Protecting our cool, clear waters.” **Swackhamer, Pam Rice** (WRS graduate faculty, SWC, USDA-ARS), **Bill Koskinen** (SWC, USDA-ARS), **Bill Arnold** (WRS graduate faculty, CE) and **Paige Novak** (WRS graduate faculty, CE) were awarded a grant from the Legislative-Citizen Commission on Minnesota Resources entitled “Understanding Sources of Aquatic Contaminants of Emerging Concern”

Josef Werne (WRS graduate faculty, LLO), **Robert Hecky** (WRS graduate faculty, LLO), and **Sergei Katsev** (WRS graduate faculty, LLO) received a three-year NSF grant of \$416,961 for their project, “Transient Diagenesis in Organic Poor Sediments: Lake Superior.” They will investigate the temporal changes in Lake



Photo credit: Christine Hansen

WRC co-director Faye Sleeper congratulates Bioproducts and Biosystems Engineering professor Bruce Wilson (WRS graduate faculty) at the 2009–2010 CFANS Awards event at the Cargill Building, St. Paul Campus, May 10, 2010. Wilson received the CFANS Distinguished Teaching Award—Graduate Faculty.

Superior sediments over the past century and their effects on the availability of nutrients to the lake water.

Ambassador, continued from page 1

water from one body to another, Manitoba and Minnesota are in agreement that water coming out of Devils’s Lake should be filtered for pathogens, thus avoiding contamination of the Cheyenne River, and in turn, Minnesota’s Red River and Manitoba’s Lake Winnipeg. Doer summed up his approach this way, “We are dealing together with water quality, quantity, and stewardship. We (Canada and the U.S.) can’t manage on our own, and we must work together.”

Water Policy student Kelly Wilder was in the audience for the ambassador’s presentation and commented, “‘Our’ water and ‘their’ water is actually part of the same system and we’re facing the same issues—industrial and agricultural pollution, aquifer overdraft, etc. Because we’re all managing the same resource, and because we have such a wide range of expertise available to diplomats, activists, and academics, for example, there really is the potential for clean and adequate water worldwide.”

The ambassador’s visit was sponsored by the University’s Hubert H. Humphrey Institute of Public Affairs’ Center for Science, Technology, and Public Policy.

Christy Dolph and **Martijin Woltering** were awarded a Graduate School Doctoral Dissertation Fellowship for 2010–2011. Dolph is advised by **Bruce Vondracek**, and Woltering is advised by **Josef Werne** and **Thomas Johnson**.

Jessica Eichmiller presented a poster, “The abundance of total fecal coliforms and *Escherichia coli* on Lake Superior beaches is not predictive of the presence of human-associated Bacteroides marker gene,” at the American Society for Microbiology General Meeting in San Diego, CA, May 23–27, 2010. Eichmiller is advised by **Randall Hicks** and **Michael Sadowsky**.

Allison Gamble presented “Nearshore-offshore linkages in Lake Superior: potential management implications” at the 53rd Annual Conference for International Association of Great Lakes Research 2010: Lessons from the Past, Solutions for the Future, in Toronto, Ontario, Canada, May 17–21. Gamble is advised by **Thomas Hrabik**.

Larissa Herrera was awarded a Graduate School Diversity of Views and Experiences Fellowship for 2009–2010. Herrera is advised by **Valerie Brady**.

Edmund Isaac presented “Consumption by the Lake Superior Fish Community: How Important are *Mysis relicta*?” at the 53rd Annual Conference for International Association of Great Lakes Research 2010:

Lessons from the Past, Solutions for the Future, in Toronto, Ontario, Canada, May 17–21. Isaac is advised by **Thomas Hrabik**.

Tonya Kjerland was awarded a Graduate School Diversity of Views and Experiences Fellowship for 2010–2011. Kjerland will be advised by **John Pastor**.

Jane Louwsma was awarded a Graduate School Fellowship for 2010–2011. Jane will be advised by **Len Ferrington** and **Bruce Vondracek**.

Tim Sundby received his M.S. in February 2010. His thesis was “Effective Use of Modeling and Rating Curves to Properly Size Two Stage Ditches.” Sundby was advised by **Bruce Wilson**.

Valerie Were (NRSM) received a 2010–2011 Compton International Fellowship from the Interdisciplinary Center for the Study of Global Change (ICGC). ICGC Compton International Fellowships provide research support to graduate students from sub-Saharan Africa or Latin America whose studies and research will address issues of peace, human security, and conflict resolution in these regions, especially in relation to population and environmental concerns. The fellowships also aim to build and sustain a community of Fellows over time that can help link peace and security to population and/or environmental issues. Were is advised by **Karlynn Eckman**.

Minnegram

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Submissions: Minnegram welcomes articles, community news, news stories, photos, and other materials for publication.

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July 13–15, 2010

UCOWR/NIWR 2010 Annual Conference
HydroFutures: Water Science, Technology, and Communities

The Red Lion Hotel, Seattle, WA

For more information, visit:
ucowr.siu.edu/

October 13, 2010

St. Croix River Research Rendezvous

Warner Nature Center

Marine on the St. Croix

Sponsored by the St. Croix Watershed Research Station, the Rendezvous has been a significant forum for the presentation and discussion of scientific investigations of the St. Croix River watershed. For more information, visit:
researchstation@smm.org.

October 19–20, 2010

Minnesota Water Resources Conference

Rivercentre, St. Paul, MN

The Minnesota Water Resources Conference presents innovative and practical water resource engineering solutions, management techniques and current research about Minnesota's water resources. For more information, visit:
wrc.umn.edu

May 30–June 3, 2011

IAGLER 54th Conference on Great Lakes Research

Duluth, MN

Hosted by the University of Minnesota-Duluth. For more information, visit:
www.iaglr.org/hot/calendar.php

Publications & Resources

WaterAlert is a new online service from the USGS providing instant, customized updates about water conditions. WaterAlert allows users to receive daily or hourly updates about current conditions in rivers, lakes and groundwater at any of more than 9,500 sites where USGS collects real-time water information. This information is crucial for managing water resources during floods, droughts and chemical spills. Sign up at:
water.usgs.gov/wateralert.

Anthropogenic Organic Compounds in Source Water of Selected Community Water Systems that Use Groundwater, 2002–05. Hopple, J.A., G.C.Delzer, and J.A., Kingsbury, 2009. Source water, defined as groundwater collected from a community water system well prior to

water treatment, was sampled from 221 wells during October 2002 to July 2005 and analyzed for 258 anthropogenic organic compounds. Most of these compounds are unregulated in drinking water and include pesticides and pesticide degradates, gasoline hydrocarbons, personal-care and domestic-use products, and solvents. The laboratory analytical methods used in the study have detection levels that commonly are 100 to 1,000 times lower than State and Federal standards and guidelines for protecting water quality. Find this publication at: pubs.usgs.gov/sir/2009/5200/

New results of studies from the USGS NAWQA program include **Quality of Water from Public Supply Wells in the United States**, available at: water.usgs.gov/nawqa/studies/public_wells/ and **Effects of Urbanization on Stream Ecosystems**, available at: water.usgs.gov/nawqa/urban/.

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