Wise Water Words

The Newsletter of
the Nebraska Section

American Water Works Association

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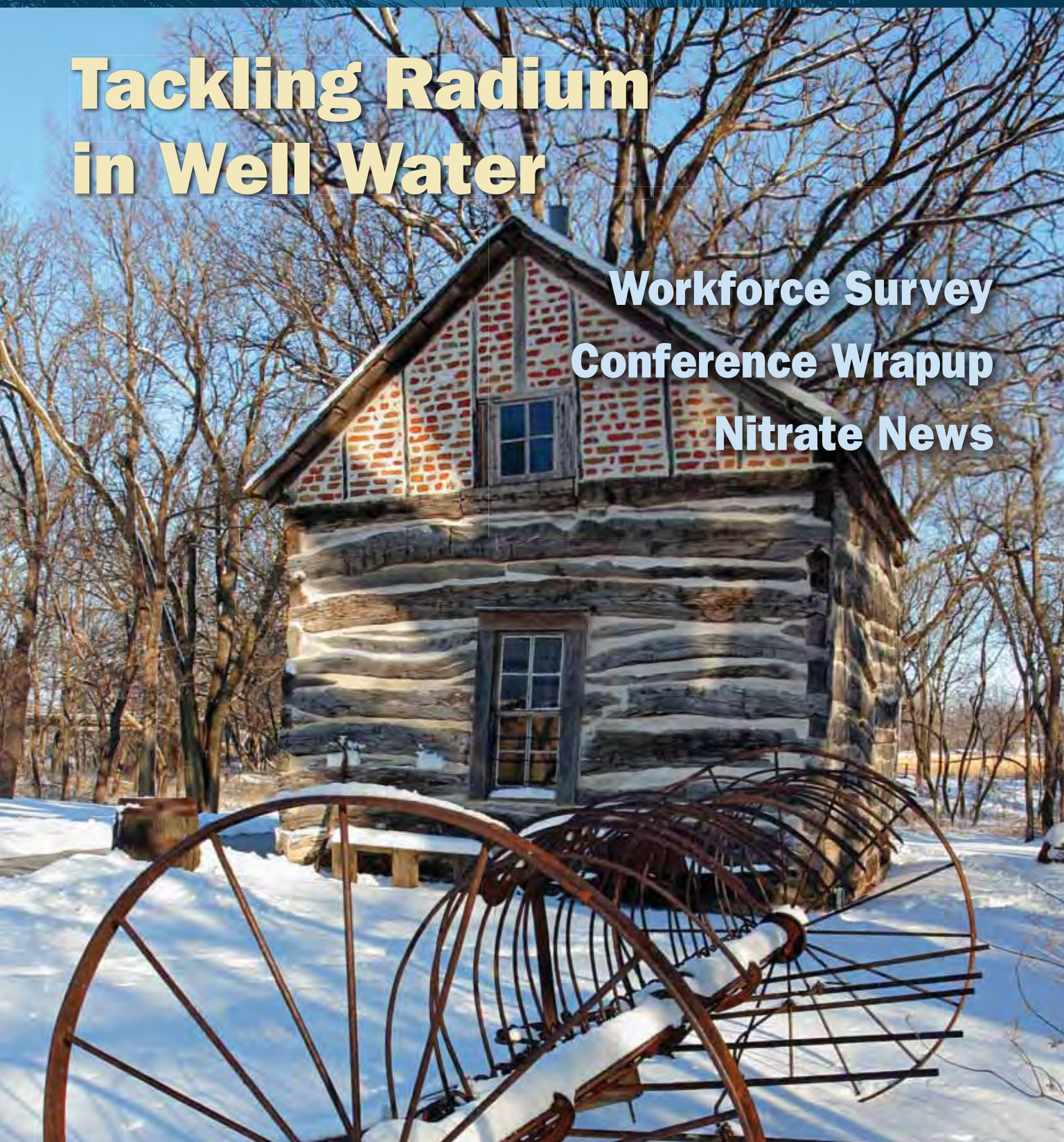
Winter 2011

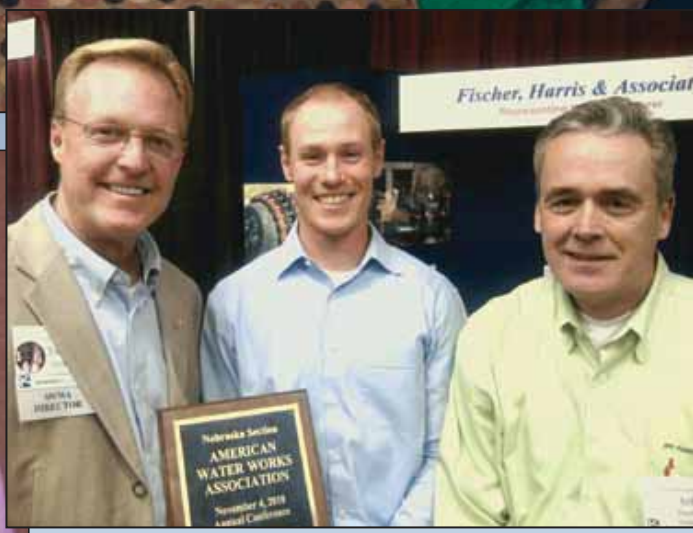


Tackling Radium in Well Water

Workforce Survey

Conference Wrapup

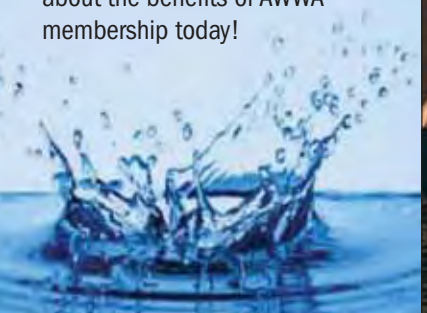
Nitrate News



MEMBERSHIP

American Water Works Association

AWWA MEMBERSHIP isn't just a great way to stay on top of the knowledge and skills you need in today's water industry. It's also the best way to make sure you don't miss out on good times with your fellow Nebraska water professionals. Tell a co-worker about the benefits of AWWA membership today!



The Nebraska Section of
American Water Works Association

American Water Works Association

Table of Contents

WISE WATER WORDS
American Water Works Association

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On the cover: Palmer-Epard Cabin and old hay rake; Homestead National Monument of America, Beatrice, Nebraska.

Chair's Corner

Water Getting Some Attention, for Once

by Teresa Konda, HDR

Much of the news coverage in Nebraska in recent months has centered around the TransCanada Keystone XL pipeline. This public discussion has brought one of Nebraska's invaluable resources, our water, to the forefront of public attention.

I believe it is a good thing to have people—many of whom normally do not give a passing thought to the water flowing from their taps—talking about our state's water. It helps all of us who work in the drinking water industry to remember how important our work is with respect to ensuring the health and safety of our families and communities, the strength of our local economies and the protection of our natural resources.

The Nebraska Section AWWA Annual Fall Conference showcased some of the things our members have been doing the past year. Congratulations to the City of Fremont, which won the Water Tasting Competition for the second year in a row. Congratulations as well to all of the award winners, and to the winners of the Ultimate Backflow Challenge and Top Ops.

The technical sessions were informative and covered a wide range of topics. We enjoyed getting to know the visiting AWWA dignitary, vice president Dennis Kelleher from the New York Section.

The raffle to support Water For People was once again highly successful. The first annual poker tournament to benefit Engineers Without Borders, a joint effort between the NS-AWWA and NWEA Young Professionals committees, was the talk of the conference. Thank you to all of the speakers, exhibitors, committee members, board members and others who made the conference happen. And thank you to everyone who participated in the conference activities, whether you volunteered or were "volun-told" — the active involvement of our members is one of the things that makes our Section strong.

It has been my honor and pleasure to serve as the 2010-2011 NS-AWWA chair. As we put the finishing touches on 2011 and look forward to the new opportunities and challenges of 2012, I am excited by the possibilities of a new year and excited by the things our members, committees and board will accomplish in the coming year.

WELCOME OUR NEW NEBRASKA SECTION AWWA MEMBERS

by Rich Robinson, Kirkham Michael

The Nebraska Section AWWA welcomes these new members who joined in 2011:

Jeffery Schovanec, MUD
Heather Ramig, Midwest Laboratories
Brittany Hirschbrunner, Water Technology Group
Patrick Harlan, Miller Mechanical Specialties
Ron Beaver, Waterlogic USA
Tracey Christensen, MUD
Douglas King, MUD
Wesley Province, Province Plumbing & Heating
Allen Schoemaker, City of Blair
Teresa Justin, Lincoln Public Schools
Matt Rochester, Metrologic
Andrew Kneeland, American Underground Supply
Richard Douglas, City of Ravenna
David Stuart, Hastings Utilities
Chunmei Bai, University of Nebraska-Lincoln
Kristen Cope, University of Nebraska-Lincoln
Robert Egerer, Corix
Omid Kalantari, University of Nebraska-Omaha
Phuc Pham, University of Nebraska-Lincoln

Director's Report

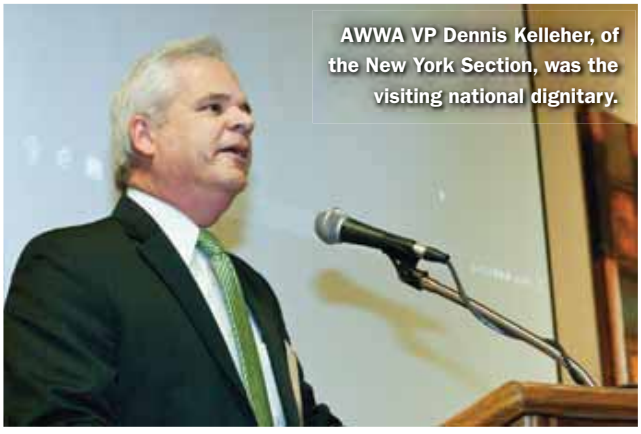
Annual Conference Another Success

by Tony Bilek, Mc², Inc.

Greetings, AWWA members and fellow water professionals. It was good to see so many of you at the annual Fall Conference and Exhibition in Kearney. The feedback and comments on the conference have been very positive. Congratulations to the Fall Conference planning committee on preparing another successful conference.

Our visiting national AWWA dignitary, Vice-President Dennis Kelleher, echoed many of the same sentiments as past visiting dignitaries. Our Section should be proud of the committee members, board members and volunteers who provide our membership with ample, and meaningful, training and educational opportunities. Other quality deliverables, such as mentoring, public awareness, networking and career-building, are just a few of the benefits AWWA members enjoy. Working with the Nebraska WEA and APWA associations at the annual Fall Conference is a model that is commended by all three national organizations. On the national level, these organizations have been developing plans to work together and these efforts will continue to grow. The visiting national dignitaries are always impressed with our conference, our volunteers and the fact that we work so well with other associations in the water utilities field.

The awards banquet is always a conference highlight. Congratulations to all of the individuals and utilities that received awards this year. Thank you to those award winners who have demonstrated their skills to become leaders in our industry. The awards are a small token of appreciation for what you do, day in and day out, to provide your customers with safe and ample drinking water.



AWWA VP Dennis Kelleher, of the New York Section, was the visiting national dignitary.

The 2012 Fall Conference will be moving to the new Younes Convention Center, which is located immediately west of the Kearney Holiday Inn Convention Center. We're excited about the new venue and the benefits of this larger and very impressive facility. Stay tuned for further details. Vice-Chair Eric Lee is the chairperson for the 2012 Fall Conference planning committee. Please feel free to contact Eric or any board member with suggestions on events, activities, topics or items that you feel will help in preparing another successful conference.

Please take some time to look at the list of committees at awwaneb.org/committees and consider participating in one (or more) that may be of interest and value to you. The success of any association is in its membership. Members who are active and involved in associations provide the foundation for strength and growth. As an active member of a committee, you will play a key part in the growth and success of our Nebraska Section of AWWA.

This was the conference's last year in its longtime venue.

PHOTO: DARYL KOTTWITZ

Enhance your professional network by joining NS-AWWA on LinkedIn. Find the link at awwaneb.org/socialmedia.

Water Reflections

No Policy Without a Crisis

by Brian Gongol, DJ Gongol & Associates

Winston Churchill is widely credited with saying, "Americans can always be trusted to do the right thing, but only once all other possibilities have been exhausted."

It's a claim that's a little cynical, a little hopeful, and all too often true — even if nobody seems to be able to prove that Churchill actually said it. I paraphrase it slightly differently: We are a nation of no policy without a crisis.

In August, Governor Dave Heineman sent a letter[1] to the White House and the Secretary of State asking them to block the proposed Keystone XL pipeline route through the sandhills. The letter is just 316 words long — but in those few words, the governor argues that a spill along the pipeline could contaminate the Ogallala Aquifer and put at risk the "lifeblood of Nebraska's agriculture industry."

Our section has taken no official stance in the pipeline debate, and I won't take one here, either. But there was, and still is, an enormous and expensive campaign being waged over the pipeline. Groups ranging from the National Wildlife Federation[2] and the Natural Resources Defense Council[3] to the American Petroleum Institute[4] and the Teamsters Union[5] have weighed in with letters, advertising dollars, and lots of pressure on politicians in Washington to try to determine the outcome of this Nebraska issue. The special legislative session this fall appears to have changed the route of the pipeline itself, which may satisfy some, but not all, of the opponents.

Now that the route is being revised, the question of whether the pipeline really threatened drinking water supplies may become purely hypothetical. But what motivated all the activity was the immediacy of it — it was urgent, so people perceived that there was a crisis.

Yet we know for certain about two threats to our public water supplies that are happening right here, right now: Much of our infrastructure is outdated — and many of the people who have been serving the industry are soon to retire and take their knowledge and experience with them. When it comes to those two very big issues, our trouble is that we don't face an immediate crisis. The pipeline issue was very concrete, and it had a very real timeline. The concepts of an aging infrastructure and a shrinking workforce are a lot harder to pin down. And when our mindset is "no policy without a crisis," that means we're likely to find ourselves without a policy.

Fortunately for all of us, we don't face many urgent, headline-grabbing supply and distribution failures in Nebraska. But on any given day, at least a handful of American communities are brought face-to-face with the consequences of under-investing in their water infrastructures. On our website at awwaneb.org/news/alerts, you'll find a stream of news stories about water-main breaks, boil orders and other water service interruptions from around the nation. Not every one of them is the result of infrastructure under-investment — but we all know that some of them are.

Knowing more about these failures elsewhere can help arm you with the knowledge you need to educate customers and elected officials about the need for investment in your own community. You may not have a crisis at home, but nobody knows

more about the hidden time bombs ticking away beneath the surface than the people who work in the water sector every day.

Take just a few moments every once in a while to read up on the latest water crisis somewhere else — then share what you've learned with the people who can give you the tools to make a difference. By showing others what has already happened elsewhere, you may be able to get a policy without a crisis. Sometimes, people simply need to experience a moment of "There but for the grace of God go I" to be propelled into action.

The Keystone XL debate has shown that people are willing to react when they think their safe water supplies are threatened. It's up to all of us as water professionals — operators, engineers, regulators and suppliers alike — to sustain the public's level of interest in safe water and to motivate people to care before a crisis erupts.

ENDNOTES

[1]http://www.governor.nebraska.gov/news/2011/08/31pipeline.html
[2]http://blog.nwf.org/wildlifepromise/2011/08/jobs-claims-for-keystone-xl-dont-stand-up-to-scrutiny/
[3]http://www.nrdc.org/media/2011/110826.asp
[4]http://energynation.org/keystone-xl/
[5]http://www.teamster.org/content/labor-keystone-xl-jobs-and-economic-game-changer

The Nebraska AWWA mentoring program is here for you. Share your wisdom or gain new insight from an experienced pro. See details of the program at awwaneb.org/mentors.

Nebraska News and Events

Dennis Watts Honored With Fuller Award

by Mary Poe, Nebraska Department of Health & Human Services

Norfolk water and sewer director Dennis Watts is the Nebraska Section's 2011 George Warren Fuller Award recipient. This is the highest honor given by AWWA, and is presented for outstanding service to the water industry. He will be honored at the national AWWA conference in Dallas next summer.

Dennis began his career in the water industry in 1988 as a water operator and was promoted to his current position in 1995. He was instrumental in the development of a wellhead protection plan for the city, and has been involved with the design and construction of numerous projects over the years. Dennis chaired the Nebraska Section AWWA in 2003 and was one of the key members in the development and implementation of the Nebraska WARN system. He is a Grade 1 water operator.

Dennis is a life-long resident of Nebraska, born in Shelby and the proud father of four children and grandfather of nine. He and his wife celebrated their 35th anniversary this year, and the two have toured 25 states by motorcycle. The Nebraska Section is pleased to recognize Dennis with this honor.

Dennis Watts (center) with this year's Fuller Award.

Water Departments Receive AWWA Safety Awards

by Rob Pierce, League of Nebraska Municipalities

Eight municipal facilities received safety awards at the annual conference held in Kearney. Chadron (Class I), Seward (Class II), Beatrice (Class III) and Lincoln (Class IV) received the "Certificate of Achievement" awards as the top systems in their respective classes.

In addition, Scottsbluff (Class II), Auburn (Class II), Norfolk (Class II) and the Metropolitan Utilities District (Class IV) each received certificates of recognition.

The awards were based on data received by the NS-AWWA safety committee from the survey applications returned by the systems.

A scoring system using five years of data on reportable injuries, work hours and safety programs was used to determine the rankings. The top utility in each class received a "Certificate of Achievement" award. These systems also had to achieve a minimum of 750 out of a possible 1,000 points.

Systems earning the "Certificate of Recognition" had to accumulate a minimum of 600 points. Eligibility for all levels of recognition is limited to those systems that are AWWA members or those that have at least one individual AWWA member employed at the system.

This year, of the eight systems receiving awards, the calculated recordable incidence rate averaged about 6.1. That compares to a national average normally at about 10.0. Two systems, Chadron and Scottsbluff, logged no recordable accidents or lost work days with 113,993 hours worked over the past five years.

The safety committee encourages all AWWA-member water departments to send in their safety surveys for calendar year 2011, so they can receive recognition for their safe work environments. We can't recognize your safety efforts unless you return the survey.

A safe work environment is something to be proud of and deserves recognition. To those receiving awards for the calendar year 2010, congratulations and keep up the safe work!

Water For People Raffle Results

by Christian New, Terracon

Congratulations to the winners of the 2011 Water For People prize raffle at the Fall Conference in Kearney:

- 1st Prize: $250 to John Otter of JBS USA
- 2nd Prize: $150 to Sean Guinzy of MUD
- 3rd Prize: $100 to Jose Laborador of HDR

In addition, we'd like to thank Lyle Christensen, Jim Mahoney, Paul Trout and Aaron Dressel for donating their prize winnings back to Water For People.

This year's raffle raised $1,620 for the Water For People mission: "To build a world where all people have access to safe drinking water and sanitation, and where no one suffers or dies from a water- or sanitation-related disease."

Fremont Repeat Winner in "Best Drinking Water" Contest

by Mary Poe, Nebraska Department of Health & Human Services

"Doesn't all water taste the same?" asked one of the judges prior to the third annual Best Drinking Water in Nebraska taste test, held at the annual conference in Kearney. After evaluating and rating the six water samples for scent, appearance, flavor and aftertaste, the judge had his answer.

The water sample from the city of Fremont was rated the best-tasting for the second consecutive year. Fremont is now invited to submit a sample for the "Best of the Best" taste-test competition at the AWWA Annual Conference and Exposition (ACE) in Dallas in June. Other submissions came from the municipal water supplies in Beatrice, Lincoln, Omaha (MUD), Norfolk and Seward — and the final scores reflected a very close competition. We all know that water tastes best when it is chilled; however, this year, all the water samples were required to be at room temperature for the tasting contest, giving the judges the best opportunity to distinguish each water's flavor and quality from the others.

The contest, organized by the Nebraska Section's Public Information Committee, also had an entertaining flavor to it.

From left: Jordan Bang, Waren Sund, and Larry Andreasen, city of Fremont; AWWA VP Dennis Kelleher.

The organizers guessed that watching a water tasting contest may not be quite as exciting as watching a football game in Memorial Stadium, so they put together a slide presentation entitled "Waters of the Big Ten" to help liven up the program. Those in attendance (and paying attention) learned that the Big Ten Conference has been around longer than chlorinated water systems in this country have been around, along with other interesting facts.

Several lucky audience members took home door prizes, and the tasters were each thanked with a stainless steel water bottle emblazoned with the phrase "Official Taster of Nebraska's Best Water." The judge who had earlier wondered if all drinking water tasted the same, may have filled up his new water bottle with the leftover water from Fremont...Nebraska's Best Tasting Drinking Water in 2011.

Targeting Better Water: Shotgun Event for Water For People

by Chris New, Terracon

Sixteen shooters raised $1,255 for Water For People in a sporting clay event at the Oak Creek Shooting Club near Brainard on Oct. 7. After a lunch of barbecued pork loin sandwiches provided by Mamma Linell of the Oak Creek Club, the shooters hit the field for a 10-station event, with challenges for the experienced shooters, fun for the novices, and perfect weather for all.

First place went to Andrew Hansen of Black and Veatch. Tim Mundorf of Midwest Labs took second, and Gary Janicek of David City and Randy Lambert of Midwest Labs tied for third. Mundorf, Lambert, and Janicek were joined by Scott Steager of David City on the first-place team.

Andrew Hansen's prize was a beautiful wall clock provided by Mellen and Associates. Generous raffle purchases by the shooters and prize donations from Mellen and Associates, Terracon, Olsson Associates and Water For People ensured that everyone took home a prize. Oak Creek donated a two-person gift certificate for a round on the house. Our station sponsors included EA Scientists and Engineers, Legado de Compación (Creighton University Student Group), Maguire Iron, Midwest Labs, Olsson Associates, Terracon and Tnemec (Schmit–Greteman Associates).

We would like to thank the shooters and sponsors for making this event such a success.

Public Information Committee Report

by Mary Poe, Nebraska Department of Health & Human Services

The water-tasting contest at the annual conference went well, with six samples submitted. A fun and fact-filled presentation entitled "Waters of the Big 10" accompanied the contest. Door prizes were given out to audience members and each of the tasters was given a stainless steel water bottle customized with our logo as a thank-you gift. This year's repeat winner, the City of Fremont, was announced at the evening banquet and presented with a plaque.

The Nebraska Section AWWA Facebook page is seeing an increase in activity, with 108 fans and 146 visits in the week following the Annual Conference.

Nebraska News and Events

Nitrate Mitigation at the Source

by Ben Day, Olsson Associates, and Brian Gongol, DJ Gongol & Associates

This article is the third installment in a special series for *Wise Water Words* to address the persistent issue of nitrates in drinking water. The first article ("The trouble with nitrates," Spring 2011) summarized the most common sources of nitrates:

- runoff from fertilized agricultural cropland and pastures
- runoff from livestock feedlots
- runoff from fertilized lawns around homes and businesses
- septic systems
- municipal wastewater treatment discharges
- natural leaching from nitrogen-fixing plants such as legumes

The second article ("Solving nitrate problems at the plant level," Summer 2011) described the treatment options for nitrate reduction and removal, including blending, filtration and source replacement.

The key observation to take away from the previous installments is that there are many sources that contribute to nitrates in our drinking water supply, and once nitrates are present, they are difficult and costly to mitigate. As with so many other things in life, an ounce of prevention can be worth a pound of cure, so the focus of this article is the mitigation of nitrates at their source.

The debate over nitrate source management can be contentious. Because nitrates are a non-point-source problem, responsibility for reducing them is hard to pin down — and it's even harder to make the economic case for who should pay for the prevention.

Reviewing the common sources of nitrates, we'll discuss some current methods of mitigation that are being used or are in the process of being implemented to address the nitrate issue.

RUNOFF FROM FERTILIZED AGRICULTURAL CROPLAND AND PASTURES

Agricultural application of fertilizer requires a license and is monitored. Due to the cost of chemicals, many farmers strive to apply the ideal amount of synthetic fertilizer at optimal conditions to conserve and save on costs. The science and technology of efficient fertilizer application have advanced a lot over the last 30 years. Innovations such as no-till planting; contour farming; genetic engineering of crops; and fertilizer application plans based on soil testing, moisture, and temperature conditions have led to a general reduction in the application of synthetic fertilizer.

In addition to synthetic fertilizers, many farms also land-apply treated manure from their livestock. Because this fertilizer is "free," in a sense, farmers have less incentive to use it as efficiently as synthetic fertilizer; however, regulatory guidance on land-applied manure can have a very important impact on the amount of nutrients that are put onto fields, long before they have the potential to wash into waterways.

To help reduce the impact of both synthetic and manure-based fertilizers, farmers and ranchers are regularly encouraged to dedicate land next to streams and waterways to buffer strips and conservation acreage. This forces runoff from fields to pass through a natural filtration zone before entering the water. However, as grain prices have risen (particularly for corn), so has the pressure to remove land from conservation service and return it to crop production. When corn sells for $6 per bushel (as it does right now) or nearly $8 per bushel (as it did earlier this year), it's much harder to ask farmers to take additional acres out of crop production than when corn was selling for $2 a bushel just six years ago.

RUNOFF FROM LIVESTOCK FEEDLOTS

Regulations continue to become more restrictive on the requirements to capture and contain runoff from livestock feedlots.

RUNOFF FROM FERTILIZED LAWNS AROUND HOMES AND BUSINESSES

Homeowners are encouraged to follow directions on the bags of fertilizer they purchase. However, over-application of fertilizer and over-application of water are both commonplace. The combination of the two results in runoff of nitrates from lawns and absorption of fertilizer into the ground before the grass can capture and use the nutrients. The application of fertilizer by homeowners is not routinely monitored, so public outreach and educational efforts are needed to reduce the amount of excess fertilizer entering the water supply.

SEPTIC SYSTEMS

Regulations on septic systems, including set-back requirements from wells, buildings, and other septic systems, help reduce the contribution these systems can make to nitrate pollution. These new setbacks often make it difficult to install new septic systems if and when the old systems fail. A common mitigation method in developed residential areas is to install centralized sewer collection and treatment systems.

MUNICIPAL WASTEWATER TREATMENT DISCHARGES

State regulations limit the amount of nitrates that can be discharged from wastewater treatment plants into receiving streams and rivers. The reduced limits require that the wastewater treatment plants remove nitrates by providing denitrification. Simply put, denitrification is the anoxic biological reduction of nitrate nitrogen to harmless nitrogen gas.

NATURAL LEACHING FROM NITROGEN-FIXING PLANTS LIKE LEGUMES

The most common mitigation approach is the simple rotation of crops between soybeans (which naturally increase nitrogen in the soil) and corn (which consumes it). Higher corn prices have tilted the rotation of these crops in favor of more acres producing corn and fewer producing soybeans, but future conditions might see the balance tip in favor of more soybean acreage.

As described above, mitigation efforts are currently underway and research has shown that these efforts are successful in reducing nitrate levels in soil and in groundwater. In particular, for select groundwater sources in Nebraska, data indicates that changes in fertilizer application over the years has reduced the level of nitrates in the upper layers of the vadose zone (the zone between the ground surface and water table). The reduced levels of nitrates within the vadose zone will eventually correlate to reduced level of nitrates in the groundwater.

Mitigation techniques are successful, but the time frame between implementing a mitigation technique and observing a noticeable result in the drinking water supply varies based on a number of factors, including soil type, aquifer movement and volume of water pumped, to name just a few. Further education and implementation of mitigation methods will be important to control and reduce nitrate levels in the future. Although it is not always clear how immediate the impact of nitrate mitigation may be on a drinking water source, over the long term, nitrate mitigation does have a positive environmental and economic impact — and is simply the right thing to do.

Student Activities and Research Committee by Xu Li (UNL)

Four UNL/UNO graduate students applied for AWWA student memberships in September. The UNL student chapter and the Young Professionals committee co-organized a social in Ashland on Oct. 5 and tours of the Hickman Water Treatment Facility on Oct. 12 and 13. About 15 UNL and UNO students attended the AWWA/NWEA fall conference in Kearney.

Students attending the 2011 Fall Conference, from left: Taofic Onifade, Daran Rudnick, Xu Li, Mohamed Jalloh, Vivek Sharma, Michael Florek, Hugues Oke, Allison Cole, Jeffrey Mihulka, Kristen Cope, Jake Fisher, Chunmei Bai, Zhe Du, Maria Arellano, Yun Zhang.

Membership Survey

A Portrait of the Nebraska Water Industry Workforce

by Marc Rosso, Tetra Tech, Inc., and Michael Wentink, Nebraska DHHS DPH

In our previous article ("Changes coming to the Nebraska water industry workforce," Summer 2011 *Wise Water Words*), we profiled the Nebraska water industry workforce in general, as well as noting which areas our members want the Section to focus on growing.

We are aware, though, that the potential for a wave of retirements among water operators from the Baby Boomer generation could cause us to lose a lot of institutional knowledge. This could have a severe impact on many Nebraska public water systems, particularly those serving small numbers of customers or those with limited financial resources to attract and retain qualified water utility workers.

The survey findings provide demographic information about the current water utility workforce that indicates a level of experience, education and institutional knowledge that may be useful for succession-planning goals.

AGES OF LICENSED WATER OPERATORS WORKING IN PUBLIC WATER SYSTEMS

	Region 1 (n=59)	Region 2 (n=79)	Region 3 (n=58)	Region 4 (n=49)	Region 5 (n=59)	Region 6 (n=33)	Region 7 (n=43)	Region 8 (n=31)	Total (n=408)
Field office	Lincoln	Omaha	Norfolk	Nelson	Grand Island	Norfolk (O'Neill region)	North Platte	North Platte (Panhandle region)	
Under 25	–	1%	–	2%	–	–	–	–	–
25 to 34	3%	6%	9%	2%	7%	3%	5%	3%	5%
35 to 49	29%	47%	22%	29%	35%	24%	44%	32%	33%
50 to 54	13%	15%	28%	29%	14%	31%	21%	23%	21%
55 to 59	24%	13%	22%	16%	11%	21%	21%	29%	20%
60 to 64	17%	8%	9%	18%	15%	12%	2%	7%	12%
65 and over	14%	10%	10%	4%	10%	9%	7%	6%	9%
Average (median) age in years	55.0	47.7	52.4	51.9	51.9	52.7	49.2	52.3	51.9

YEARS TO RETIREMENT

	Region 1 (n=63)	Region 2 (n=83)	Region 3 (n=60)	Region 4 (n=50)	Region 5 (n=61)	Region 6 (n=35)	Region 7 (n=48)	Region 8 (n=37)	Total (n=433)
0 to 5 years	21%	20%	22%	26%	20%	14%	15%	16%	20%
6 to 10 years	29%	18%	25%	14%	29%	26%	27%	30%	25%
11 to 20 years	25%	36%	40%	36%	33%	45%	31%	27%	34%
21 to 30 years	21%	16%	12%	12%	10%	9%	23%	27%	16%
Over 30 years	4%	10%	1%	12%	8%	6%	4%	–	5%

EDUCATIONAL ATTAINMENT

	Region 1 (n=64)	Region 2 (n=85)	Region 3 (n=62)	Region 4 (n=49)	Region 5 (n=61)	Region 6 (n=36)	Region 7 (n=48)	Region 8 (n=37)	Total (n=438)
High school graduate	61%	42%	65%	53%	66%	72%	65%	62%	59%
Associate's degree	17%	21%	18%	27%	11%	17%	23%	19%	19%
Bachelor's degree	14%	27%	10%	12%	15%	11%	8%	16%	15%
Graduate degree	5%	8%	2%	2%	8%	–	4%	3%	4%
Declined to respond	3%	2%	5%	6%	–	–	–	--	3%

Developmental work on this project began in 2008 with the assignment of an ad-hoc committee. The ad-hoc committee members are:

- Lee Applebee, Lincoln Water system
- Brian Gongol, D.J. Gongol & Associates, Inc.
- Mary Poe, Nebraska DHHS DPH
- Marc Rosso, HDR, Inc. (currently of Tetra Tech)
- Richard Sklenar, Papio-Missouri NRD
- Michael Wentink, Nebraska DHHS DPH

The project was jointly sponsored by the Nebraska Section AWWA, the Nebraska Water Environment Association, and the Nebraska Department of Health and Human Services Division of Public Health. Wiese Research Associates, Inc., was selected as a consultant and worked under contract with the ad-hoc committee to develop a mail survey that was designed to be mailed to existing members as well as to potential members who are Nebraska licensed water operators and/or certified wastewater operators.

A total of 2,512 mail surveys were sent during the late summer of 2009 and the findings were compiled by late 2009. A total of 698 surveys were returned to the contractor for tabulation

Continued on p.18

MAJOR BARRIERS TO HIRING A SUCCESSOR

	Region 1 (n=60)	Region 2 (n=76)	Region 3 (n=55)	Region 4 (n=44)	Region 5 (n=50)	Region 6 (n=32)	Region 7 (n=40)	Region 8 (n=32)	Total (n=385)
Salary	73%	63%	89%	75%	64%	81%	75%	81%	74%
Employee benefits	50%	36%	55%	52%	50%	56%	50%	34%	47%
Stereotypes of work environment	27%	46%	33%	39%	50%	25%	40%	34%	37%
Lack of support from higher-level management	33%	34%	35%	27%	28%	19%	42%	22%	31%
Physical working conditions	28%	22%	25%	20%	26%	25%	28%	53%	27%
Lack of training available	18%	32%	16%	30%	18%	19%	18%	16%	21%

HAS A SUCCESSOR BEEN IDENTIFIED FOR YOUR POSITION?

	Region 1 (n=64)	Region 2 (n=82)	Region 3 (n=62)	Region 4 (n=49)	Region 5 (n=60)	Region 6 (n=36)	Region 7 (n=48)	Region 8 (n=37)	Total (n=435)
Yes	12%	6%	13%	8%	7%	3%	4%	0%	7%

ESTIMATED AGE WHEN LICENSED WATER OPERATORS BECAME EMPLOYED IN THE INDUSTRY

	Years of Experience in the Industry				
Current Age	0 to 5 (n=87)	6 to 10 (n=73)	11 to 20 (n=110)	21 to 30 (n=86)	More than 30 (n=52)
Under 25	2%	–	–	–	–
25 to 34	14%	9%	1%	–	–
35 to 49	43%	40%	36%	34%	1%
50 to 54	18%	18%	22%	28%	13%
55 to 59	11%	19%	19%	20%	37%
60 to 64	7%	7%	13%	9%	27%
65 and over	5%	7%	9%	9%	21%
Average (median) age	46.6 years	49.3 years	57.9 years	57.8 years	58.7 years
Age adjustment (midpoint)	-3.0	-8.0	-15.0	-25.0	-30.0
Estimated age when first employed	43.6 years	41.3 years	42.9 years	22.8 years	28.7 years

Plant Profile

Seward Water/Wastewater Utility Shines in Spotlight

Continuing our series on water systems across Nebraska, we asked Seward water and wastewater superintendent David Lathrop to tell us about his system.

Wise Water Words: *Where is your plant located?*

David Lathrop: Seward, Nebraska. We're about 25 miles west of Lincoln, and six miles north of I-80.

WWW: *What is its capacity?*

Lathrop: Our capacity is 3.2 million gallons per day, but the maximum ever pumped was 2.4 mgd.

WWW: *When was the plant built?*

Lathrop: The reverse-osmosis water treatment plant went online in June 2004.

WWW: *How long has your community had municipal water service?*

Lathrop: Since 1890. [Editor's note: This was the year of the massacre at Wounded Knee and the invention of the corrugated cardboard box. Benjamin Harrison was President of the United States, and municipal drinking-water chlorination was still 18 years away.]

WWW: *When was your last major upgrade or renovation?*

The Seward plant's capacity is 3.2 mgd.

Lathrop: We recently completed a $3 million wastewater plant renovation. On the water side, we're building a $1.5 million dollar alternate/backup transmission main to bring water from the three city well fields and nine total wells to the water plant. It's currently at the 30 percent design phase, with construction to be finished by September 2012.

WWW: *What is the oldest component of your water system?*

Lathrop: Water mains from the early 1900s.

WWW: *Tell us about your most senior employee.*

Seward recently completed a $3 million wastewater plant restoration, and has also begun building a $1.5 million backup transmission main.

Lathrop: Doug Pollak started with the water department out of high school in 1983. He has a light touch with the backhoe. Doug is the operator to have around when the water gushes up out of the ground in a most unnatural way.

WWW: *What about your newest employee?*

Lathrop: Ryan Hurst — "The Kid" — has been with the city for five years. He takes on new challenges with relish. He also fits into small places.

WWW: *What is your most significant day-to-day challenge, and how do you deal with it?*

Lathrop: Managing multiple demands. I write out my list of

priorities each day. I also have cardboard boxes that I use to file project documents until the project is finished — I have seven boxes of projects in progress at this time. On completion, I will file documents in permanent folders and purge unnecessary documents. I use Microsoft Word documents and spreadsheets to keep logs, track completions and present reports of many things, such as claims, accidents, well levels, backflow, nitrate levels, overtime, main breaks, sewer backups and so on. I also have an engineering file cabinet where I track permanent characteristics of equipment such as specs and another file cabinet I use to track work and expense histories against each piece of equipment.

WWW: *What worries you the most about serving your community for the next 10 to 20 years?*

Lathrop: High water and sewer rates. Rates will only decrease in relative terms as other communities begin raising their rates to keep their systems sustainable — particularly Lincoln.

Seward water workers Chris Inness, David Lathrop, Ryan Hurst, Dave Rathje, Randy Johner, Mike Smith and Doug Pollak

WWW: *What message is the hardest one to communicate to your customers?*

Lathrop: The water/wastewater department has been well-supported by the community, city administration and city council; however, there does seem to be a sense of distrust with government spending money efficiently or effectively. Except within a small margin, in general, you cannot have exceptional customer service and low water rates.

WWW: *What is your favorite community event of the year? Does the water utility take part?*

Lathrop: Seward is Nebraska's Fourth of July Community. The Seward chamber of commerce recently purchased several of Lincoln's Star City parade floats to be used in the annual Fourth of July parade. The water department supplies "food alley" with water and opens up a back entrance to the airport for an additional route for the airshow.

WWW: *What's special about your source water?*

Lathrop: Seward draws its water from the feather edge of the High Plains aquifer. In the city's well area, it contains about 15 ppm nitrates. The city has spent $7.8 million on treatment plant and additional water mains solely to address nitrate issue. This does not include the ongoing operation and maintenance expense of running a water plant. [Editor's note: See Ben Day's article on source mitigation for nitrates elsewhere in this issue.]

WWW: *When did you last make any major changes to your distribution system?*

Lathrop: Expansions to the water distribution system in progress at this time include water main projects for East Seward Street ($75,000), North Columbia Avenue ($65,000) and Waverly Road ($430,000). In addition, the system is making the last tie-in from the city's takeover of the Twin Oaks water/sewer franchise. The Twin Oaks franchise was entirely surrounded by the city of Seward, and it was in an advanced stage of disrepair. The city received a report from Olsson Associates in January 2011 on the water distribution system that provides a road map for future improvements.

WWW: *What is the most important lesson you've learned as a utility in the last 12 months?*

Lathrop: We recently completed a water/sewer rate study. It brought home the necessity of separating O&M costs from capital projects and improvements in order to provide a true picture of the underlying financial conditions.

Our thanks to David Lathrop for putting Seward in the spotlight for this edition. If you'd like to share your story in an upcoming edition of Wise Water Words*, please contact publications committee chair Brian Gongol by e-mail at brian@gongol.net.*

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Conference Snapshots

PHOTOS: DARYL KOTTWITZ AND DAVID PLANK

Budget Report

NEBRASKA SECTION AWWA BUDGET. YTD figures are shown as of December 14, 2011.			
INCOME	**2011 Budget**	**2011 Actual (YTD)**	**2011 Projection**
Section Allotment	$11,050.00	$12,153.00	$12,153.00
Association Allotment	$3,950.00	$2,847.00	$2,847.00
Multi-Section Allotment	$650.00	$693.20	$693.20
Annual Meeting	$43,000.00	$72,546.17	$72,546.17
Interest on Accounts	$900.00	$870.01	$900.00
Advertising Income	$0.00	$0.00	$0.00
Education: Pipe Workshop	$0.00	$0.00	$0.00
Education: Preconference	$1,800.00	$1,530.00	$1,575.00
Miscellaneous	$0.00	$0.00	$0.00
Safety Committee	$1,300.00	$1,120.00	$1,120.00
Small Systems	$250.00	$0.00	$250.00
Special Project Funding	$0.00	$0.00	$0.00
SRF	$15,000.00	$0.00	$0.00
WARN	$0.00	$0.00	$0.00
Water for People: Golf Event	$8,000.00	$9,565.91	$9,565.91
Water for People: Raffle - Fall Conference	$1,500.00	$2,245.00	$2,245.00
Water for People: Trap Event	$2,000.00	$1,255.00	$1,255.00
YP Poker Fundraiser	$0.00	$1,951.00	$1,951.00
TOTAL INCOME	**$89,400.00**	**$106,776.29**	**$107,101.28**
EXPENSES	**2011 Budget**	**2011 Actual (YTD)**	**2011 Projection**
Annual Fall Conference	$30,000.00	$29,984.58	$59,056.00
Annual Meeting at Fall Conference	$1,500.00	$630.90	$630.90
Audit	$0.00	$0.00	$0.00
Awards (non-safety)	$600.00	$728.73	$600.00
Board Conference Calls	$500.00	$177.17	$500.00
Bonds for treasurers	$150.00	$100.00	$100.00
Cross-Connection Workshop	$2,470.00	$2,220.00	$2,470.00
Director's Spouse (meeting expense)	$300.00	$274.30	$274.30
Education: Education Committee	$750.00	$0.00	$750.00
Education: LONM/NSAWWA Seminars	$5,000.00	$5,000.00	$5,000.00
Education: Pipe Workshop	$0.00	$0.00	$0.00
Education: Preconference	$1,800.00	$0.00	$1,800.00
MAC Council	$0.00	$200.00	$200.00
Membership	$300.00	$776.34	$300.00
Miscellaneous (pens, postage, envelopes)	$400.00	$676.43	$676.43
Nitrates Committee (ad-hoc)	$0.00	$450.00	$450.00
Officer Training: Membership Summit	$0.00	$0.00	$0.00
Officer Training: Regional Officer Meetings	$1,500.00	$488.05	$488.05
Officer Training: Summer Leadership Workshop	$1,500.00	$1,150.58	$1,150.58
Officer Training: WFP Workshop	$750.00	$500.64	$500.64
PO Box	$50.00	$44.00	$44.00
Public Information Committee	$750.00	$445.86	$445.86
Publications: Advertising	$0.00	$0.00	$0.00
Publications: Membership Directory	$0.00	$0.00	$0.00
Publications: Wise Water Words	$0.00	$0.00	$0.00
Research Foundation	$1,000.00	$1,000.00	$1,000.00
Retreat (annual)	$250.00	$118.34	$118.34
Safety Committee	$1,525.00	$1,239.14	$1,239.14
Scholarships: Abel Wolman	$1,000.00	$1,000.00	$1,000.00
Scholarships: Conference	$0.00	$0.00	$0.00
Scholarships: Poster Board Competition	$1,000.00	$0.00	$0.00
Scholarships: Stockholm Water Prize	$500.00	$0.00	$500.00
Scholarships: Students (Liesen)	$3,000.00	$3,000.00	$3,000.00
Scholarships: Top Ops	$3,000.00	$255.00	$255.00
Secretary of State	$35.00	$23.00	$23.00
Small Systems Committee	$1,000.00	$0.00	$1,000.00
SRF	$15,000.00	$0.00	$0.00
Student Activity	$350.00	$72.00	$350.00
Tax Preparation (annual)	$550.00	$545.00	$545.00
WARN Conference	$750.00	$0.00	$750.00
Washington Fly-In	$2,250.00	$1,094.69	$1,094.69
Water for People (Event Expenses): Golf Event	$4,000.00	$4,680.58	$4,680.58
Water for People (Event Expenses): Raffle - Fall Conference	$700.00	$623.72	$623.72
Water for People (Event Expenses): Trap Event	$200.00	$0.00	$0.00
Water for People (Payments to WFP): Golf Event	$4,000.00	$4,865.33	$4,865.33
Water for People (Payments to WFP): Raffle - Fall Conference	$800.00	$1,629.87	$1,629.87
Water for People (Payments to WFP): Sustaining Membership	$0.00	$0.00	$0.00
Water for People (Payments to WFP): Trap Event	$1,800.00	$1,255.00	$1,255.00
Water Utility Council	$750.00	$750.00	$750.00
Website: Hosting	$0.00	$0.00	$0.00
Website: Registration	$100.00	$0.00	$100.00
Young Professionals	$50.00	$700.00	$700.00
YP Poker Fundraiser (donation to charity)	$0.00	$1,026.00	$1,026.00
TOTAL EXPENSE	**$91,930.00**	**$67,725.25**	**$101,942.43**
NET INCOME	**-$2,530.00**	**$39,051.04**	**$5,158.85**

Small City Tackles Radium in Well Water

With radium and iron concentrations exceeding established standards, a Minnesota city turned to pressure filtration, and residents are taking notice of resulting improved water quality. BY NAEEM QURESHI AND GREG VOLKART

RADIONUCLIDE contamination of groundwater is generally attributed to sources naturally occurring in rock formations from which drinking water is obtained. Radionuclides are unstable and continually emit energy. Three radionuclides—uranium, radium, and radon—are of primary concern because of their potential carcinogenic impact. Because about 80–85 percent of the radium that accumulates in a human body is deposited in bones, the predominate health hazard of radium is bone cancer.

REGULATION

In December 2000, the US Environmental Protection Agency published the final Radionuclides Rule, effective Dec. 8, 2003. The rule established maximum contaminant levels (MCLs) for radioactivity from gross alpha, beta-photons, radium-226, radium-228, and uranium. The MCL for combined radium-226 and -228 is 5 pCi/L, and the MCL for gross alpha is 15 pCi/L. The MCL for uranium is 30 µg/L. These standards affected more than 500 US water systems and 1.4 million people in 177 Midwest cities, including Goodview, a city in southeastern Minnesota with a population of about 3,700 residents.

Table 1. Raw Well Water Quality in Goodview, Minn.

All three wells had radium and iron concentrations that exceeded established standards.

	Radium-226 pCi/L	Radium-228 pCi/L	Radium-226 and -228 pCi/L	Iron mg/L	Manganese mg/L
Well 1	1.81	3.40	5.21	0.57	0.036
Well 2	2.80	6.77	9.57	0.47	0.045
Well 4	2.58	7.17	9.75	0.41	0.032
Standard			5.00	0.30	0.050

Table 2. Filter Media Tested During Pilot Study

Manganese greensand media produced the best quality water and removed the most radium and iron.

Filter 1 Dual Media	Filter 2 Sand	Filter 3 Manganese Greensand
6-in. 0.6–0.8-mm anthracite	24-in. sand 0.45–4.55-mm	6-in. 0.6–0.8-mm anthracite
18-in. 0.45–0.55-mm sand		18-in. 0.3–0.35-mm greensand

TROUBLE IN GOODVIEW

The city of Goodview has three pressure zones and is served by three wells: Wells 1, 2, and 4. Located in the low-pressure zone, Wells 1 and 2 have a 600-gpm capacity each. Well 4 is in the intermediate-pressure zone and has a capacity of 900 gpm. All three wells had radium and iron concentrations that exceeded established standards. Radium-226 and -228, iron, and manganese levels recorded in the raw water are shown in Table 1.

An analysis of alternatives for addressing high radium in well water revealed that the incremental cost of removing iron in a plant designed to remove radium was small, so the city and its consultant proceeded with a pilot study

This feature is an excerpt from *Opflow*, published January 2011 by American Water Works Association (www.awwa.org). Reprinted by permission.

Naeem Qureshi is a project manager with Progressive Consulting Engineers (www.pce.com), Minneapolis. Greg Volkart is public works director, City of Goodview (http://goodview.govoffice.com), Goodview, Minn.

A pilot plant study helped the city of Goodview, Minn., solve radium and iron problems before it built two new water treatment plants, one of which is shown at top right.

PHOTOGRAPH: CITY OF GOODVIEW, MINN.

Removal of radium with hydrous manganese oxide (HMO) and coprecipitation with iron was the most cost-effective option. Dual media, sand, and manganese greensand media were tested in the pilot plant (Table 2).

The pilot study showed that the manganese greensand media had the lowest filter headloss buildup and would produce the longest filter runs. The media also produced the best quality water with the highest removal rate of radium and iron. The feed rate for HMO during the pilot testing was 1 mg/L. The city subsequently instructed its consultant to prepare final plans and specifications for two pressure-filter plants: Plant 1 to treat water from Well 1 or Well 2 and Plant 2 to treat water from Well 4.

A NEW APPROACH

While reviewing base and alternate bids, the city opted for stainless steel process piping instead of ductile-iron piping, which added $206,000 to the base bid

of about $3.4 million. Final construction cost was $3,657,282. The plants were constructed during 2008 and 2009 and went on-line in mid-2009.

Test results in June 2010 showed iron levels of 0.03 mg/L and 0.02 mg/L from Plant 1 and Plant 2 effluents, respectively. The standard iron level is 0.30 mg/L. The manganese level in effluent from Plants 1 and 2 is 0.02 mg/L, compared with a standard level of 0.05 mg/L. The HMO feed rate started at 1 mg/L and was gradually reduced to 0.25 mg/L, as radium removal was still well below the standard even at lower HMO feed rates (Table 3).

A NOTICEABLE IMPROVEMENT

The plants now produce water substantially below the radium standard. Residents have noticed improved water quality and have complimented the city staff. The improved water quality has also reduced the amount of time required for system flushing.

Table 3. Radium Results From the Plant Effluent

The plants now produce water below the radium standard, and residents have noticed improved water quality.

Date Sampled	HMO Feed Rate mg/L	Filter Plant 1		Filter Plant 2	
		Gross Alpha pCi/L	Radium-226 and -228 pCi/L	Gross Alpha pCi/L	Radium-226 and -228 pCi/L
8/20/2009	1.00	2.92	0.1513	2.56	0.377
11/20/2009	0.50	0.15	0.153	0.786	1.1069
3/15/2010	0.25	1.62	0.122	0.793	0.1304

Membership Survey

Continued from p.11

for an overall response rate of 28 percent, which is within the expected range of typical mail surveys conducted with a single mailing. This overall return rate was considered acceptable for the Section's use.

The tables accompanying this article are responses in part from the survey. Among the highlights of the results:

- 12 percent of licensed water operators are age 60 to 64 and an additional 9 percent of licensed water operators working in the public system are 65 or over. This 21 percent total again reflects that **about one in five** licensed water operators in Nebraska's public water systems are **likely to retire in the next five to ten years**.
- Findings indicate a **slightly older overall age profile in Region 1** (where 31 percent are age 60 or over) compared with some of the other regions of the state.
- Regions 7 and 8 in the western part of the state appear to have **fewer licensed water operators age 60 and over** (9 percent and 13 percent, respectively) compared with 21 percent in the state as a whole. These differences were not statistically significant, largely due to the limited sample size per region.
- Workers who **entered the workforce during the last 10 years** tended to be **in or near their 40s when they entered** the industry, whereas workers who have been in the industry 21 years or more tended to join the industry in their late 20s or early-to-mid-30s, rather than in the 40-to-45-year-old age range for more recently-hired employees.
- Among those working in Nebraska's public water systems, **20 percent of licensed water operators plan to retire in the next five years**. An additional 25 percent anticipate retirement in the next six to ten years.
- **Salaries** are rated as the **most significant barrier** to hiring successors in every region.
- **More than 9 in 10** water operators are in a position where there is **no identified successor** being groomed for the position.

To help identify the areas of the state that may be more significantly impacted by Baby Boomer retirements, survey responses were identified by their Office of Drinking Water and Environmental Health field area in Nebraska.

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Nebraska Marketplace

Certification Corner

Excerpted from the April 2010 issue of *Opflow*, published by AWWA. Reprinted by permission. For more information and references, visit www.awwa.org.

WATER

1. **Hard water scale is usually caused by**
   a. calcium bicarbonate.
   b. calcium carbonate.
   c. magnesium bicarbonate.
   d. magnesium carbonate.

2. **Which of the following is an example of a weighting agent?**
   a. Polyelectrolytes
   b. Bentonite clay
   c. Calcium carbonate
   d. Sodium bicarbonate

3. **What's the most common filtration rate for slow sand filters?**
   a. 0.02 gpm/ft^2
   b. 0.05 gpm/ft^2
   c. 0.1 gpm/ft^2
   d. 0.5 gpm/ft^2

WASTEWATER

1. **Which type of organisms are most likely associated with poor treatment or young biomass?**
   a. Amoebas
   b. Free-swimming ciliates
   c. Rotifers
   d. Stalked ciliates

2. **The most common flow-measuring device for wastewater is a**
   a. Parshall flume.
   b. magnetic flowmeter.
   c. weir.
   d. Venturi meter.

3. **In secondary aerobic treatment, living organisms partially stabilize organic matter by the process of**
   a. putrefaction.
   b. fermentation.
   c. hydrolysis.
   d. oxidation.

ANSWERS Water: 1. b, 2. b, 3. b Wastewater: 1. a, 2. a, 3. d

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