



**SOUTH DAKOTA
RURAL WATER'S**

Quality On Tap!

January 2017 | Volume 12, Issue 3

SYSTEM SPOTLIGHT:
Sioux Rural Water

**NITRATES IN THE
BIG SIOUX RIVER**

**PROTECTING
RIPARIAN BUFFERS:**
A Good Idea For Everyone

A MESSAGE FROM THE PRESIDENT OF THE BOARD

Ron Gillen, President
South Dakota Association of Rural Water Systems



Join us at the 2017 ATC!

Association staff are currently very busy gearing up for the 2017 Annual Technical Conference in Pierre, South Dakota, January 10-12 at the Ramkota Hotel and Convention Center in Pierre. The conference features an exhibit hall and educational sessions.

We are pleased to have Mark Johnson as our Keynote Speaker at this year's ATC. Mark spent twenty years as a Special Forces, Green Beret officer in over fifty nations on four continents, much of this time in combat, remote locations, and other sensitive operations. He was decorated with the Bronze Star for his extraordinary actions during the Gulf War. Mark retired at the rank of Lieutenant Colonel in October 2000.

He has devoted much of his life to education and teaching. Mark taught at the U.S. Army Command and General Staff College, Fort Leavenworth, KS for more than eight years and his last assignment in the Army was as Chairman and Professor of the Military Science Department at Pittsburg State University, in Pittsburg, Kansas.

Special Pre-Conference Session by ESRI

This year we are excited to announce a special pre-conference session from ESRI. By making your water systems smarter, you can understand buried assets better, optimize performance, and extend the life-span of your assets. This two-part class will focus on location-based applications and dashboards help strategies flow faster, and help you respond quickly to main breaks and leaks. As an added bonus, this session is included in our regular conference admission.

We are also hosting a spouse program this year, so make sure to bring along your significant other. Please turn to pages 14-15 for the full conference agenda. You can find everything you need to know about this year's conference on our website at: www.sdarws.com/atc.html, including registration information, exhibitors list, agenda, and more!



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2017 RURAL WATER RALLY

**Dennis N. Davis, Executive Director
South Dakota Association of Rural Water Systems**

South Dakota Rural Water does many things, and one of the most important benefit to our rural water membership relates to our legislative efforts. Every year the National Rural Water Association hosts a Rural Water Rally in Washington D.C. to further the work of providing drinking water and wastewater services to rural communities. Rural Water professionals, leaders and customers from every state attend the rally to thank their Senators and Representatives for their support and encourage them to further support the goals and needs of the Rural Water Industry. SDARWS has participated in the Rally since its inception in 1986, and 2017 will be no exception. The Rally provides your Association the opportunity to meet directly with our congressional delegation one-on-one to discuss concerns of SDARWS members and other systems, as well as with their staffers, and USDA. Guest speakers from legislative staffs and federal organizations, like the EPA and USDA, are invited by NRWA to share their views and insight to the assembled guests from across the nation.

SDARWS generally meets with both of our two Senators and our Representative; we also meet directly with their key staff members to make sure that rural water funding remains a priority. Our time at the Rally usually culminates with a meeting with the loan program specialists at USDA Rural Development. Managers and

board members, and even employees of systems make the trek to DC for this important endeavor.

State rural water associations operate contracts that are funded through the National Rural Water Association. This funding originates with EPA and the Rural Utilities Service (RUS), a division of the USDA. For SDARWS, and more importantly, the public we serve, those programs include three circuit riders, a wastewater tech, a source water protection specialist, and a part-time training specialist. While membership dollars help to support your association, we cannot cover the cost of staff and travel to provide assistance to systems without continued funding through the State of South Dakota, USDA, and EPA.

While the Rally began as an information meeting to make us aware of legislative and regulatory issues affecting our industry, it also prepares us to discuss these very issues with our legislators. There are a few mainline items that we always like to discuss during our time in DC. It is important to note that all rural water priorities are authorized in the Farm Bill or the Safe Drinking Water Act. They are not earmarks.

We invite you to join us February 6-8, 2017 at the Hyatt Regency on Capitol Hill. For more information, visit NRWA's Rally page at: nrwa.org/rally. Room reservations can be made at the Hyatt Regency by calling 202-737-1234. If you have any questions about attending this year's event, please call the SDARWS office at 605-556-7219. We would love to have you join us on the Hill!

February 6-8 | Washington, DC | nrwa.org/rally

OUT AND ABOUT

JANUARY

12-14 – 16TH ANNUAL MOBRIDGE ICE FISHING TOURNAMENT

Come to Mobridge for the largest ice fishing tournament in South Dakota. With more than 500 teams and more than \$85,000 in prizes, this annual weekend tournament is one of our favorite events all year - and shows participants just how much fun winter can be. If you want to fish, check out our website for info on how to enter our lottery for spots this year.
www.mobridgeoutdoors.com/ice-fishing-tournament.

25-27 – SIOUX FALLS FARM SHOW & SIOUX EMPIRE FARM SHOW

For the past 19 years, the Sioux Falls Farm Show has showcased the latest agricultural technology and services with over 380 exhibitors. Join over 25,000 agricultural producers from South Dakota, Nebraska, Iowa, and Minnesota to review the latest farm technology focused on improving yields, reducing costs, and managing risk. The Sioux Falls Convention Center, Event Center & Arena provide over 85,000 square feet of exhibits, as well as educational seminars. Exhibits are also featured at the W.H. Lyon Fairgrounds in conjunction with the Sioux Empire Farm Show.
<http://siouxfallsfarmshow.com>,
<http://siouxempirefarmshow.org>.

FEBRUARY

27-FEBRUARY 5 – ANNUAL BLACK HILLS STOCK SHOW & RODEO

The Black Hills Stock Show & Rodeo in Rapid City features events, rodeos and vendors. The region's largest trade show, livestock sales and competitions and is one of the top 5 indoor PRCA rodeos in the country. There are 10 different breeds of cattle sales, a two-day horse sale, and seminars for livestock producers, horse enthusiasts and the general public. Events are held at the Central States Fairgrounds and at the Rushmore Plaza Civic Center. www.blackhillsstockshow.com

If you would like your event featured in the April 2017 issue of Quality on Tap!, please email your event description to: info@sdarws.com. April's issue will cover events taking place April - June 2017. Event listings are subject to approval by the QOT Editorial Board.

FEBRUARY

7-11 – WATERTOWN WINTER FARM SHOW

The Watertown Winter Farm Show is a five-day event filled with entertainment and education for all ages. For 72 years, the show has been an outlet for the agriculture community to share new programs, opportunities and ideas. Featured events include livestock shows and sales, home and family programs, educational presentations, commercial exhibits, zoo demonstrations and a Lego contest. All activities are held at the Codington County Extension Complex. Show hours are 9 a.m.-4 p.m., daily.
www.watertownwinterfarmshow.com.

11 – SIOUX EMPIRE ON TAP

America On Tap brings their beer festival to the Sioux Falls Arena. Sample over 100 releases from some of America's best craft breweries. Plus hang out in an atmosphere filled with live music, delicious food available for purchase, and great vendors. Sioux Empire On Tap has two sessions: Session 1 is 1-4 p.m. and Session 2 is 5-8 p.m. Patrons must be 21 to attend. General admission tickets for one session start at \$30 and include a souvenir sampling glass. Tickets can be purchased online through www.ticketmaster.com, or charge-by-phone at 1-800-745-3000.

MARCH

4-7 – SUMMIT LEAGUE BASKETBALL CHAMPIONSHIPS

The 2017 Summit League Basketball Championships return to the Denny Sanford PREMIER Center in Sioux Falls, March 4-7. <http://thesummitleague.org/tickets/index>

17-18 – ST. PATRICK'S DAY WEEKEND IN DEADWOOD

Celebrate St. Patrick's Day in the Old West with pub crawls, the Leprechaun Olympics, parades, music and food. Deadwood's annual Pub Crawl, held on Saturday, March 18, is the largest of its kind in the region, with well over 1,200 participants annually. The fun starts at 5 p.m. on Friday and runs through Saturday.
www.deadwood.com

24-25, AND MARCH 31-APRIL 1 – 59TH ANNUAL SCHMECKFEST

Schmeckfest is an annual festival in Freeman in southeastern South Dakota. It celebrates the German-Russian heritage on which the community was established through food, the arts and people coming together. Held on the campus of the Freeman Academy, it's been a fundraiser for the school every spring since 1959. The ethnic German meal, served family-style, and the community musical take place two weekends in March/April. www.schmeckfest.com

Home Leak Detection

Water leaks in your home can literally drain money out of your wallet. Finding or narrowing down where a water leak may be occurring can also help save money on a professional who would charge you for the time to locate the leak. Just know that not all of the leak detection techniques highlighted in this article will find all leaks, but even finding an approximate location of your home leak will help your hired professional finish the job more efficiently.

Hot Water Tanks

Check the pressure relief valve on your hot water tank. Sometimes these valves are plumbed directly into a drain and can leak without you knowing. Take care to avoid being scalded when working around your hot water heater. If you can, remove the drainpipe to check for a leak by listening. A “hissing” sound would indicate a leak.

Important! If you suspect the leak is in your water heater – call an expert. **NEVER** stick a screwdriver in there – it is very dangerous and you could cross wires or puncture the tank.

In-Home Water Meter

If your water meter is located in your home you can check the meter to see if you have a leak in your home (if you have an outside meter pit, please see the next paragraph). First locate your meter – it is usually located in your basement. To check for a leak using your meter, first make sure that no water is being used in the house – this includes washing machines, dish washers, sprinkler systems, showers, faucets or toilets. You may also turn off your master water shut off valve. Most meters have a low flow indicator (usually a little red triangle on the meter face). If the low flow indicator on your meter is spinning – even slowly – water is going through the meter and you may have a leak somewhere in your home. The next step is to locate it; toilets are always a good place to start.

Toilets

Leaking toilets are frequently the culprit for in-home leaks. To check for a leaky toilet, first remove the top off of the tank and listen closely. If you hear hissing, try to locate where it is coming from. If you are able to locate the leak you will need to assess whether you can fix it yourself or call a plumber.

If you don't see anything noticeable, put a couple of drops of food coloring into the tank (not the bowl) and wait several minutes. If you see colored water in the bowl – you have a leak in the flapper located at the bottom of the tank, which is allowing water to seep through. If you feel comfortable, you can make the repair yourself, or call a plumber.

It is a good idea to test all of the toilets in your home just to make sure you don't have a problem with more than one.

Outside Meter Line

If your toilets don't show signs of leaking go ahead and check the

line running from the house to the curb stop or to an outside meter pit (if you don't have an inside meter). Locating an outside leak can save you money if you can locate the leak for the plumber.

If your meter is located in a pit, do not enter or try to open the pit. You may walk the area between the meter pit or curb stop and your home and look for obvious signs of a leak, such as: soft muddy areas and/or grass that is greener than or growing much faster than other areas. If you see such an obvious sign, call the plumber or assess to see if you can make a repair yourself. If the leak appears to extend past the meter pit, please contact your rural water system.

Hose Bibs/Outdoor Faucets

If you suspect the leak is near the house, you will need to locate all the hose-bibs (hose-bibs are the faucets located on the outside of your home that you hook your garden hoses to). Usually an average residence has one hose-bib in the front and one in the back, but be sure to locate all of the hose bibs on your residence. (Be sure to unhook garden hoses from hose-bibs in the winter so they can drain and not freeze).

Once you have located your hose-bibs, take a screwdriver (preferably one long enough to give yourself room to work), and put the metal tip of the screwdriver directly on the metal part of the hose-bib. Put your ear to the plastic handle of screwdriver, (in this manner the solid screwdriver works like a stethoscope) and carefully listen for sounds emanating from the hose-bib. If you hear any sound be sure to mark that hose-bib. If the sound seems to be louder at any of the other hose-bibs, then the leak is closer to that unit and you should make sure and note that when you call your plumber. This technique also works for yard hydrants.

If you listen to all the hose-bibs and still find no sound, go into the house and follow the same process with the screwdriver on your house fittings such as faucets in sinks, shower valves, washer and hot water heater. If you are still not sure, just contact a plumber.



WARNING! If you do find the leak and decide to try and dig it up please make sure you do a “One Call” (dial 811) so that you don't dig up any utility lines and cause yourself physical or financial harm. If you are not sure, call an expert or your local plumber.

PROTECTING RIPARIAN BUFFERS: A Good Idea for Everyone

By Barry Berg & Matt Johnson, East Dakota Water Development District

What exactly is a riparian area? A riparian area is simply the transitional zone between land and water environments. Examples of riparian areas include flood plains, stream banks, lake shores, and wetlands. A healthy riparian area is extremely important to water quality as it will reduce sediment, nutrients, pesticides, and other materials in surface and shallow subsurface runoff.

One or more beneficial uses have been assigned to water bodies across the state. There are established state and federal standards for the levels of certain pollutants that can be in the water before it becomes a problem for a given beneficial use. Waters that exceed these standards are considered impaired for one or more of the assigned uses, and efforts to address the source(s) of the impairments are undertaken.

One of the most effective methods for addressing the more common impairments involves restoring and/or maintaining riparian buffer areas. As the name implies, these areas provide a buffer between potential contaminant sources and the particular water resource. The buffer typically consists of a strip of natural (or restored) grassy vegetation in which most conventional farming or ranching practices are prohibited or restricted. According to the 2016 South Dakota Integrated Report for Surface Water Quality Assessment, <http://denr.sd.gov/documents/16irfinal.pdf>, a significant number of rivers, lakes and streams are impaired due to excess levels of sediment, bacteria and nutrients.

Buffers along rivers, streams and lakes provide protection in several ways. The vegetation acts as a filter, trapping sediment that might be carried into it by runoff. Growth of the vegetation can also take up nutrients in the runoff, lowering inputs to the water body. The deep-seated root systems of the plants also help stabilize and strengthen the lake or stream banks, protecting



them from erosion and keeping sediment out of the river. Finally, exclusion of livestock prevents the direct introduction of manure (nutrients and bacteria) into the water. This also prevents degradation of the stream or lake bank due to animal traffic.

In recognition of the highly beneficial aspects of riparian buffers, there are numerous programs available to support and encourage landowners who want to maintain or restore these areas. Help can be sought from the US Department of Agriculture under the Conservation Reserve Program (CRP) and Wetland Reserve Easements, administered by the Farm Services Agency and Natural Resource Conservation Service (NRCS) respectively. The United States Fish and Wildlife Service provides support for the restoration and protection of riparian buffers. Options and assistance may also be obtained through a variety of private conservation organizations and land trusts for efforts ranging from fence building and grass seeding to long-term or permanent easements.

In the Big Sioux River watershed, watershed project sponsors have developed and implemented two local options. The Riparian Area Management (RAM) Program mimics the benefits and requirements of the federal CRP Program, and is applied to land parcels that do not meet CRP eligibility requirements. RAM is most often used to pick up the final few acres of a parcel that is enrolled in CRP, spreading the support between two sources and protecting buffers.

A relatively new program called Seasonal Riparian Area Management (SRAM) allows producers to change how they manage riparian grassland acres along certain stream segments in order to improve water quality while still keeping those acres in production. The SRAM program is essentially a 6-month, deferred grazing program for those portions of a pasture that lie within the 100-year flood plain of a stream. The program

is currently only available to producers within the Big Sioux Watershed Project but may soon be opened to other watershed projects within the state.

Studies across the nation have demonstrated the positive impact that intact and functioning riparian buffers can have on adjacent waters. Working in concert with the SD Department of Environment and Natural Resources, the East Dakota Water Development District has been conducting intensive water quality monitoring along a stretch of Skunk Creek in north-central Minnehaha County for three years. Landowners along

this stretch of the stream have voluntarily adopted various practices, particularly SRAM, that have restored riparian area vegetation and limited livestock access. The reductions in bacterial loads have been dramatic, and the overall condition of the area has improved greatly.

During the 2016 Session of the South Dakota Legislature, State Senator Jim Peterson brought forward a bill that would have reduced the property tax burden on riparian areas planted to permanent vegetation. It was a recognition of the voluntary effort by the landowner to forego a higher income from the property (through more intensive land uses) in favor of the broader public water quality benefit of maintaining or establishing a buffer zone. The bill had widespread legislative support, but was ultimately vetoed by Governor Dugaard due to questions about the actual implementation of the concept. The Governor has indicated that a “new and improved” version of this effort will be presented to the 2017 Legislature for consideration.

For more information about how you might help protect and preserve riparian buffers in your area, your local NRCS Office is the best place to start.





Nitrates in the Big Sioux River

By Jay Gilbertson, East Dakota Water Development District

Early in 2015, a public water utility in central Iowa, Des Moines Water Works (DMWW) initiated legal actions in response to chronic high nitrate concentrations in its primary water source, the Raccoon River. Water distributed by public utilities can contain nitrate at concentrations of no more than 10 milligrams per liter (mg/L). Unfortunately, nitrate in the Raccoon River often exceeds 15-20 mg/L. In order to bring the nitrate concentrations down to acceptable levels, the utility has had to undertake extraordinary efforts, at substantial costs to its 500,000 customers (one-sixth of the state population). In 2015 alone, the utility spent roughly \$1,500,000 on nitrate reduction.

DMWW's legal actions have been brought against the boards of supervisors, i.e., county commissioners, of three counties in northwest Iowa (Buena Vista, Calhoun and Sac) in their roles as the trustees (individually or jointly) for numerous drainage districts. DMWW has measured excessive nitrate loads emanating from the outfalls of these drainage districts. They argue that the drainage districts should be treated (i.e., regulated) as point sources of pollution under the provisions of the federal Clean Water Act, as well as state environmental protection law. Historically, such facilities have been treated as non-point sources, and not subject to regulation. The DMWW complaint can be viewed at: <https://www.calt.iastate.edu/sites/default/files/1513756-0--20402.pdf>.

MIGHT SIMILAR ISSUES ARISE IN EASTERN SOUTH DAKOTA?

The Big Sioux River has long been a significant water source for South Dakota's largest community, the City of Sioux Falls. In addition, the majority of the remaining public water systems (PWSs) throughout the basin depend primarily on the shallow Big Sioux Aquifer, which is hydrologically connected to the river. As such, Big Sioux River basin residents are no less dependent on their river than central Iowans are on the Raccoon River. To date there have been no recognized impairments attributed to nitrate in the watershed, however no systematic assessment of

conditions within the Big Sioux River basin had been performed.

For the past two years, the East Dakota Water Development District has conducted an intensive water-sampling program for nitrates in the Big Sioux River, and selected tributaries, from its headwaters near Summit to the confluence with the Missouri River at North Sioux City. Monitoring sites have been established at 28 points along the river, at which samples are collected on a weekly or bi-weekly basis. Another 18 sites are monitored on tributaries to the Big Sioux or Minnesota Rivers. Sample collection and analyses by District staff begins in late April and concludes in early November. In many instances, the monitoring sites are also sampled by other entities, providing access to additional information.

RESULTS SO FAR

Through mid-November 2016, only a very small percentage of samples have exceeded the state/federal drinking water standard of 10 mg/L. In 2015, just two samples (out of 1,198) exceeded the standard, and both were collected from the same site. In 2016, the number of samples that exceeded the standard rose, but still represent a small fraction of the total tests (51 of 1,077). Samples collected above the City of Sioux Falls drinking water intake were consistently well below the standard, rarely rising above 2.0 mg/L. Similar results were found in the portions of the river adjacent to PWS well fields.

However, persistent elevated nitrate concentrations are being detected at certain locations. The values detected do not necessarily exceed the drinking water standard, but the concentrations are high relative to the overall results.

The majority of the elevated readings are found immediately below the out falls of municipal wastewater treatment facilities (WWTFs). Relative increases are consistently noted in the Big Sioux River below Watertown and the South Fork of the Whetstone River below Milbank. The impacts at these locations are particularly pronounced when stream flow is low. At times,

the bulk of the water at the monitoring point is discharge from the WWTF. The influence of the Sioux Falls WWTF on nitrate in the Big Sioux River is also discernable, but to a lesser extent.

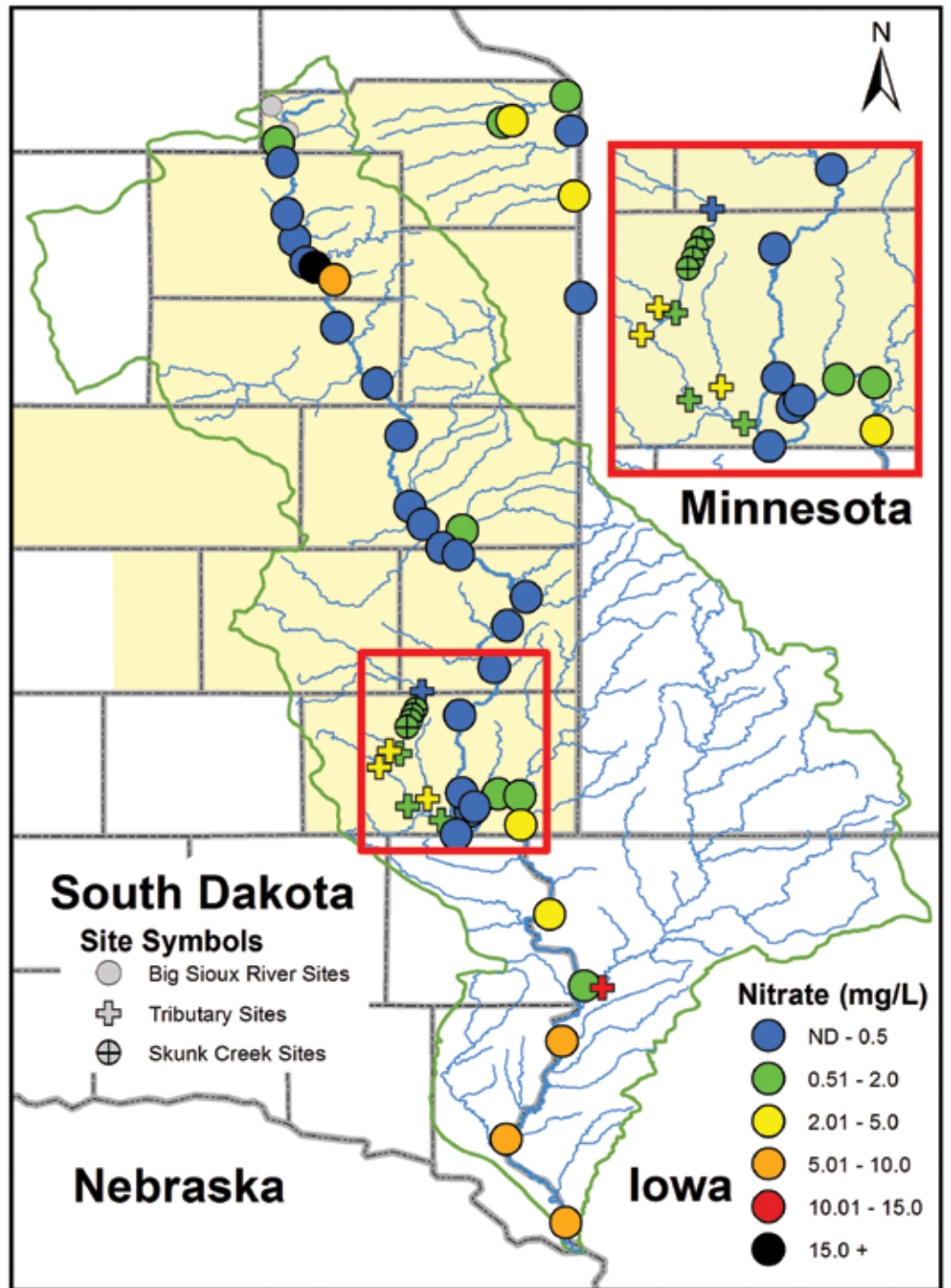
Increases in nitrates in the Big Sioux River are also noted after the confluence with three of its tributaries. Samples collected downstream of the junctions with Medary Creek in Brookings County and Split Rock Creek in Minnehaha County show modest but persistent increases. The tributary with the most pronounced impact on the river is the Rock River, which enters the Big Sioux just below Hudson in Lincoln County. This watershed falls entirely outside of South Dakota, encompassing parts of southwestern Minnesota and northwestern Iowa. Eleven of fourteen samples collected from the Rock River exceeded 10 mg/L, and the impact of the nitrate load on the river was reflected in high nitrate levels downstream to the confluence with the Missouri River.

WHAT DOES THIS MEAN FOR YOUR LOCAL PUBLIC WATER SYSTEM (PWS)?

As noted earlier, many PWSs in South Dakota draw water from shallow aquifers with strong connections to surface water sources, such as the Big Sioux River. In many cases, the amount of water withdrawn exceeds what the aquifer alone is capable of supplying, so additional river recharges the aquifer adjacent to the wells. In these cases, the aquifer can act as a filter, keeping out dangerous microorganisms like Giardia and Cryptosporidium that might be present in the river water. It can also minimize taste and odor issues that may relate to algae blooms, and remove fine particulates. Further, ground water temperatures are fairly stable, making any necessary treatment processes easier.

Perhaps the most important result of this “blending” of sources is on the nitrates found in the water. Shallow aquifers are

Big Sioux River & Tributary Nitrate Levels
07/18/16 - 07/24/16



Prepared by Thomas Braga-Henebry
East Dakota Water Development District
Data Sources: East Dakota Water Development District nitrate monitoring program, ESRI, & USGS

particularly susceptible to land use impacts. Testing has shown that parts of the aquifer underlying row crops, commonly found in the Big Sioux River valley, frequently have elevated nitrate levels, often above the drinking water standard. Consequently, when a PWS pumps its wells, it is typically drawing in a blend of true aquifer water (high nitrate) and water induced via river bank

...continued on page 13

SIoux RURAL WATER SYSTEM

Poor water, both in quality and quantity has been one of the major problems facing rural residents of Hamlin, Codington and Deuel Counties in eastern South Dakota. The area receives an average annual rainfall of about 20 inches with 16 inches falling during the crop growing season. In an effort to improve the available water supply for household and livestock consumption, the farmers banded together early in 1972 forming the Sioux Rural Water Association.

The engineering firm of DeWild Grant Reckert & Associates Co. (DGR) was engaged in March 1972 to perform a system feasibility study and preliminary design work. The study was financed by \$25.00 good intention fees collected from all association members. The feasibility study was completed late in September 1972 and indicated favorable conditions for developing the proposed water system. The Association's Board of Directors approved the study and directed the engineer to proceed with final design and preparation of Plans and Specifications. Following approval of the Association Board and funding agencies, successful bid lettings were held in May and September 1972, and June 1975. Construction work began in the fall of 1974 with work essentially complete by early fall of 1976.

At that point, the Sioux System served 632 members at 670 pipeline connections; that number has grown to 1,601 members. Projected water use for the system is approximately 500,000 gallons per day or over 180 million gallons per year; 371,628,000 gallons were pumped in 2016. Ninety percent of the potential users with the system's service area who joined the Association are receiving water. The System has a density of 1.8 connections per mile of pipe, with approximately 1,400 miles of pipe in the ground.

Final construction cost for the original system was \$3,962,000 with 76% of this cost for construction of the distribution pipeline. Total project cost including legal, engineering and administrative cost is \$4,440,000. The cost was paid for by a partial grant and a 40-year construction loan from the Farmers Home Administration, a grant from the State of South Dakota, and by user membership fees. The cost of operation and repayment of loans will be made through water use revenues.

Projects and Upgrades

The 1979 User Add-on Project: After original system construction and continued requests for service, funding was

secured and a few hundred new users became members of the Sioux Rural Water System.

1983 Water Source: A new water source was needed in Division II, so after a year of research a new well, pump station and storage at the Castlewood Pumping Station. Moreover, 12.5 miles of main line were added and the system began to serve the Town of Hayti.

1988 Phase I Construction: Deteriorating water quality became a priority prior to 1988, coupled with the system outgrowing portions of original design. These factors prompted the construction of 8.5 miles of main line, added storage, a new well at Castlewood and piping upgrades at the Sioux plant.

1990 Phase II Construction: Phase II constructed two water filtration plants and 20.3 miles of main line piping with treatment plants located at the Castlewood well site and the Sioux well site. Plant improvements remedied issues caused by iron and manganese found in raw water sources.

1991 User Add-on (Phase III): Sioux Rural Water System obtained 130 new members through an expansion project. The project was engineered and designed to provide water to individuals experiencing a lack of water or poor water quality.

1996 Well Relocation / System Upgrade: Nitrate contamination required Sioux to look for a new water source. A year-long search culminated in the purchased 60 acres of land near existing wells by the Castlewood Treatment Plant (Division II). Additional efforts, along with the help of surrounding land owners, created a wellhead protection area. Furthermore, the project included the implementation of a SCADA control systems allowing operators to monitor and control the system remotely.

1999-2000 User Add-on Project: Continued requests for water to areas miles away from other water systems prompted a study of those areas. The process identified 150 new members system wide and another mainline expansion.

2009 Office Project: In 2009 Sioux Rural Water constructed a new office near the original office at the Sioux Treatment plant location. The construction of this efficient building will adequately meet Sioux Rural Water's needs for years to come.

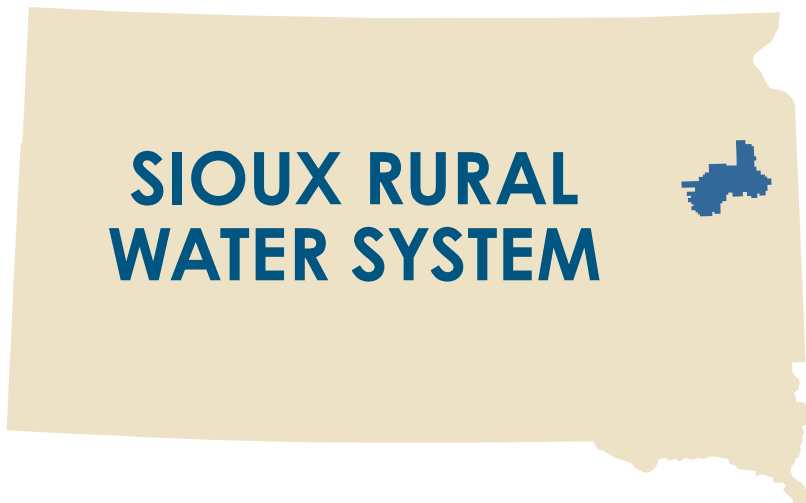


2015 Water System Improvement Project: A successful funding application was submitted for the 2015 Water System Improvement Project. On March 27, 2015 The South Dakota Board of Water and Natural Resources approved a \$2,515,000 drinking water State Revolving Fund loan and a Consolidated Water Facilities Construction Program grant for 43.9 percent of project costs not to exceed \$2,000,000 for the Sioux Rural Water System. The term of the loan is 3% interest for 20 years.

Construction of approximately 31 miles of new distribution system pipelinetidual meter services in Kranzburg. One existing booster pumping station will be replaced due to equipment being made obsolete by distribution system changes.

The City of Kranzburg distribution system will be improved with 14,950 feet of pipeline and appurtenances size 3-inch through 6-inch, and with new service pipelines and meter pits. The 72 existing customers of the City of Kranzburg water utility will be customers of Sioux Rural Water, and the City will no longer operate a water utility.

Additionally, two new wells and accessories will be constructed at the Castlewood wellfield to replace declining capacity in existing wells. The obsolete water system SCADA control system will be replaced.



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- Brad Jongeling**, Director
- Betsy Oleson**, Director
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- Travis Steffensen**, Operations Supervisor
- Todd Goodfellow**, System Operations Specialist
- Guy Groenwold**, System Operations Specialist
- Jesse Foreman**, System Operations Specialist
- Amanda Rudebusch**, Billing Clerk

STATISTICS:

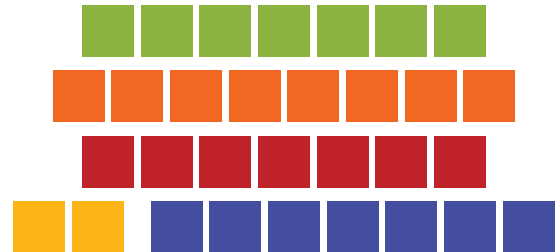
- Hookups:** 1,601
- Miles of Pipeline:** 1,400
- Water Source:** 6 wells and 2 standby wells
- Counties Served:** Codington, Clark, Deuel, Hamlin
- Towns Served Individual:** Bemis, Grover, Naples, Thomas, Vienna, Waverly
- Towns Served Bulk:** Bryant, Hayti, Hazel, Kranzburg; Standby Bulk - Castlewood

RURAL WATER & Crossword & Word Scramble Contest

\$100 Grand Prize

South Dakota Mascots

SCRAMBLE ANSWER

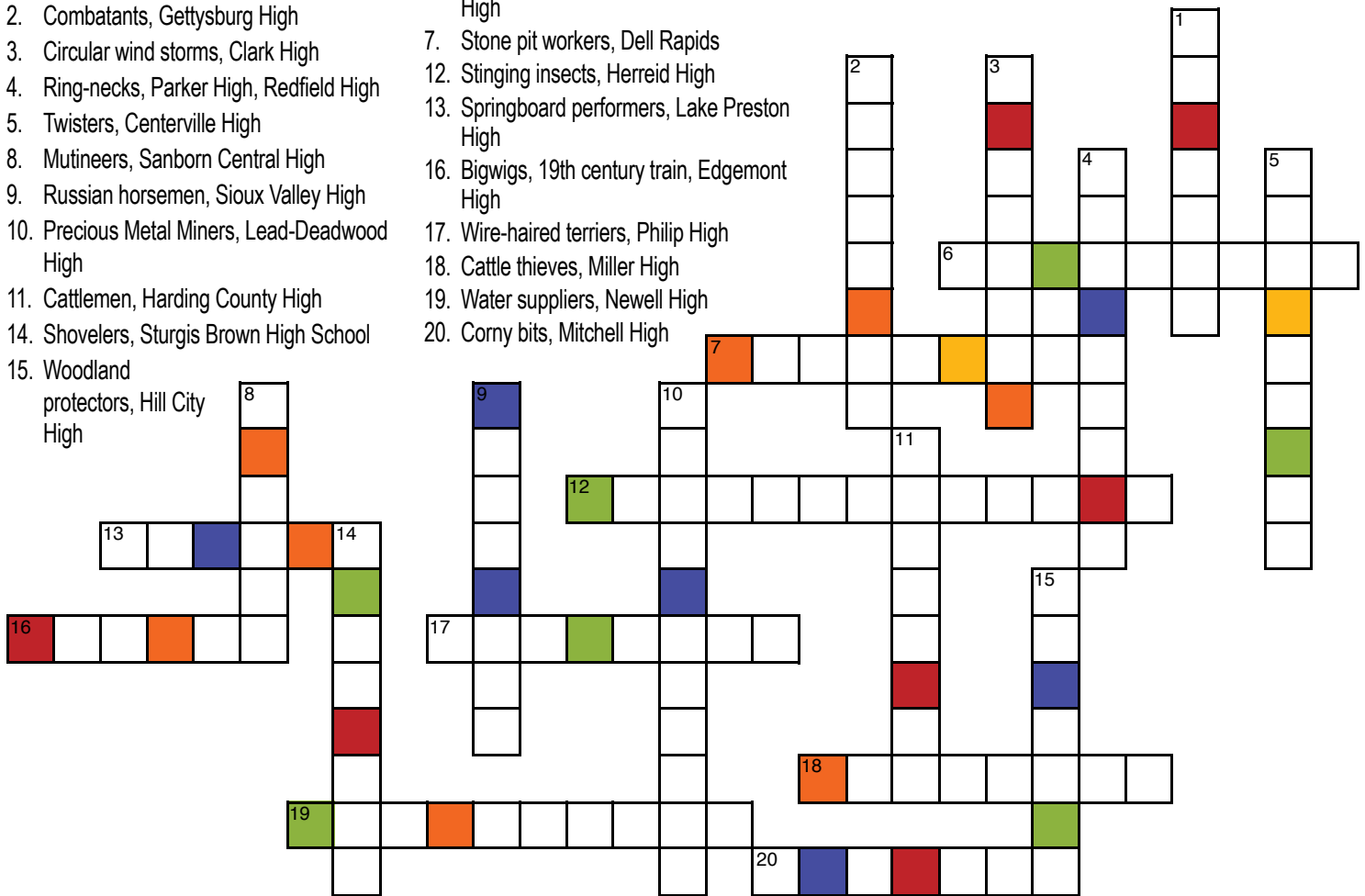


DOWN

1. Knight's foes, Waubay High
2. Combatants, Gettysburg High
3. Circular wind storms, Clark High
4. Ring-necks, Parker High, Redfield High
5. Twisters, Centerville High
8. Mutineers, Sanborn Central High
9. Russian horsemen, Sioux Valley High
10. Precious Metal Miners, Lead-Deadwood High
11. Cattlemen, Harding County High
14. Shovelers, Sturgis Brown High School
15. Woodland protectors, Hill City High

ACROSS

6. State leaders, Pierre T.F. Riggs High
7. Stone pit workers, Dell Rapids
12. Stinging insects, Herreid High
13. Springboard performers, Lake Preston High
16. Bigwigs, 19th century train, Edgemont High
17. Wire-haired terriers, Philip High
18. Cattle thieves, Miller High
19. Water suppliers, Newell High
20. Corny bits, Mitchell High



RULES

Use the colored squares in the puzzle to solve the word scramble above. Call your Rural Water System (See page 2 for contact information) or enter online at www.sdarws.com/crossword.html with the correct phrase by March 10th, 2017 to be entered into the \$100 drawing.

Online Entries - go to: www.sdarws.com/crossword.html

Only one entry allowed per address/household. You must be a member of a participating rural water system to be eligible for the prize. Your information will only be used to notify the winner, and will not be shared or sold.

Congratulations to Bernie Udell who had the correct phrase of "Hazy skies and pumpkin pies" for October 2016.

Nitrates: continued from page 9

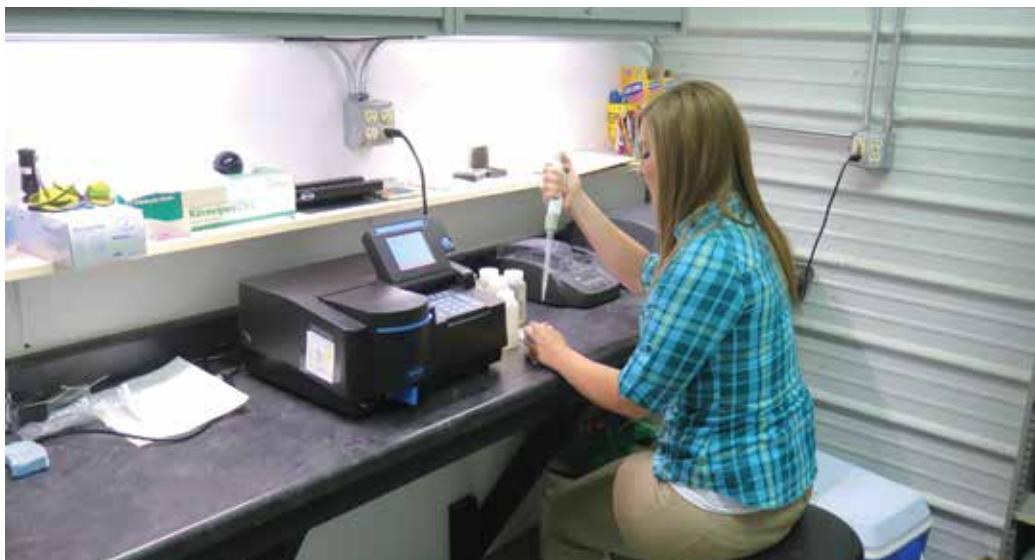
filtration from the river (low nitrate). The river water acts as a buffer in the blend, lowering the overall nitrate levels delivered to the treatment plant. If nitrate levels in the river water rise, the PWSs will lose the buffering effect, and the "blend" will likely exceed drinking water standards.

WHAT'S NEXT?

Efforts so far have found only limited elevated nitrate concentrations. At no time during the investigation did any PWS experience nitrate-related problems, and there is nothing to suggest that the types of problems currently being experienced in Iowa are present in eastern South Dakota. However, overall stream flows during the study period have been well above normal, so it is possible that impact of some problematic sources may be masked by dilution. Sampling over a range of flow rates will be needed to better define the actual conditions. The District's nitrate sampling program will continue for the foreseeable future.

One of the likely factors leading to Iowa's current nitrate problems is the wide spread and long-term application of agricultural drainage (both surface and subsurface). This type of practice is just starting to take root in eastern South Dakota, and while there is little to suggest that it is having a discernable water quality impact at this time, the experience of our eastern neighbors is not encouraging. Water quality impacts need to be given all due consideration when proposing major land-use changes.

Lastly, except in very limited cases, nitrate discharges are not typically regulated. When treating municipal wastewater, attention has focused on the elimination/reduction of ammonia, which is highly toxic to fish. Conversion of ammonia to nitrate (both are nitrogen compounds) is the standard treatment process, albeit one that simply converts one contaminant into another. Down the line, actual limitations on the discharge of nitrates into the environment may be necessary to protect our critical drinking water sources.



JANUARY 10-12

ATC 2017

SOUTH DAKOTA RURAL WATER'S ANNUAL TECHNICAL CONFERENCE

PREMIER ATC SPONSOR



SCHEDULE OF EVENTS

TUESDAY

JANUARY 10, 2017

TIME	LEWIS & CLARK	ROOM D-E	ROOM F	ROOM G	LAKE SHARPE B
8AM-4PM	CONFERENCE REGISTRATION – Registration Desk		EDUCATIONAL SESSIONS SPONSOR 		
8AM-4PM	WATER PAC RAFFLE – Lobby Area				
8:00 AM	REFRESHMENT TABLE – Lobby Area				
10:00 AM	<i>Mix or Not to Mix</i>	<i>FlexNet Tower Reading System</i>	<i>Water & Wastewater Solutions in Tongo, West Africa</i>	*SPECIAL SESSION* ESRI: GIS for Water Utilities	<i>Quality on Tap!</i> Editorial Board Meeting (This meeting is open to Rural Water managers, board members and office staff)
11:00 AM	<i>Tanks: New Construction & Coatings</i>	<i>Membrane Process Selection</i>	<i>The Many Uses of Energy Efficient Mixing for Municipalities</i>		
NOON	LUNCH – On your own				

AMPHITHEATER II

OPENING SESSION: Keynote Address – Mark Johnson (1:00 PM - 2:30 PM)

KEYNOTE BREAKOUT – Mark Johnson (3:00 PM - 4:30 PM)

2:30 PM	BREAK TABLE – Sponsored by DGR – Lobby Area				L. FRANCIS CASE
3:00 PM	<i>Rural Development Funding</i>	<i>Chemical Storage, Safety and Handling</i>	<i>Overcoming Bio-Film in a Dist. Transmission Main</i>	*SPECIAL SESSION* ESRI: GIS for Water Utilities	<i>Importance of High Resolution Data/Analytics</i>
	4:00 PM	<i>RD Apply (3:45 PM)</i>	<i>Water Meter Technology (3:45 PM)</i>		<i>Permanganate Pre-oxidation for Mitigating Hazardous Algal Blooms Cyanotoxins (3:45 PM)</i>

WWW.SDARWS.COM/ATC.HTML

WEDNESDAY

JANUARY 11, 2017

TIME	AMPHITHEATER I	AMPHITHEATER II	L. FRANCIS CASE A-B	LAKE SHARPE B
8AM-4PM	CONFERENCE REGISTRATION – Registration Desk			
8AM-4PM	WATER PAC RAFFLE – Lobby Area			
8:00 AM	<i>Class A&B Member Caucus</i>	<i>The Impacts of Record Drawings</i>	<i>Using GIS to Streamline Meter Replacement</i>	SIGN UP TO USE THIS ROOM FOR CLIENT MEETINGS 605-556-7219
8:30 AM	8:15 AM <i>42nd Annual Membership Meeting</i> (This is the Official Business Meeting of the SDARWS)	<i>The Emergency Within the Emergency (8:45 AM)</i>	<i>SDWARN Informational Meeting</i>	
9:00 AM		BREAK TABLE– Sponsored by HR Green – Lobby Area		
9:30 AM				
10:00 AM	<i>Rural Water Center Annual Meeting</i>	<i>Gaining on Your Water Loss</i>	<i>New Well Siting Considerations</i>	SIGN UP TO USE THIS ROOM FOR CLIENT MEETINGS 605-556-7219
10:30 AM		<i>Understanding Chlorination (10:45)</i>	<i>Smartphone Data Collection for Water Systems (10:45 AM)</i>	
11:00 AM				
11:30 PM	LUNCH – On your own			
1:00 PM	<i>Legislative Panel - Representatives for Thune, Rounds, and Noem</i>	<i>After Flint: Managing Water Corrosivity and Stability</i>	<i>MONOFORM Manhole Rehabilitation</i>	SIGN UP TO USE THIS ROOM FOR CLIENT MEETINGS 605-556-7219
1:30 PM		<i>Healthy Benefits Insurance</i>	<i>Optimize Storage Facility Operation to Maintain Water Quality (1:45 PM)</i>	
2:00 PM			BREAK TABLE – Sponsored by CoBank – Lobby Area	
2:30 PM				
3:00 PM	<i>Legislative Preview/Attorney Panel</i>	<i>Recapturing Lost Revenue from Customer Leaks</i>	<i>Alternative Wastewater Treatment</i>	SIGN UP TO USE THIS ROOM FOR CLIENT MEETINGS 605-556-7219
3:30 PM			<i>Low Pressure Sewer Systems</i>	
4:00 PM	LEGISLATIVE RECEPTION AND TECHNOLOGY EXHIBITS – Grand Galleria			

2017 AWARDS BRUNCH

THURSDAY JANUARY 12, 2017

8:00 AM	REFRESHMENT TABLE – Rooms D&E
8:00 AM	LEGISLATIVE OPEN FORUM – Rooms D&E
9:30 AM	AWARDS BRUNCH – Rooms A-B-C

SPECIAL FOR 2017
ESRI Tuesday Pre-Conference Session

SPOUSE PROGRAM

WEDNESDAY JANUARY 11, 2017

- 9:00 AM Continental Breakfast
- 10:00 AM Burlap Wreath Craft with Jennifer
- 11:30 AM Spouse Luncheon
- 1:30 PM Rural Water Taste Test Finals



DOES YOUR SYSTEM HAVE THE BEST DRINKING WATER IN SOUTH DAKOTA?

Bring a glass quart jar of your water to the 42nd Annual Technical Conference in Pierre

All entries must be submitted to the registration desk by 2:00 pm on January 10th in order to be entered into the contest. Entries must be submitted in a glass jar.

The winner's name will be announced at the ATC Awards Banquet on Thursday, January 12, 2017. The winner will go on to represent South Dakota at the NRWA Great American Water Taste Test in Washington, DC on February 8th, 2017.



SOUTH DAKOTA RURAL WATER
 P.O. Box 287
 Madison, SD 57042
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WATER MATTERS

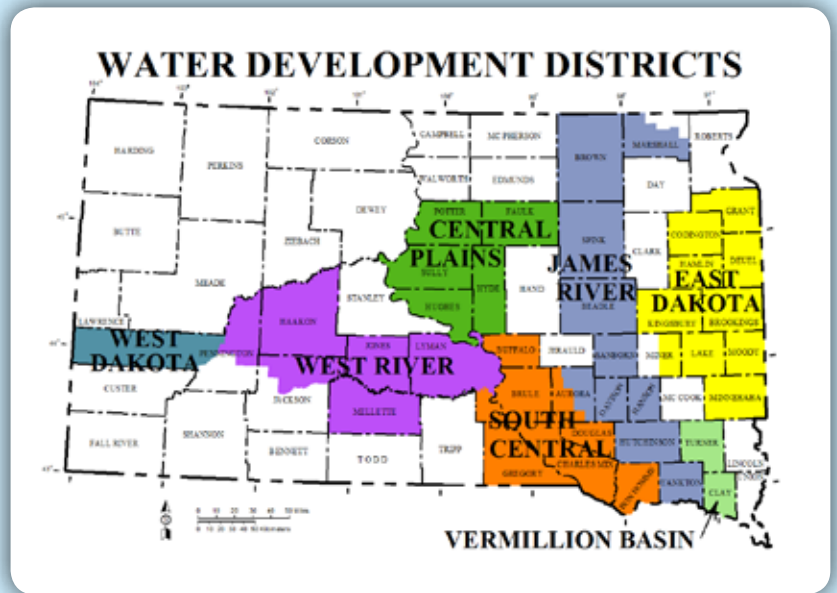
SD Water Development Districts

What are water development districts?

Water development districts (WDDs) are political subdivisions of the State. WDDs promote the conservation, development, and proper management of water resources according to district priorities. They can provide technical, organizational, and financial assistance to prospective and existing projects and activities. While sharing many common efforts, each of the seven existing WDDs (see map) have developed programs and expertise designed to address those issues most important to their area.

Each WDD is governed by an elected Board of Directors, consisting of 5, 7, or 9 members, depending on population. Directors serve staggered, four-year terms. The Board hires staff as necessary. WDDs have a limited taxing authority, being able to levy a tax of no more than thirty cents per thousand dollars of taxable valuation (0.3 mill). They also pursue external grant support for priority activities.

If an organization, entity, group or individual has a project or activity that needs technical, organizational, or financial assistance, contact the WDD for that area. Staff has extensive experience in developing and supporting projects. They can assist in preparing an application to include a project on the State Water Plan, an important step if a project needs state or federal assistance. They can also help project sponsors search for funds from other sources.



For More Information:

East Dakota WDD, Jay Gilbertson
 605-688-6741 • edwdd@brookings.net

Vermillion Basin WDD, Brad Preheim
 605-563-2883 • vbwdd@hotmail.com

James River WDD, Dave Bartel
 605-352-0600
davebartel@midconetwork.com

Central Plains WDD, Lynette Eckert
 605-280-6763
cpwdd@midconetwork.com

South-Central WDD, Debra Benson
 605-724-2624 • scwdd@unitelsd.com

West River WDD, Jake Fitzgerald
 605-669-2931 • jfitzgerald@wrlj.com

West Dakota WDD, Leon Ewert
 605-394-2685
administration@westdakotawater.com

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