



# Water Current

PART OF THE SCHOOL OF NATURAL RESOURCES AND AFFILIATED WITH THE ROBERT B. DAUGHERTY WATER FOR FOOD INSTITUTE

## MEET THE FACULTY

**Michael W. Van Liew, Ph.D.**



Michael W. Van Liew is a hydrology research specialist in UNL's Department of Biological Systems Engineering, where he has been for the last year. Among several previous positions, he came to UNL after nearly three and a half years as a water quality hydrologist for the Montana Department of Environmental Quality.

**Education:**

- M.A., Intercultural Ministry, Western Seminary, Portland, Ore; 1991
- Ph.D., Engineering Science, Washington State University, Pullman, Wash.; 1983
- M.S., Agricultural Engineering, Colorado State University, Ft. Collins, Colo; 1976
- B.S. Geological Engineering, University of Idaho, Moscow, Idaho; 1974

*continued on page 3*

## INSIDE

- Director's Notes ..... 2
- New Advisory Panel ..... 4
- Flooding..... 6
- Summer Water Tour..... 12-13
- Lab Methods..... 19
- Reader Survey.....23



## Fall Water Law Conference and Great Plains Climate and Ecosystems

By Steve Ress, UNL Water Center

Separate, back-to-back October events sponsored by the UNL Water Center, in affiliation with the Robert B. Daugherty Water for Food Institute, will focus on Nebraska water law and Great Plains climate, water and ecosystems.

The Water Center's annual Water Law Conference is Wednesday, Oct. 12 at Lincoln's downtown Holiday Inn. It is followed on Thursday, Oct. 13, by a one-day symposium on "Climate, Water and Ecosystems - Shaping the Great Plains."

Attendees can register for either or both events, depending on interests and needs, said event organizer and UNL Water Center assistant director Lorrie Benson. A discounted registration fee is available for attending

both events.

"We want to hit as broad an audience and interest base as possible over two days that focus on current regional water issues and water law," Benson said.

The Oct. 12 water law conference, co-sponsored by NU's College of Law, will focus on current Nebraska water law. It is designed to benefit practicing attorneys, but is open to anyone and can benefit water professionals and managers in many other professional venues.

CLE credits for practicing attorneys have been applied for in Nebraska, Colorado and Iowa.

The conference kicks-off with an optional 7:30 a.m. pre-session on "Water Law 101" by Leroy Sievers of the Nebraska Department of Natural Resources.

*continued on page 15*

## Lenton Named to Head NU's Daugherty Institute

Dr. Roberto Lenton, one of the world's foremost experts in water management and development, has been named to lead the Robert B. Daugherty Water for Food Institute at the University of Nebraska, NU President James B. Milliken announced in early August.

Lenton will also hold an appointment as Professor of Biological Systems Engineering at the University of Nebraska-Lincoln.

"Roberto Lenton is the ideal person to lead the Daugherty Institute as its founding director," Milliken said. "His experience in water management, food security, sustainable

agriculture and responsible use of resources is exceptional. As important, he shares our vision for the



institute and its potential to have an impact on the world. We are fortunate to have been able to attract someone of this caliber and international reputation to the University of Nebraska. He will help us quickly establish the Daugherty Institute as a global leader in research, education and policy related to water for food."

*continued on page 16*

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## From the Director

**Bruce Dvorak**

# Advisory Panel Formed, Fall Conference and Symposium Planned

By Bruce Dvorak

As temperatures have risen this summer, so too have our activities here at the Water Center.

I was very pleased to be able to attend a good share of the July 12-14 water and natural resources tour to North Central Nebraska. The opportunity to interact with such a diverse group of 50 people in the settings of the Nebraska Sand Hills and Niobrara River basin was a Water Center-sponsored activity I had not yet had the chance to experience firsthand. It is now much easier for me to see the benefits and processes that go into the nearly yearlong planning and preparations for these tours and the unique educational and networking opportunities they represent for participants, many of whom were also attending their first tour this year.

It also makes it far easier to understand the value of these tours to the University in providing opportunities for close contact and networking with our many stakeholders and collaborators and why the Water Center has been such an ardent supporter of continuing them as they have evolved from the first summer "irrigation tours" organized under the leadership of then UNL Chancellor D.B. "Woody" Varner in the 1970's.

I want to extend special thanks to our partners in this annual venture: The Kearney Area Chamber of Commerce, Central Nebraska Public Power and Irrigation District and Nebraska Public Power District, as well as the sponsors that joined us in supporting this year's tour specifically: Lower Loup Natural Resources District, Northern Plains Supply, Inc., Perfect Valley Irrigation, Inc. and Sandhill Equipment, Inc. and to our tour organizing committee of retired UNL lecturer Mike Jess, Jennie Nollette of the Kearney Chamber,

Jeff Buettner of Central Nebraska Public Power and Irrigation District, and our own Steve Ress.

We are already in the process of examining where next year's tour might be held and what issues it may examine. Though absolutely nothing has been decided at this point, a strong possibility is a tour of the Missouri and/or Platte River basins to look at the effects and aftermaths of this year's record flooding, responses to it and exploring some of the many facets of floods and flooding in general. Other venues we may look into include surface and groundwater projects in nearby Iowa or Minnesota. There is also a very strong possibility that this tour, or a separate one, will be held in conjunction with the Robert B. Daugherty Water for Food Institute's annual conference in mid to late June 2012. We will keep you informed as all of this unfolds.

Among the advocates for a Missouri River/flood tour were many members of our newly organized Water Center Advisory Panel that met for the first time in mid-June. This group will help advise and strengthen the Water Center as it carries out its missions of support for water-related research, education and outreach within the University of Nebraska system. The group was empanelled since it had been some time since the Water Center had had a fully functioning and contributing advisory panel. The full panel will likely meet twice per year to discuss "Big picture" issues, but the majority of their important work will be done through focused

*continued on page 7*



## MEET THE FACULTY

### James W. Schneider

Jim Schneider is a University of Nebraska–Lincoln (UNL) Extension Educator specializing in irrigated cropping systems within the Southeast Research and Extension Center in Lincoln (officed in Aurora), a position he has held for nearly four years.

#### Education:

M.S., Agronomy, South Dakota State University, Brookings, SD

B.S., Agricultural Business, South Dakota State University, Brookings, SD

#### Examples of Current Research/Extension Programs:

My primary interest is in the area of no-till farming. I have a strong interest in soil biology and how the productivity of soil can be enhanced with the use of no-till, and crop diversification. Currently I am involved in several on-farm research studies evaluating the use of cover crops. At the same time, I have an interest in conserving water in dryland and irrigated cropping systems. No-till will save water while soil moisture measurement along with crop evapotranspiration measurement will provide irrigated producers the information they need to cut excessive irrigation. I have been a part of the Nebraska Ag Water Management and Demonstration Network



*continued on page 15*

### Michael W. Van Liew, Ph.D. *continued from page 1*

#### Examples of Current Research/Extension Programs:

Providing technical support and guidance among state agency and university extension specialists in the use of watershed model outputs for the development and implementation of watershed management programs and water quality assessments throughout the Heartland Region of Nebraska, Kansas, Missouri, and Iowa. Assessing the impact of best management practice implementation on pollutant reduction under variable climatic conditions.

#### Examples of Past Research/Extension Programs:

Determined the impact of seasonal precipitation forecasts on streamflow for a watershed in Oklahoma; Evaluated the strengths and limitations of the Soil and Water Assessment Tool (SWAT) for simulating streamflow from rainfall and snowmelt under a range of climatic, physiographic, and land management conditions for watersheds throughout the US; Employed the SWAT model to determine the impact of flood retarding structures and land use changes on streamflow and sediment for watersheds in Oklahoma under decadal scale dry, average, and wet climatic conditions.

#### Examples of Outreach Programs:

Developing and implementing Heartland Regional Water Coordination Initiative webcasts, on-line resources, and training modules to enhance capacity in the region for the use of watershed models.

#### Selected Publications:

- Veith, T. L., M. W. Van Liew, D. D. Bosch, and J. G. Arnold. 2010. Parameter sensitivity and uncertainty in SWAT: a comparison on 5 USDA ARS watersheds. Accepted for publication in: *Trans. of the ASABE*.
- Xuesong, Z., R. Srinivasan, and M. Van Liew. 2009. Approximating SWAT model using artificial neural network and support vector machine. *J. Am. Water Resources Assoc.* 45(2): 460-474. 2009.
- Moriasi, D.N., Arnold, J.G., Van Liew, M.W., Bingner, R.L., Harmel, R.D., Veith, T.L. 2007. Model evaluation guidelines for systematic quantification of accuracy in watershed simulations. *Trans. of the ASABE.* 50(3):885-900.
- Van Liew, M.W., C.H Green, P.J. Starks. 2007. Unit source area data: can it make a difference in calibrating the hydrologic response for watershed scale modeling? *J. of Soil and Water Conservation.* Vol 62(3): 162-170.
- Van Liew, M.W., T.L. Veith, D.B. Bosch, and J.G. Arnold. 2007. Suitability of SWAT for the Conservation Effects Assessment Project: comparison of USDA Agricultural Research Service Watersheds. *J. of Hydrologic Engineering.* 12(2):173-189.
- Van Liew, M.W., B.D. Bosch, and J.G. Arnold. 2005. Problems and potential of autocalibrating a hydrologic model: *Trans. of the ASAE.* 48(3):1025-1040.

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## Water Center Empanels New Advisory Board

By Steve Ress

The UNL Water Center assembled a new advisory panel in June to help it with broad-based advice and support on a number of projects and issues.

The purpose of the panel is to advise and strengthen the Water Center as it carries out its mission of support for water-related research, education and outreach. Though the Water Center has empanelled advisory panels in the past on a regular basis, there was not one currently functioning when new panel members took their seats in June.

Water Center interim director Bruce Dvorak said the group will likely meet twice per year, with larger meetings of the full panel being used to “Help with big picture issues,” but he noted that focused subcommittees will be where much of the advisory panel’s work on behalf of the Water Center will get done.

“Many of those named to the panel have been giving their time and talents to the Water Center on any number of programs and projects for many years, others are somewhat new to what we do,” he said.

At the June 21 kick-off meeting at UNL’s East Campus Hardin Hall, members were given a short history of the 47-year-old Water Center, noting that its vision and mission have remained relatively consistent over the years despite sometimes shifting fortunes and administrative affiliations within the University of Nebraska system.

Panel members include John Bender, Nebraska Department of Environmental Quality; Valery Forbes, UNL School of Biological Sciences; John Gates, UNL Department of Earth and Atmospheric Sciences; Steve Gaul, Nebraska Department of Natural Resources; Rick Holland, Nebraska Game and Parks Commission;

Alan Kolok, UNO Department of Biology and Environmental Health and Toxicology Center, UNMC; John Miyoshi, Lower Platte North NRD; Tim Shaver, UNL West Central Research and Extension Center and Department of Agronomy and Horticulture; Ron Zelt, U.S. Geological Survey Nebraska Water Science Center; Dean Eisenhauer, UNL Department of Biological Systems Engineering; Sarah Michaels, UNL Department of Political Science; and Steve Thomas, UNL School of Natural Resources.

Committee seats are by position, not individual, and each will serve staggered three-year terms.

In describing the Water Center’s current mission and focus, assistant director Lorrie Benson said that two words...facilitator and catalyst...best describe what the center does in supporting faculty and staff research, education and outreach efforts.

It was noted that the center is now affiliated with and actively supporting the new Robert B. Daugherty Water for Food Institute “We try to support researchers as much as we can, we’re excellent at outreach functions and as an entry point for lots of different individuals and groups to the University and we take our networking and assistance to others in water-related disciplines very seriously,” she said.

Dvorak told the panel that while he envisions that the overall missions of the Water Center will remain constant into the future, there will be a number of changes in the coming year, not the least of which is affiliation with the Daugherty Institute. That may necessitate a name change as well, possibly to “University of Nebraska Water Center.” He noted that the center has gone

through several name changes since it began in 1964 as the Nebraska Water Resources Research Institute.

A Water Resources Advisory Panel (or WRAP), been convened by Ronnie Green, NU Vice President and Institute of Agriculture and Natural Resources Harlan Vice Chancellor, and Prem Paul, Vice Chancellor for Research and Economic Development, and facilitated by the Water Center, has been in existence for several years. It provides advice on general water research and opportunities for NU faculty to talk about their research with stakeholders and is totally separate from the Water Center advisory panel.

Panel members were provided summaries of upcoming Water Center events and activities and were asked for input on where and what topics the annual water and natural resources summer tour should examine in 2012.

Many of the panelists voiced strong support for a tour focused on causes and effects of current flooding in the Missouri and Platte River basins, as well as using those events to discuss flooding and river management issues in general. Ideas were also offered on possible tour topics and destinations in nearby Iowa and Minnesota.

Panel members also agreed to serve on the following subcommittees:

**Outreach and Communications:** Gaul, Bender, Miyoshi and Kolok.

**Science Advisory:** Gaul, Bender, Holland, Zelt, Eisenhauer and Michaels.

**Research Support:** Holland, Zelt and Shavers.

**Water Sciences Laboratory:** Gates, Kolok, Dvorak, Thomas and Forbes.

# Rapid Changes in Greenland Climate Over Last 5,000 Years, Study Says

By Tom Simons, University Communications, UNL

**A**brupt average temperature changes of as much as four or five degrees Celsius over a few decades may have profoundly affected human civilization for cultures that occupied western Greenland over the past 5,000 years.

Those are the findings of a study published in the May 30-June 3 online edition of the Proceedings of the National Academy of Sciences by a group of scientists that included Sherilyn Fritz of UNL.

Using a new technique that measures the qualities of haptophytes (salt-loving microscopic plants), the scientists studied carbon-dated sediment cores recovered from the beds of two saline lakes near Kangerlussuaq, West Greenland, an area north of the two major medieval Viking (Norse) settlements. Haptophytes are common in the ocean and they produce group of compounds called alkenones, a type of lipid.

Like the fats in human diets, they're saturated and unsaturated, and the level of saturation depends on temperature. Haptophytes have been used for decades to infer temperature variation in oceans, but only in the last 10 years or so have scientists known that they also occur in salt lakes.

The study detailed in PNAS was part of the development of the use of alkenones in researching temperature history in salt



*(From left) William D'Andrea, Sherilyn Fritz and Fritz's former UNL Ph.D. student Frank Aebly at the edge of the Greenland Ice Sheet in July 2002, about 25 miles east of the lakes that were reported on in PNAS.*

lakes. The technique allowed the scientists for the first time to fine-tune their knowledge of climate change in West Greenland -- and they found some dramatic changes. The fossil organisms revealed a succession of temperature shifts that roughly coincide with changes in human occupation of the area, including the Saqqaq people (4,500 to 2,800 years ago), the Dorset (2,800-2,000 years ago), the Norse (1,000-550 years ago) and the Inuit (800 years ago to present).

"The research is important because the study has basically described and quantified the temperature variation during the last 5,000 years in this area of West Greenland which has had a fairly rich cultural history over much of that time period," said Fritz, George Holmes university professor of earth and atmospheric sciences.

"Some of the changes are quite rapid and fairly large. There's a temperature drop of about 4 degrees Celsius starting about 800 years ago when the Norse were still there, but the reconstruction suggests that within 80 years, temperature dropped 4 degrees during

*continued on page 7*



*Lake E, one of the Greenland salt lakes studied in the PNAS paper (the other is Braya So).*

## Missouri River Flooding and UNL Extension Response

By Rick Koelsch, Ph.D., Assistant Dean of Extension, University of Nebraska–Lincoln

The Missouri River floods of 2011 are causing extreme hardships for many homeowners and farmers in the basin. Some aspects of this flood are unprecedented with homes and property being exposed to flooding conditions for many months.

The prospects of high water tables into next winter pose additional threats to homes and other property. UNL Extension is responding to this challenge by providing research-based information to help individuals, families and businesses deal with the chal-

lenges of extended flooding.

UNL Extension does not have a faculty member who provides leadership for disaster issues as found in some other states. Thus, a mix of extension specialists, educators, and administrators stepped up to our flooding challenge and shared their expertise and time to help our constituents.

Beginning in early June, a group of faculty began meeting each week to identify challenges, share resources, and formulate an education response to the flood. Some of the

more critical activities of this group over the couple of months include:

- Assembling recommended resources at a single web site, <http://flood.unl.edu> and marketing this site through media and partner web sites.
- Recommended resources have been assembled around 15 topic areas, including resources for Spanish speaking audiences

*continued on page 14*

## Be Patient, Cautious When Dealing with 2011 Flood

Nebraskans dealing with the 2011 flood along the Missouri River have come to realize this is not a typical flood.

The amount of water and the length of time makes this flood different, a University of Nebraska–Lincoln Extension educator said.

“First and foremost when dealing with this flood, people have to be patient and stay away until authorities have deemed areas safe to enter,” said Carroll Welte, UNL Extension educator in Burt County. “My advice is to err on the side of caution rather than on the side of carelessness.”

Welte said when property and homeowners do return, before entering the home, it is important that all electric power has been disconnected from the electrical grid. As a precaution, shut off the power at the meter pole outside the home if it is safe to do so. No one should be standing in water or on damp surfaces using any electrical equipment.

“People don’t want to go back to their homes and be working on cleaning up water and then all of a sudden have the electricity come back on. That would be very dangerous, especially if there are appliances in standing water or other electrical hazards,” she said. “With this particular flood situation, it might

be good to communicate with the power company as to when you plan to re-enter your property.”

Welte said it also is important to inspect for structural damage from the outside to determine if the property is safe to enter.

Once inside, people should watch for settled or bulging floors or cracked walls, particularly in basements. These are signs of structural damage.

In addition, before any cleanup happens, according to a University of Missouri Extension “Resources for Your Flooded Home Publication”, it’s also important for people to:

- Watch for electrical shorts and live wires.
- Turn off outside gas lines.
- Wear sturdy shoes, rubber gloves and eye protection.
- If mold is present, wear a respirator that can filter mold spores.
- Never mix bleach with ammonia or vinegar.

It’s also important to contact an insurance agent immediately, take pictures of the damage before cleaning up and keep accurate records of all cleanup and repair bills.

It’s also been recommended by the Centers for Disease Control that children not enter flooded areas. Children are especially vulnerable as they are in a critical period of development when toxic exposures can have profound negative effects, and their exploratory behavior often places them in direct contact with materials that adults would avoid, according to the American Academy of Pediatrics.

For more information about children returning to flooded areas, visit [http://www.aoec.org/documents/positions/Hurricane\\_rec\\_AAP\\_PEHSU.pdf](http://www.aoec.org/documents/positions/Hurricane_rec_AAP_PEHSU.pdf).

While the above information is just the tip of the iceberg when it comes to resources available for a flooded home or property, Welte recommends consulting the University of Missouri Extension publication, “Resources for Your Flooded Home”, for additional information. This publication includes a step-by-step guide on how to clean flood damaged homes and information about financial recovery, children, reentering the home, cleaning basements, salvaging water-damaged belongings, avoiding mold and reducing bacteria in clothing and textiles. It is available at <http://extension.missouri.edu/explorepdf/miscpubs/mp0904.pdf>.

subcommittees. These subcommittees are 1.) Outreach and communications, 2.) Science advisory, 3.) Research support, and 4.) Water Sciences Laboratory.

I am grateful to the following individuals for agreeing to serve on the panel: John Bender, Nebraska Department of Environmental Quality; Valery Forbes, UNL School of Biological Sciences; John Gates, UNL Department of Earth and Atmospheric Sciences; Steve Gaul, Nebraska Department of Natural Resources; Rick Holland, Nebraska Game and Parks Commission; Alan Kolok, UNO Department of Biology and Environmental Health and Toxicology Center, UNMC; John Miyoshi, Lower Platte North NRD; Tim Shaver, UNL West Central Research and Extension Center and Department of Agronomy and Horticulture; Ron Zelt, U.S. Geological Survey Nebraska Water Science Center; Dean Eisenhauer, UNL Department of Biological Systems Engineering; Sarah Michaels, UNL Department of Political Science; and Steve Thomas, UNL School of Natural Resources.

Preparations are essentially complete for our Fall Research Symposium on October 13. "Climate, Water and Ecosystems-Shaping the Great Plains" will showcase natural, physical, and social sciences research and innovative programming including effects of climate change or variability in the Great Plains. Research or programming that's transferable to the Great Plains will be part of the program. It will also include a session related to tools, which can be used to help manage watersheds. The event has been planned with generous assistance and support from the U.S. Geological Survey's Nebraska Water Science Center.

The day before, on Oct. 12, we hold our annual Water Law Conference in partnership with the University of Nebraska College of Law. The conference will touch on a broad range of water law issues, including Clean Water Act requirements and enforcement, transactions involving water rights, and due process rights associated with

water rights. The primary audience is the practicing bar, but this conference will be useful to anyone interested in water quality or quantity, especially water professionals and managers.

Registration for both events is online at [watercenter.unl.edu](http://watercenter.unl.edu) and we will happily give you a discounted rate to register and attend both events.

This might be a good place to plug the many additions and changes to our website over the past few months. We think we have one of the most comprehensive and up-to-date sites at UNL and are very proud of it. Lorrie Benson and Rachael Herpel have done great work in developing undergraduate and graduate student databases to make it easier for our students to explore areas of study, classes and chances to connect to faculty and Steve Ress keeps our general database of information up-to-date and broad, including providing much information related to this summer's flooding on the Missouri and Platte Rivers.

When you visit the site to register for the fall symposium and conference, take a few minutes to check us out.

Lastly, you may have noticed a new logo and wording on the cover of this issue of the Water Current, noting our recent affiliation with the Robert B. Daugherty Water for Food Institute (WFI). Consistent with our 47-year history of being affiliated with many larger organizations (including the Conservation and Survey Division, School of Natural Resources, etc.), creation of WFI and the obvious overlap in interests and activities of our two entities means that it only makes sense that the Water Center affiliate with WFI and provide assistance to it. Details of this affiliation are still being developed as WFI develops, but are gathering speed rapidly, so expect to hear more on the evolution of this affiliation during the coming year.

Until next time.

## Greenland Climate *continued from page 5*

summer months and stayed quite low, so it's quite a large fluctuation. And there are other periods when temperature change was quite rapid and substantial, in the order of 4 to 5 degrees Celsius."

Thanks in large part to ice cores recovered from the massive ice sheet that covers most of Greenland, scientists have long had a good understanding of hemispheric- and millennial-scale climate variability in the North Atlantic and Europe over the past several thousand years. They've also known that climate change was happening in West Greenland, including the areas where the Vikings settled, but until now, they haven't been able to quantify the specific conditions.

The study's lead author is William J. D'Andrea, a postdoctoral fellow at the University of Massachusetts in Amherst. D'Andrea

began the research during Greenland field seasons from 2001 to 2003 as his master's thesis project with Fritz at UNL, and went on to earn a doctorate studying with organic geochemist

Yongsong Huang at Brown University, where he completed the study. Huang and N. John Anderson of Loughborough University in the United Kingdom are also co-authors of the PNAS paper.

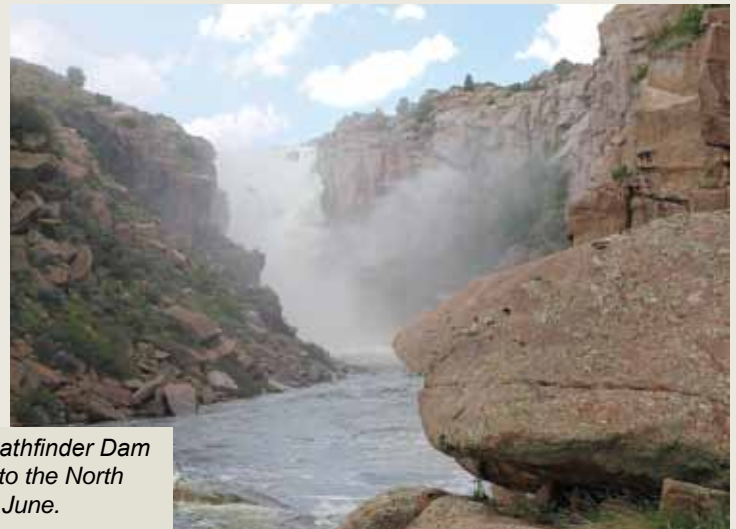
The study was funded by grants from the National Science Foundation.

The NSF also funds a grant for Fritz, Huang and Paul Baker of Duke University to use the alkenone technique in a study of the temperature history of saline lakes in the Great Plains, including the Nebraska Sandhills.

## Summer 2011 Flooding on the Missouri and Platte Rivers



*June 17, Beartooth Pass northeast of Yellowstone. This snow will melt and run into the Yellowstone River which flows into the Missouri River near Fort Peck Dam in Montana.*



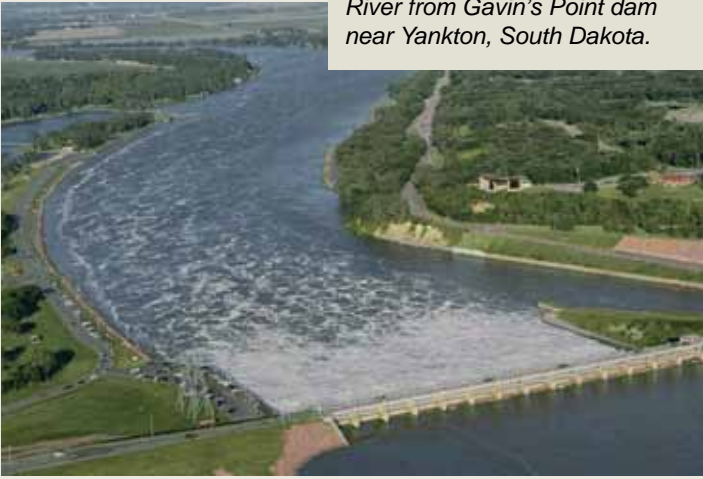
*Water spills over Pathfinder Dam in Wyoming and into the North Platte River in late June.*



*Workers recover a tree from a bridge over the North Platte River at Henry, near the Nebraska-Wyoming border. The June 6 photo shows how high waters had risen.*



Water rushes down the Missouri River from Gavin's Point dam near Yankton, South Dakota.



Onlookers watch record releases of water down the Missouri River at Gavins Point Dam near Yankton, South Dakota.

Aerial view of Missouri River flooding in mid-June.



A view of Omaha's Eppley Airport (top) on June 11.



Another aerial view of the Missouri basin in June.

Among those contributing photographs were Gary Stone, Tricia Liedle, Steve Ress, Mike Jess, Drew Tyre, Glen Roebke, Jim Goeke and Chris Henry.

continued on page 20

## 2011 Missouri River Flood: A Nested Matryoshka Doll

By Alan S. Kolok, Ph.D., Aquatic Toxicologist, Department of Biology, UNO;  
Department of Environmental, Agricultural and Occupational Health, UNMC

A matryoshka doll is a traditional, ornately painted Russian figurine. The little wooden doll is noteworthy in that it contains a series of slightly smaller dolls nested inside.

Looking at the largest doll, the viewer has no idea of the number and character of the smaller dolls contained within.

The recent flood on the Missouri River may prove to be a matryoshka doll in that one issue associated with the flood may be hidden inside another, only to be revealed later.

As I write, it can be argued that the most pressing issue regarding Missouri River flooding is the inundation itself. River water is currently flooding large sections of cultivated cropland as well as communities and residences. Damage to drinking water facilities, wastewater treatment plants and power plants that use or treat



UNO environmental toxicologist Alan Kolok.

large volumes of water and that have been strategically located in the floodplains of the Missouri, represent a slightly different but related issue.

Moving water of the magnitude currently flowing downstream in the Missouri River causes other problems that may not be fully realized until after floodwaters recede. Sediment scour is an inevitable consequence, as the waters move large quantities of sediment downstream, exposing and potentially weakening infrastructure of bridges, buildings and other structures that may fail during high water or when the waters recede.

Moving sediments have to go somewhere and ultimately when the river slows and waters recede, traveling sediments will be deposited, creating shoals or sand bars where none existed before.

So how does the flood relate to the fate and transport of trace organic contaminants? The relationship can be nested.

Water is an excellent solvent; therefore many chemicals that have been locked in flood plain soils are now being released into the river. Like a gigantic sugar cube, water-soluble compounds are slowly dissolving into surging waters where they will be carried downstream.

Is the water volume increase diluting the organic cocktail of the river to a greater extent than it would otherwise, or is the increased loading of water soluble compounds into the river increasing the potency of the cocktail in excess of what it would be normally?

The Missouri-Mississippi River system provides an interesting laboratory to test this question, although the answer will take some time to unfold. At the confluence of the two rivers, Missouri River flow accounts for slightly less than half the total flow.

Those comingled waters then flow downstream to the Mississippi River delta where they enter the Gulf of Mexico, and where nutrients (primarily inorganic nitrogen and phosphorus) in the water create huge algal blooms that live their short lives, die and decompose. Microbial decomposition requires oxygen and, indeed, so much oxygen is required that a hypoxic, dead-zone, a zone in the gulf where no fish or shrimp can exist, results.

Early predictions suggest that the dead-zone this year will approach 10,000 square miles, roughly the size of Vermont.

Research cruises in the Gulf of Mexico this June are confirming predictions that this year's dead-zone will be the largest recorded to date. Is the flooding and release of nutrients (organic and inorganic) from the Missouri River partially responsible for the expected expansion of this year's dead zone?

The vast majority of sediment particles mobilized by floodwaters are not going to make the long journey to the Gulf of Mexico, but will be re-deposited somewhere downstream. The larger the sediment particle, the shorter its journey, but regardless of particle size, the particles are likely to carry organic and inorganic compounds downstream.

It is important to recognize that Missouri and Mississippi bottomlands reap huge benefits from the deposition of these nutrient-rich sediments. In fact, this is the very reason why these lands have been so historically productive.

But how is sediment movement going to influence movement of trace organic contaminants? Will the primary impact of sediment deposition be one of nutrient enrichment or deposition of potentially toxic compounds on formally productive landscapes?

We know that contaminants bound to sediment can be re-released, particularly when sediment beds are disturbed. Current flooding is at unprecedented levels, therefore it is a safe assumption that sediment deposits that have sat unmolested for decades are now being mobilized and moved downstream. What will be the impact of compounds released from contaminated sediments, how long will it take for the impact to be realized, and will we even recognize the causative agent responsible for the impact should it occur?

The nested problems with flooding may have adverse consequences, but may also be the most difficult to substantiate.

Rivers carve the landscape as they transport water and sediment to the sea. They also flood sometimes. As modern rivers travel this ageless path to the sea they come in direct interaction with our buildings, agricultural fields and lives, particularly during floods.

Floods can initiate a suite of problems some overt and obvious; others like the smallest matryoshka dolls, remain as least for now, concealed from view.

# Forest Service Map Bolsters Watershed Health

The U.S. Forest Service (USFS) has released a new map that characterizes the health and condition of National Forest System lands in more than 15,000 watersheds across the country.

USFS's Watershed Condition Classification Map is the first step in the agency's Watershed Condition Framework, and is the agency's first national assessment across all 193 million acres of national forest lands.

National forests and grasslands supply more than 900 cities and 3,400 public water systems with clean water. Watersheds on national forests and grasslands are the source of 20 percent of the nation's drinking water supply.

The map establishes a baseline that will be used to establish priorities for watershed restoration and maintenance. The national Watershed Condition Framework establishes a consistent, comparable, and credible process for characterizing, prioritizing, improving, and tracking the health of watersheds on national forests and grasslands.

The Framework also builds added accountability and transparency into the Integrated Resource Restoration program, which is included in President Obama's budget proposal for the next fiscal year.

*continued on page 14*

## Web Resources for Tracking Flow and Flood Conditions in the Platte River Basins

The following list of web sites, and hints for how to use them, should be helpful in tracking flow and the potential for majoring flooding events all along the Platte River basin this summer. They are provided with help from Extension Educator Gary Stone at the University of Nebraska-Lincoln's Panhandle Research and Extension Center, Scottsbluff.

- <http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/snowprec.html> University of Wyoming Water Resources Data System. Scroll down to the Upper and Lower North Platte River basins. You can see we are 259% and 207% of average snowmelt equivalent.

- [http://www.usbr.gov/gp/lakes\\_reservoirs/wareprts/wygraph1.htm](http://www.usbr.gov/gp/lakes_reservoirs/wareprts/wygraph1.htm) U.S. Bureau of Reclamation web site that graphically shows Average Snow Water Equivalent (in black), the 2010 Snow Water Equivalent (in red) and current, 2011 Snow Water Equivalent.

Conditions are far above average with more snowmelt to come. Click on any of the charts to enlarge. The ones on the North Platte River are Seminoe, which is the first reservoir on the USBR's North Platte River system in central Wyoming, and Glendo, which is the second to the last reservoir in the system which has a flood pool to help manage potential surges or increases in the flows into the North Platte River. The next reservoir in the system after Glendo is Lake McConaughy, near Ogallala, which was more than 95 percent full at the time this was posted.

- [http://www.cnpidd.com/Elevation\\_Flows2.htm](http://www.cnpidd.com/Elevation_Flows2.htm) Central Nebraska Public Power and Irrigation District web site showing flows into and out of Lake McConaughy and at other points along the Platte River across Nebraska.

- [http://www.usbr.gov/gp/hydromet/teacup\\_form.html](http://www.usbr.gov/gp/hydromet/teacup_form.html) Another U.S. Bureau of Reclamation web site. Fill in "North Platte Basin" in the search box and hit "Submit" and you will get a "TEACUP" model of the reservoirs on the Upper North Platte River with inflows, outflows and reservoir levels. Pathfinder Reservoir is currently "full" flowing water over the natural spillway back into Fremont Canyon, creating quite a waterfall as it drops more than 200 feet to the riverbed, below the dam.

- <http://waterdata.usgs.gov/ne/nwis/current/?type=flow> U.S. Geological Survey web site for Nebraska showing the different real time flows at selected points on the various rivers and streams across the state.

- <http://water.weather.gov/ahps2/index.php?wfo=cys> Part of the NOAA web site for flood prediction at any given area in the United States. Use the arrows to navigate the site to anywhere around the state or anywhere in the country where you want to see what is going on. Click on the markers to see what flows and predictions are for that site / area.

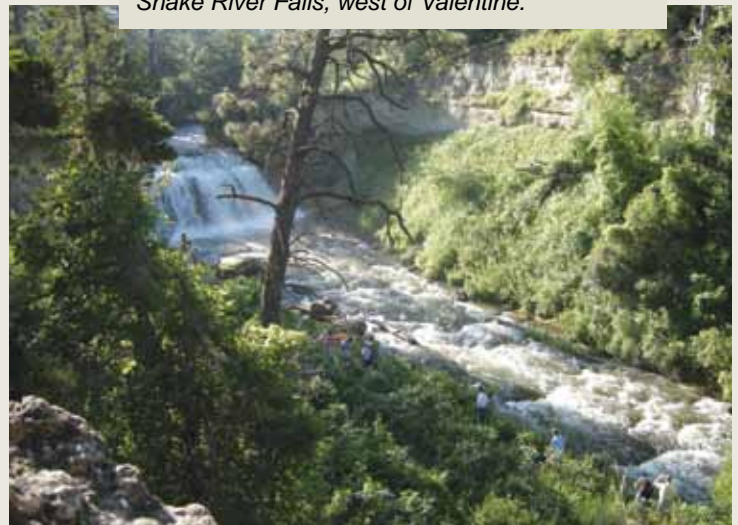
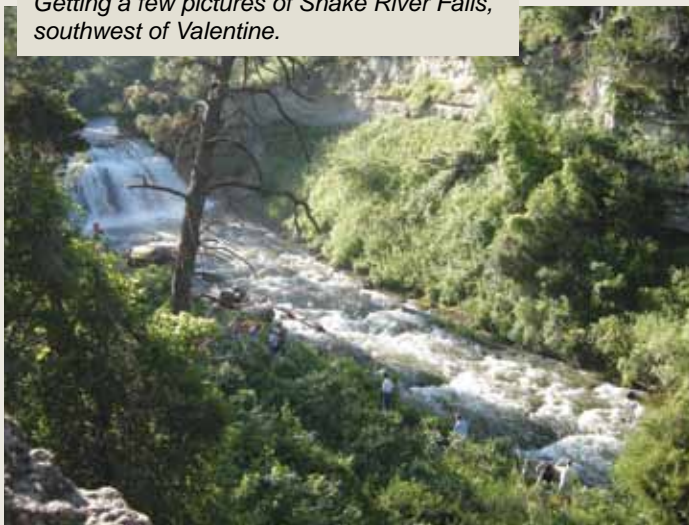
Historical high water flow at Scottsbluff was a little over 17,000 cfs (cubic feet per second or second feet) in 1929, according to NOAA weather radio. This was 20 years after Pathfinder Reservoir was built, but before Glendo Reservoir was constructed. One cfs equals about two acre-feet of water in a 24-hour time period (646,272 gallons of water per day).

## 2011 Water and Natural Resources Tour Visits North Central Nebraska July 12-14



*The 2011 Water and Natural Resources Tour visited the Loup, Niobrara and Snake River basins in north central Nebraska.*

*Getting a few pictures of Snake River Falls, southwest of Valentine.*



*Snake River Falls, west of Valentine.*



*Water from Merritt Reservoir flows into the Snake River during a very unusually wet and lush mid-summer in the Nebraska Sand Hills.*



*Rod Imm, general manager of the Ainsworth Irrigation District, talks about district operations at Merritt Reservoir, west of Valentine.*

**Cosponsored by: Central Nebraska Public Power and Irrigation District, Kearney Area Chamber of Commerce, Lower Loup NRD, Nebraska Public Power District, Northern Plains Supply, Inc., Perfect Valley Irrigation, Inc., and Sandhill Equipment, Inc.**



*Pelicans on the shore of Merritt Reservoir.*



*Driving west on Hwy 20 toward Marrison shows the vastness of the Nebraska Sand Hills.*



*Tim Nollette grills steaks on a homemade grill at the Nollette ranch near Nenzel.*



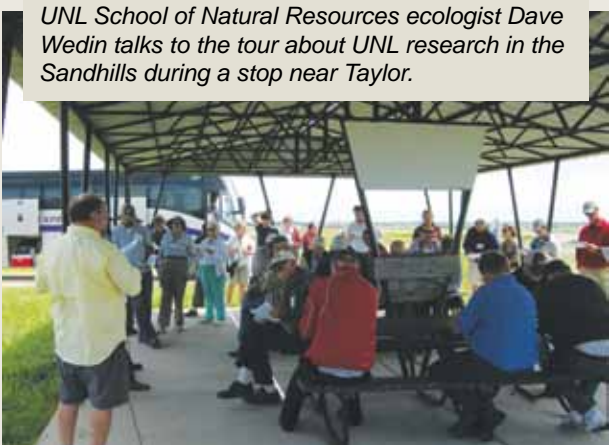
*Linking up for freshly grilled steaks at the Nollette ranch near Nenzel.*



*Brothers Greg and Tim Nollette (in cowboy hats) explain the diversity of operations at their ranch near Nenzel, which include stockbreeding, grape production and many sustainable agriculture projects.*



*Those on the tour examine vines for growing vinegar grapes at the Nollette ranch near Nenzel.*



*UNL School of Natural Resources ecologist Dave Wedin talks to the tour about UNL research in the Sandhills during a stop near Taylor.*



*Pat Grant walks across the newly completed Taylor-Ord canal head gate near Taylor. The head gate had to be built to replace one that was washed-out by floodwaters in 2010.*

*(Photos by Steve Ress and Rachael Herpel) continued on page 21*

## Missouri Flooding *continued from page 6*

- Distributing appropriate resources such as one-page handouts and other appropriate information to constituents in a variety of settings were flood victims frequent
- Teaming with Iowa State University Extension to plan joint educational activities around cropping systems and homeowner issues.
- Planning for a mold management workshop series and supporting materials to be initiated soon.
- Engaging UNL's Educational Media team in managing web resources, preparing news releases, and editing new publications to support local Extension efforts.

These efforts are resulting in a robust set of educational resources and programs to help Nebraskans better manage the tremendous challenges posed by Missouri River flooding.

These efforts would not have been possible without a team faculty willing to set aside normal responsibilities to help people access recommended flood-related resources. In addition, many local Extension educators in the affected counties are sharing resources with local clientele and media and are planning educational workshops to help Nebraskans make good decisions in response to a bad situation.

Without a disaster or flood specialist among our UNL faculty,

we have relied heavily on a network of faculty from around the U.S. in our land grant university system. The national Extension Disaster Education Network (<http://eden.lsu.edu>) and eXtension (<http://www.extension.org/>) have provided a wealth of information from which to choose to adapt to our constituent needs.

Our colleagues at North Dakota State University and University of Missouri have contributed additional resources for our use in Nebraska. These networks have allowed us to provide people with access to unbiased, peer-reviewed, science-based information.

### Contents of [flood.unl.edu](http://flood.unl.edu)

Health / Hazards - Mosquitoes & Other Insects; Displaced Wildlife; Food Safety  
Property - Homes & Buildings, Septic Systems; Wells & Drinking Water; Gardens, Trees & Landscapes; Livestock & Pets, Propane Tanks  
Emotional and Financial Impact - Children & Families; Small Business Recovery  
Crops & Cropland  
Saturated Soil Risk  
Flood Resources in Spanish

## Forest Service Maps *continued from page 11*

The Framework uses three watershed condition classifications:

- Class 1 watersheds are considered healthy.
- Class 2 watersheds are relatively healthy, but may require restoration work.
- Class 3 watersheds are those that are impaired, degraded or damaged.

Additional benefits to the Framework are the opportunities it provides to current and future partners in watershed restoration and maintenance. It also increases the public's awareness of their local watershed conditions and the role they can play in improving them. USFS expects that as the map gains more use, it will promote the department's "all-lands" approach to managing the nation's forest and landscapes.

"Watershed restoration is not new to the Forest Service, but we now have new capabilities to assess and prioritize where resources

are most needed," said U.S. Forest Service Chief Tom Tidwell. "For the first time, we are laying out a process to allow data from local assessments to be collected, analyzed and evaluated to better understand existing conditions and the specific needs for restoration and maintenance at the national level."

The Framework integrates well with both the proposed Land Management Planning Rule and the agency's Climate Change Scorecard. All three efforts require working with the public and partners to assess, monitor, maintain and restore the health of forests and watersheds. The Framework assists by providing key data that will help to prioritize resources.

The Forest Service expects to have national and regional Watershed Condition Classification maps posted electronically on an agency Web site early next week, with an interactive mapping tool available by the end of the month, according to agency officials.

### James W. Schneider *continued from page 3*

(NAWMDN) since I started with Extension. The NAWMDN works with producers to educate and train them on using the newest and most effective tools and technologies available to maximize their irrigation scheduling efficiency. By helping producers become successful no-tillers while utilizing tools and technologies of the NAWMDN program, irrigation could potentially become a supplement to their operations rather than a necessity.

#### Examples of Past Research/Extension Programs:

I have been a member of the Greater Quad County On Farm Research group since I started with UNL Extension in December 2006. The program was initially started by Extension Educators and Specialists supporting York, Fillmore, Cay and Hamilton Counties in Nebraska and has expanded beyond the county lines since then. We work with producers to design field-sized experiments to answer their management questions. We meet as a group to review research results

and to decide on research plans for the following year with the goal in mind of conducting these trials on multiple farms so we can evaluate across environments, soils and farming systems.

One recent study evaluated soybean seeding rates in 30" rows. Three years of on-farm research studies in South Central Nebraska have showed producers can plant 120,000 seeds/acre on 30" rows, reducing seeding rates by an average of 40,000 seeds/acre with no significant effect on soybean yields while saving producers \$10.66-18.57/acre based on \$40-65/bag seed cost.

#### Examples of Outreach Programs:

As mentioned above, I have worked with irrigated producers to increase their irrigation efficiency through the NAWMDN.

#### E-mail:

[jschneider7@unl.edu](mailto:jschneider7@unl.edu)

## Fall Water Law Conference *continued from page 1*

Regular morning sessions, begin at 8:30 a.m. and include "The Realities of Climate Change Law and Practice" by Adell Amos, University of Oregon School of Law; "New Guidance from EPA and the Corps Sets the Stage for Expanded CWA Jurisdiction" by Tom Wilmoth, Blankenau Wilmoth LLP; and "Impact of Niobrara River Litigation on Nebraska Water Law" by Stephen Mossman, Mattson, Ricketts, Davies, Stewart and Calkins Law Firm; and "What's New Quick Review, Anthony Schutz, NU College of Law.

Afternoon sessions, beginning at 1 p.m., include "Water-Use Transfers-Current Procedures and Possible Measures for Improvement" by consulting engineer Michael Jess, Ann Bleed of Ann Bleed and Assocs. and David Bargaen of Remboldt Ludtke LLP; "Stormwater Management-Shifting Paradigms, John Heil, Baird Holm LLP and David Shelton, UNL; and "General and Specific Conflicts of Interest in Water Law: An Overview" by Richard Dooling, NU College of Law.

The conference's focus is an overview of current topics in Nebraska water law, Benson said.

At the same location the following day, focus shifts to Great Plains climate, water and ecosystems in a symposium showcasing impacts at the intersection of climate change or variability, water and all other disciplines, including infrastructure, design, hydropower, agriculture, ecosystem services, drinking water and many others. Geographic focus will be the Great Plains, including research or programming transferable to the Great Plains

The symposium opens at 8 a.m. with "Regional Implications of

Global Climate Change for the Great Plains" by UNL climatologist Robert Oglesby and continues with "Global Change and 21st Century Water Resources Challenges" by keynote speaker Matthew Larsen, associate director, U.S. Geological Survey, Climate and Land Use Change.

That will be followed by sessions on "Impacts and Adaptations" the remainder of the morning that feature a variety of speakers and discussion sessions on topics to include hydropower, agriculture, wildlife, ecosystem services and others.

Time will be available at lunch to view more than two dozen posters, after which the afternoon will be dedicated to three breakout sessions.

Session one is dedicated to "Managing Watersheds," and will focus on water budgets or balances, a currently hot topic in Nebraska. Sessions two and three will focus on "Research and Innovative Programming Highlights."

Breakout sessions two and three are divided into 15 minute blocks, allowing for 10 or more presentations per sessions. Symposium registrants are free to mingle among the three sessions as they choose.

Breakout session speakers are from UNL, Iowa State University, USGS, area law and professional firms and other locales. Detailed information on the three sessions is online at [watercenter.unl.edu](http://watercenter.unl.edu).

The one-day event is being co-hosted by the USGS Nebraska Water Science Center.

Additional details and registration information for both events are online at [watercenter.unl.edu](http://watercenter.unl.edu) or call Benson at (402) 472-7372. Registration is \$120 for either day's event, or \$200 for both days.

## Lenton Named Head continued from page 1

Lenton currently chairs the independent World Bank Inspection Panel, a vice presidential-level position within the World Bank organization. The Panel was established in 1993 to increase accountability of the World Bank and to improve compliance; he has served as chair since 2009.

His appointment to head the Daugherty Institute begins February 1, 2012; He will remain a member of the Panel until August 2012.

Lenton said, "The Robert B. Daugherty Water for Food Institute has so much to build on: its base at a leading land grant university with a strong tradition of practical application of scientific knowledge; its location in the state of Nebraska, known as an innovator of good policies and practices in agricultural water management; the enormous talent of its faculty and research staff who have a long track record of addressing water and food security issues from a variety of disciplinary perspectives; its strong convening power, as illustrated by the annual Water for Food Conferences that have begun to shape the debate on this critical issue of our time; and the very generous founding gift from the Robert B. Daugherty Foundation that will enable the Institute to get off to a rapid start." He added, "I am very excited by the opportunity to build on these strong foundations and enable the Institute to fulfill its commitment to help the world use its limited freshwater resources effectively and ensure food security for current and future generations."

Dr. Ronnie Green, Vice Chancellor and Vice President, Institute of Agriculture and Natural Resources, University of Nebraska (IANR is the administrative home of the Daugherty Institute) said "Dr. Lenton brings a wealth of global experience to the Daugherty Water for Food Institute that will allow the University of Nebraska to capitalize on its considerable strengths of Nebraska's major water resources and long history of excellence in agricultural water innovation and education. Meeting the grand challenge of feeding a growing world population with more efficient use of scarce water resources requires great vision and we are tremendously excited to have someone of Roberto's caliber coming to lead us in this highly important initiative for Nebraska and the world."

Among Lenton's most important experiences was helping establish and then serving as Director General of the International Water Management Institute in Sri Lanka from 1987 to 1994. Under Lenton's leadership, IWMI grew from a small project-based organization to a major institute employing more than 300 people in 10 countries with an annual budget of over \$10 million.

Jeff Raikes, CEO of the Bill & Melinda Gates Foundation and a member of the Board of Directors of the Daugherty Institute, said, "Dr. Lenton is one of the most widely recognized leaders in the world in water circles. His early work in South Asia laid the foundation for the International Water Management Institute, which now has a significant global presence and impact. What he brought to IWMI -- a highly effective strategic planning process, a sharply focused research agenda and a deep knowledge of the most important issues and players throughout

the world -- are also key ingredients in the success of the Daugherty Institute. I don't believe we could have found a more qualified and respected founding director."

Dr. M S Swaminathan of Chennai, India, who is known as the "Father of the Green Revolution in India" and was the first recipient of the World Food Prize, has known Dr. Lenton for more than 30 years. He cited Lenton's "depth of knowledge on issues relating to sustainable water security and the width of his understanding of the social and scientific dimensions of water management" and added, "He is undoubtedly one of the most eminent leaders in the area of water and food security. It is therefore appropriate that he is joining as the Founding Director of the Robert B. Daugherty Water for Food Institute of the University of Nebraska. I am confident that under his leadership this Institute will become the centre of origin of important findings in the field of water for food."

Lenton has also been director of the United Nations Development Programme's Sustainable Energy and Environment Division in New York, where he worked closely with colleagues at partner institutions to help launch the Global Water Partnership, the Millennium Ecosystem Assessment and the Poverty and Environment Programme. His responsibilities in the Division included agriculture and food security, natural resources management, sustainable energy, drought and desertification, and capacity building for sustainable development. Earlier, he was Program Officer in the Rural Poverty and Resources program with the Ford Foundation in New Delhi and New York, and an assistant professor at the Massachusetts Institute of Technology. He was also senior advisor on water at the Earth Institute at Columbia University.

A citizen of Argentina with degrees from the University of Buenos Aires and MIT, Lenton is a co-author of *Applied Water Resources Systems*, and of *Health, Dignity and Development: What will it take?* -- the final report of the UN Millennium Project Task Force on Water and Sanitation, which he co-chaired. Following the release of this report in 2005, he was appointed Chair of the Geneva-based Water Supply and Sanitation Collaborative Council.

The Daugherty Water for Food Institute was established in 2010 through a \$50 million founding gift from the Robert B. Daugherty Charitable Foundation. Daugherty, founder of Valmont Industries and a pioneer in the irrigation industry, died in November 2010.

In addition to hosting the annual Water for Food conference, which this year drew more than 450 participants from across the globe, the Daugherty Institute will focus on building international partnerships with universities and ministries to help develop solutions for the optimal use of water in agriculture. At the conference last May, the University of Nebraska agreed to establish a joint program with UNESCO IHE in the Netherlands, the world's largest graduate program in management of water. University leaders are also working to develop other partnerships in China, India, Brazil and other countries.



# EPA Searchable Website for Drinking Water Violations

The U.S. Environmental Protection Agency (EPA) has announced improvements to the availability and usability of drinking water data in the Enforcement and Compliance History Online (ECHO) tool.

ECHO allows the public to search to see whether drinking water in their community met the standards required under the Safe Drinking Water Act (SDWA), which is designed to safeguard the nation's drinking water and protect people's health. SDWA requires states to report drinking water information periodically to EPA. ECHO also includes a new feature identifying drinking water systems that have had serious noncompliance.

The new SDWA information on EPA's website provides:

- Users with information about whether their drinking water has exceeded drinking water standards.
- A serious violators report that lists all water suppliers with serious noncompliance.

- EPA's 2009 National Public Water Systems Compliance Report, which is a national summary of compliance and enforcement at public drinking water systems.

The serious violators list identifies water systems that have had serious noncompliance due to a combination of unresolved violations.

ECHO data shows that overall, the number of systems identified as serious violators continues to decrease due to lead agencies, in most cases the states, more efficiently addressing serious noncompliance. Currently, about four percent of all public water systems are considered serious violators.

Under SDWA, water suppliers are required to promptly inform customers if drinking water has been contaminated by something that could cause immediate illness or impact health. If such a violation occurs, the water system will announce the violation and provide information about the potential health effects, steps the system is taking to

correct the violation, and the need to use alternative water supplies (such as boiled or bottled water) until the problem is corrected.

Systems inform customers about violations of less immediate concern in the first water bill sent after the violation, in a Consumer Confidence Report, or by mail.

EPA's enforcement goals for clean water include working with states and tribes to ensure clean drinking water for all communities and improving transparency by making facility compliance data available to the public. The release of drinking water violations data in ECHO advances these goals and creates additional incentives for government agencies to improve their reporting of drinking water violations and increase efforts to address those violations.

SDWA search page: [http://www.epa-echo.gov/echo/compliance\\_report\\_sdwa.html](http://www.epa-echo.gov/echo/compliance_report_sdwa.html)

Enforcement and Compliance History Online tool: <http://www.epa-echo.gov/echo/>

## We're Updating!!

We are updating our mailing list. If you have a change of address, title and/or name, or would like to have your name added to or removed from the *Water Current* mailing list, please let us know. Also, if you know of anyone who might be interested in receiving our publications, please give us their names and we will be glad to add them to our mailing list.

Change my address       Delete me from your list       Add to our list

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Send update to:

**Water Center**  
University of Nebraska–Lincoln  
506 Hardin Hall  
P.O. Box 830979  
Lincoln, NE 68583-0979  
Fax: (402) 472-3574  
or e-mail changes to: [sress1@unl.edu](mailto:sress1@unl.edu)

## Choosing a Laboratory Method

By Daniel Snow, Director of Laboratory Services, UNL Water Sciences Laboratory

Unless you need a sample tested, or work in a testing laboratory, there aren't many reasons to consider all of the alternatives now available for laboratory testing methods.

If you need a sample tested, you're probably going to rely on the lab to decide what method to use. This works fine for most applications, but what happens if you want to measure a chemical your laboratory doesn't test for? Consulting an analytical chemist can help in making an informed decision.

Analytical chemistry is the science of separating, identifying and quantifying chemical components of natural and artificial materials. Analytical chemists spend entire professional careers designing and using methods for detecting and quantifying substances in mixtures. There are always ways to improve methods through technological changes, new sample types and chemicals to measure.

In some cases it seems there are almost as many different methods available to measure chemicals as there are samples to collect. Because of this incredible variety of samples and ongoing changes in detection technology, it seems there are always "new and better" methods.

Because laboratories have so many choices in methodologies for measuring chemicals in water, several professional groups and associations have compiled and published descriptions of methods that meet their criteria for testing.

These so-called "consensus methods" are collections of recommended procedures and equipment to use for a common purpose.

For example, *Standard Methods for the Examination of Water and Wastewater* is among the oldest and most used source of analytical methods for testing water. First published in 1905 by the American Public Health Association, *Standard Methods* continues to provide a comprehensive technical resource to water utilities for both chemical and microbiological testing of water.

Though not a regulatory handbook, it contains a wealth of information on currently accepted methods for chemical, biological and radiological analysis of water and wastewater. Because it is so widely used, methods described in the book are generally accepted for sampling and analysis related to regulatory compliance, though often regulations specify methods to be used.

Other common sources for methods include the American Society of Testing Materials (ASTM), U.S. Geological Survey (USGS) test methods, and Association of Analytical Chemists (AOAC).

What if you would like to compare results from different laboratories or methods for nitrate, for example?

Since this is a commonly measured contaminant, most laboratories now use automated and standardized testing methods described in consensus or regulatory publications. However, there can be many new methods that use new sensors, detectors, or test kits you can use yourself. How do these compare?

The demand is always there for faster and cheaper testing methods. Faster measuring methods help provide information so decisions can be made on the spot. Less expensive methods can allow for more samples to be tested, but it's important to consider whether the results will be comparable. What decisions will be based on the results?

This question is critical to consider when choosing a method in all types of testing from routine or standard water quality measurements to advanced methods for emerging contaminants.

Please consider using your laboratory as a resource in making informed decisions about the choices available for testing your samples. Feel free to contact me, or any of the staff at the University of Nebraska–Lincoln Water Sciences Laboratory, for help in deciding what is best for your needs. General information on the lab and points of contact can be found online at <http://watercenter.unl.edu/WaterSciLab/WSL.asp>

*Analytical chemistry is the science of separating, identifying and quantifying chemical components of natural and artificial materials.*

# Goeke, Supalla Retire from UNL

Twenty of the 81 University of Nebraska–Lincoln (UNL) faculty that retired under a Voluntary Separation Incentive Program this year are from UNL’s Institute of Agriculture and Natural Resources (IANR).

Two of them.....Jim Goeke and Ray Supalla.....are well known in Nebraska’s water community.

IANR Vice Chancellor Ronnie Green spoke at an April 21 reception honoring retirees at the Lied Center for the Performing Arts. “Your lifetime of work – good work, important work, work that matters will be remembered long past your retirement date,” he told retirees.

Goeke, a professor in UNL’s School of Natural Resources, came to UNL in July 1970 and is known as “Mr. Water.” This hydrogeologist’s main research has been of groundwater in central and southwest Nebraska, and its management.

He worked with projects on gathering data for modeling unconfined aquifers near the Platte River in the central Platte region, and similar stream-aquifer studies in the Republican River valley. He often assisted Natural Resource Districts in west-central Nebraska in devising and implementing groundwater management plans.

Goeke was always available to educate groups of two to two hundred on Nebraska water and was well known throughout the states water and natural resources communities. He was outwardly proud of his affiliation with UNL’s Conservation and Survey Division.



*Jim Goeke*

Supalla, an agricultural economics professor, came to UNL in July 1976. His focus on water resource issues led to development of an irrigation analysis tool called the “Water Optimizer.”

Irrigation management, water quality and policy, and irrigation and reservoir management under limited water or drought conditions also are among his research interests. He has taught upper-level natural resources economics, advanced farm management and senior projects, and has served as an expert witness in numerous water rights cases.

UNL had 270 tenured faculty eligible to retire early in exchange for a year’s pay at the faculty member’s base salary. Faculty needed to be at least age 62 and have had at least 10 years of service to UNL. VSIP programs were also offered at NU’s Omaha and Kearney campuses.



*Ray Supalla*



**Read us on your  
iPhone or Android.**

## Summer 2011 Flooding *continued from pages 8-9*



*Blocked roads from Missouri River flooding in Brownville in late June.*



*A casino across the Missouri River from Omaha.*

*A motel on Hwy 2 braces for floodwaters.*





The tour stops at a Niobrara River overlook to listen to Middle Niobrara NRD general manager Mike Murphy.



Strange weather for mid-July. Rain, and lots of it, obscures a view of the Niobrara River from an overlook near Valentine.



Ron Wolff, manager of the Twin Loups Irrigation District talks to the tour at Davis Creek reservoir.



Mark Broham talks with Frank Albrecht at SandHills Equipment Co. near Bassett.



Tour participants enjoy a mid-morning refresher at Davis Creek Reservoir.



Merwyn French talks to Duane Swanson at Sandhills Equipment Co. near Bassett. Swanson began the company as a small garage in Rose in the mid-1950's.

## NEWS BRIEFS

### AWWA Desal Manual

American Water Works Association (AWWA) has published AWWA Manual M61, *Desalination of Seawater*.

As the desalination of seawater becomes an increasingly sought-after alternative for water supply in coastal areas, *Desalination of Seawater* (M61) provides essential information that water utility managers and design engineers need. The manual contains best practices in desalination, and was written, reviewed, and approved by worldwide desalination experts, desalination plant owners, and manufacturers of desalination equipment.

It is an excellent reference for all utilities considering desalination as a drinking water resource, currently in the planning stages of building a desalination plant, or currently operating a desalination plant.

This manual is available online at <http://www.awwa.org/bookstore>.

About the Publication: *Desalination of Seawater* (M61), American Water Works Association, ISBN: 978-1-58321-833-4. AWWA members: \$75, Nonmembers: \$119, Catalog No. 30061.

### EPA 7 Facebook Page

The U.S. Environmental Protection Agency Region 7 has launched its Facebook page.

The page allows for fast, easy, and transparent communication with the agency in a public forum. EPA Region 7 is adding a Facebook icon to its News and Events page at [www.epa.gov/region7/newsevents](http://www.epa.gov/region7/newsevents) that links to the Region 7 Facebook page.

For the latest news and information regarding Region 7 activities, go to <http://www.facebook.com/eparegion7>.

### Stevens Heads AWWA

Pledging to work to assure “the highest water quality is preserved for future generations,” West Des Moines (Iowa) Water Works General Manager Jerry Stevens took the reins as president of the American Water Works Association (AWWA) at the conclusion of the 2011 Annual Conference and Exposition in Washington, D.C.

Stevens is a registered professional engineer and certified water treatment plant operator and distribution system operator. He has been an AWWA member more than 36 years. He follows Joseph Mantua, Black & Veatch customer services manager, in leading the 130-year-old organization.

Stevens said his priorities would be to optimize value for members, pursue beneficial alliances and partnerships, and grow leadership and development opportunities for young professionals.

### New Program to Help Stop Spread of Zebra Mussel

Nebraska Invasive Species Project outreach workers are helping boaters prevent the spread of zebra mussels. This effort to keep zebra mussels and other aquatic invasive species from muscling out other lake-dwellers is made possible with a \$100,000 grant from the Nebraska Environmental Trust.

“This allows us to hire temporary employees to go out and provide outreach materials at lakes across the state,” said project coordinator Karie Decker. “It also allows us to buy decontamination units for boaters that just came from an infested lake somewhere.” Workers are distributing information about why boaters should “clean, drain and dry” when moving from lake to lake, and are providing boat decontaminations, as needed. The outreach teams will be at Lake McConaughy, Harlan Reservoir, and rotating spots across eastern Nebraska, Decker said.

In Nebraska, zebra mussels have previously been found in Zorinsky Lake in Omaha and at Lake Offutt. Zebra mussels are native to the Caspian Sea and have spread to the United States, where they have no natural predators, by hitching rides on or in ocean-going vessels. Without predators, they crowd out other species and clog underwater equipment such as intake pipes.

The Nebraska Invasive Species Project is part of the Nebraska Cooperative Fish and Wildlife Research Unit at the University of Nebraska–Lincoln’s School of Natural Resources.

2. What would you like to see in upcoming issues of the Water Current?

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3. What are your primary water and environmental interests?

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4. The Water Current provides timely and important information that I find useful.

Strongly agree  Mostly agree  Mostly disagree  Strongly disagree

5. Do you read each *Water Current* you receive?

Yes  No

6. Do you circulate your *Water Current* to anyone else?

Yes (if so, how many others \_\_\_\_\_)  No

7. Should the *Water Current* be distributed

More often  less often  remain a quarterly

8. Do you ever access the PDF copy of the *Water Current* that is on the *Water Center's* web site at <http://watercenter.unl.edu>?

Yes  No

9. What can we do to improve the appearance and/or readability the *Water Current*?

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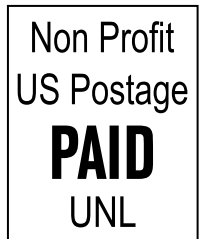
10. Additional comments (include address corrections or other updates to your mailing information):

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## Help Us Publish a Better Water Current

Help us publish a better *Water Current*.

Take a few moments to complete this questionnaire and return it to us. If you do, we will enter you in a drawing for one of three Water Center fishing lures and one of three Water Center umbrellas. To be eligible for these drawings, return your completed survey to Steve Ress, UNL Water Center, P.O. Box 830979, University of Nebraska, Lincoln, NE 68583-0979 or FAX it to (402) 472-3610 by Friday, June 25. UNL subscribers may return surveys via campus mail to 516 HarH, EC, 0979.

Mail or FAX the entire page (so we have your name and address for the drawings).

Survey responses and names of responders are confidential to the *Water Current's* editorial staff.

1. Rank, in order of importance, the usefulness of the following general areas of the *Water Current* (1 - most important to 7 - least important):

- News Briefs
- Meet the Faculty
- Reporting on upcoming events, seminars, conferences, tours, etc.
- Director's Notes
- Reporting on water and environmental research, survey and outreach activities
- Featured Partners
- What's happening with the Water Sciences Laboratory

*continued on page 23*