

**SDARWS**  
South Dakota Association  
of Rural Water Systems

# Quality On Tap!

April 2021 | Volume 16, Issue 4

**THE STATE OF  
OUR WATERS**

MAKE PLANS TO ATTEND THE RURAL WATER EXPO - RAPID CITY - APRIL 28-29, 2021

## A MESSAGE FROM THE PRESIDENT OF THE BOARD

Ron Gillen, President  
South Dakota Association of Rural Water Systems



South Dakota Rural Water is planning to host the 2021 Rural Water EXPO in-person at the Rapid City Best Western Ramkota Hotel and Conference Center April 28-29, 2021. A virtual attendee option is also available.

The EXPO is open to all water and wastewater utility staff, board/council members, engineers, State and Federal employees. The training will consist of twenty presentations, 30 minutes each, thus allocating ten contact hours for those individuals who are licensed operations specialists. Along with the training sessions, the EXPO will showcase many of our industry's manufacturer and supplier leaders. These professional companies will be set up in the main EXPO training center for attendee easy access and to provide answers to those pressing questions. Many will be displaying the recent advances in technology our industry has witnessed over the past several years.

A room block is set up at the Ramkota Best Western Hotel in Rapid City. You can make room reservations by calling 605-343-8550 and asking for the Rural Water room rate.

The EXPO will kick off at 8:00 am Wednesday, April 28th and conclude at noon on Thursday, April 29th with lunch provided on the first day. Please pre-register by visiting our website at [sdarws.com/rural-water-expo.html](http://sdarws.com/rural-water-expo.html). Due to the COVID-19 Pandemic, this event is subject to be canceled or modified. More information on this event can be found on page 3.

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**FISHING TOURNAMENT**

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MEAL PROVIDED FOLLOWING THE TOURNAMENT  
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For more information, contact Mike Moeller, SDARWS Tournament Chair  
605-270-4989 • [mmoeller@sdarws.com](mailto:mmoeller@sdarws.com)

**Register online at [sdarws.com/fishing.html](http://sdarws.com/fishing.html)**

RURAL WATER  
**EXPO**  
2021

**APRIL 28-29, 2021**  
**BEST WESTERN RAMKOTA**  
**RAPID CITY, SOUTH DAKOTA**

**ATTEND IN-PERSON OR VIRTUALLY!**



**Contact Hours • Door Prizes • Lunch provided on Day One**

***This 1½ day event includes presentations and features exhibit displays***

*The EXPO is open to all water and wastewater utility staff, board/council members, engineers, State and Federal employees. The training will consist of twenty presentations, 30 minutes each, thus allocating ten contact hours for those individuals who are licensed operations specialists. Along with the training sessions, the EXPO will showcase many of our industry's manufacturer and supplier leaders. These professional companies will be set up in the main EXPO training center for attendee easy access and to provide answers to those pressing questions. Many will be displaying the recent advances in technology our industry has witnessed over the past several years.*

**ATTENDEE  
REGISTRATION**

**\$75 – In-Person Registration**  
*Includes 10 contact hours  
and lunch on Day 1*

**NEW for 2021!**

**\$25 – Virtual Attendee Option**

**ROOM BLOCK**

Ramkota Best Western Hotel  
2111 N. Lacrosse Street  
Rapid City, SD 57701  
605-343-8550

**AGENDA COMING SOON!**

**For more information visit**  
[sdarws.com/rural-water-expo.html](http://sdarws.com/rural-water-expo.html)

**REGISTER ONLINE: [sdarws.com/rural-water-expo.html](http://sdarws.com/rural-water-expo.html)**

*Due to the COVID-19 Pandemic, this event is subject to be canceled or modified.*



# HOW CAN KIDS HELP?

Here are some fun ways you can get involved in helping protect your watershed!

## BECOME A BACKYARDER!

Create a natural environment in your backyard by planting native trees, grasses, and flowers. Taking care of native vegetation is a cinch and it will attract beautiful birds and butterflies!

## ORGANIZE A STREAM OR RIVER CLEANUP!

Trash in rivers and streams are not only an eyesore but harmful to aquatic life and other animals that forage the banks for food. Check out the National River Cleanup website for ideas on how to organize a cleanup group!

## VOLUNTEER!

Did you know there are citizen monitoring opportunities throughout your area? Volunteer to monitor water quality or become involved in other things such as bird counts or tagging monarch butterflies. You could even start your own monitoring group to monitor something important to you!

## TAKE A HIKE!

Look around. See what's going on in the watershed you live in. Document things you feel don't look right and call your local conservation district. They don't know everything happening in the watershed unless they have help from you!

## PARTICIPATE IN AN ENVIRONMENTAL EVENT!

Did you know Earth Day is April 22, 2021? Check with your local conservation district or environmental organization for a list of events happening in your watershed. Volunteer to help at the event or just come out and learn more about the environment!

# TAKING CARE OF OUR WATERSHED

A lake is a magnificent water resource. The quality of its water is a reflection of what happens on the land that surrounds it. Rain and melting snow flow across fields, towns, and roads, picking up pollutants along the way.

To protect the lake, we must protect the "watershed," the land that drains or sheds its water into the lake.

The health of a watershed depends on the kinds of activities happening in the watershed. Is there anyone fertilizing their lawn, farming, raising livestock, using an automobile, or working on construction?

Federal, state, and local agencies, as well as non-profit organizations, and even local citizens help protect watersheds every day. You can do your part, too! We all have a responsibility to keep the watershed we live in clean and healthy for all living things. Be aware of your activities and how they might affect the environment.

**Find and circle the eight pollutants listed below. Use the remaining un-circled letters to complete the phrase.**

**hint: start with the top row and move left, filling in with each un-circled letter.**

- CHEMICALS
- MANURE
- NUTRIENTS
- OIL
- FERTILIZER
- PESTICIDE
- SALT
- SEDIMENT

N O N F P O I C E R U N A M N  
 T S O U E R S H C E P O L L U  
 T I O N L R H E V U R G X D F  
 G F G Z I A T M D F W N H T N  
 E U Y U O Y D I L I Z T Y P V  
 E B J K T R R C L C M Z P M K  
 G D J P A Q P A U I D E Q T F  
 K J I D P A J L B J Z C N E Q  
 A L P C F X H S A P D E L T V  
 H Y X L I X V D G C O H R A K  
 Z D K R F T O V L E F N T G G  
 X F E S D F S J Q X M I Z O T  
 G I J W D B H E T L A S C W U  
 M N T Z R W D V P J M M K J T  
 J A N U T R I E N T S R I F Z

**THE NATION'S LARGEST SOURCE OF WATER QUALITY PROBLEMS IS:**

*This happens when pollutants (like the kind you found in the puzzle) are carried away by precipitation and runoff in our watershed and then deposited into surface water or introduces them into the groundwater.*

# BACKFLOW PREVENTION

Cucumbers, tomatoes, squash, beets ... What are you planting this year? Spring is here, and it's time to plan for that garden, fertilize the lawn, kill some weeds, fill up the pool and wash the car in the driveway.

Something you may not think about is how your outdoor activities have the potential to contaminate your drinking water.

Backflow is the reverse flow of contaminated water through a cross-connection and into pipes of a consumer's drinking water system. A cross-connection is any connection between a potable water supply and other water or fluids of unknown quality. An example is the piping between a public water system or a consumer's potable water system and an auxiliary water system, cooling system or irrigation system.

## Types of Backflow

There are two types of backflow: backpressure and backsiphonage. Backpressure backflow occurs when downstream pressure is greater than potable water supply pressure. Backpressure can result from an increase in downstream pressure, a reduction in water supply pressure, or a combination of both. Increases in downstream pressure can be created by pumps or temperature increases in boilers. Reductions in potable water supply pressure occur whenever the amount of water being used exceeds the amount of water being supplied, such as during water line flushing, fire fighting or breaks in water mains.

Backsiphonage is backflow caused by a negative pressure, or a vacuum in a public water system. Backsiphonage can occur when there is a stoppage of water supply due to nearby fire fighting or a break in a water main.

## Protect Your Drinking Water

Backflow can make drinking water unsafe, so what measures have you taken to prevent contaminating your water? Rural water systems have been required to install backflow prevention devices on new connections since 1983. However, devices installed by water systems may not be sufficient in certain circumstances. That's why you should still use protective vacuum breakers on outdoor hoses.

So, before you bust out the fertilizer and start the sprinklers, make sure you protect yourself and your family. To avoid contamination, backflow preventers should be installed whenever there is potential for a cross connection.

To find out more about backflow prevention, contact your water system. Together we can maintain the quality of our drinking water!



## WHAT IS BACKFLOW?

The undesirable backward flow of water through the pipes of a drinking water system. The backflow of water from home plumbing systems into community drinking water happens when water is pulled backward due to pressure loss in the system or pushed back by a pressure source such as a well pump.

## WHAT IS A CROSS-CONNECTION?

Connections between drinking water and other water or fluids of unknown quality. Indirect cross-connections are made by garden hoses and temporary connections. Direct cross-connections are more permanent hard-pipe arrangements.

## BACKFLOW PREVENTION TIPS

- Don't submerge hoses in buckets, pools, or sinks.
- Don't use a garden hose to clear a stoppage in a sewer.
- Don't use spray attachments without a backflow prevention device. The chemicals you put on your lawn could be fatal if ingested.
- Don't put a garden hose in anything you wouldn't want to drink.
- Do install vacuum breakers on all threaded faucets around your home.



# healthy, productive soils checklist for growers

**Managing for soil health is one of the best ways farmers can increase crop productivity while improving the environment.**

Results are often realized immediately and last well into the future.

Following are four basic principles to improving the health of your soil.

1. Minimize disturbance
2. Maximize soil cover
3. Maximize biodiversity
4. Maximize presence of living roots

Use the checklist on the next page to determine if you're using core Soil Health Management System farming practices. It is important to note that not all practices are applicable to all crops. Some operations will benefit from just one soil health practice while others may require additional practices for maximum benefit. These core practices form the basis of a Soil Health Management System that can help you optimize your inputs, protect against drought, and increase production.










**United States  
Department of  
Agriculture**

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March 2017

# Soil Health Management Systems Include:

What is it?		What does it do?	How does it help?
<p><b>Conservation Crop Rotation</b></p> <p>Growing a diverse number of crops in a planned sequence to increase soil organic matter and biodiversity in the soil.</p>		<ul style="list-style-type: none"> <li>Increases nutrient cycling</li> <li>Manages plant pests (weeds, insects, and diseases)</li> <li>Reduces sheet, rill and wind erosion</li> <li>Holds soil moisture</li> <li>Adds diversity so soil microbes can thrive</li> </ul>	<ul style="list-style-type: none"> <li>Improves nutrient use efficiency</li> <li>Decreases use of pesticides</li> <li>Improves water quality</li> <li>Conserves water</li> <li>Improves plant production</li> </ul>
<p><b>Cover Crop</b></p> <p>An un-harvested crop grown as part of planned rotation to provide conservation benefits to the soil.</p>		<ul style="list-style-type: none"> <li>Increases soil organic matter</li> <li>Prevents soil erosion</li> <li>Conserves soil moisture</li> <li>Increases nutrient cycling</li> <li>Provides nitrogen for plant use</li> <li>Suppresses weeds</li> <li>Reduces compaction</li> </ul>	<ul style="list-style-type: none"> <li>Improves crop production</li> <li>Improves water quality</li> <li>Conserves water</li> <li>Improves nutrient use efficiency</li> <li>Decreases use of pesticides</li> <li>Improves water efficiency to crops</li> </ul>
<p><b>No Till</b></p> <p>A way of growing crops without disturbing the soil through tillage.</p>		<ul style="list-style-type: none"> <li>Improves water holding capacity of soil</li> <li>Increases organic matter</li> <li>Reduces soil erosion</li> <li>Reduces energy use</li> <li>Decreases compaction</li> </ul>	<ul style="list-style-type: none"> <li>Improves water efficiency</li> <li>Conserves water</li> <li>Improves crop production</li> <li>Improves water quality</li> <li>Saves renewable resources</li> <li>Improves air quality</li> <li>Increases productivity</li> </ul>
<p><b>Mulch Tillage</b></p> <p>Using tillage methods where the soil surface is disturbed but maintains a high level of crop residue on the surface.</p>		<ul style="list-style-type: none"> <li>Reduces soil erosion from wind and rain</li> <li>Increases soil moisture for plants</li> <li>Reduces energy use</li> <li>Increases soil organic matter</li> </ul>	<ul style="list-style-type: none"> <li>Improves water quality</li> <li>Conserves water</li> <li>Saves renewable resources</li> <li>Improves air quality</li> <li>Improves crop production</li> </ul>
<p><b>Mulching</b></p> <p>Applying plant residues or other suitable materials to the soil surface to compensate for loss of residue due to excessive tillage.</p>		<ul style="list-style-type: none"> <li>Reduces erosion from wind and rain</li> <li>Moderates soil temperatures</li> <li>Increases soil organic matter</li> <li>Controls weeds</li> <li>Conserves soil moisture</li> <li>Reduces dust</li> </ul>	<ul style="list-style-type: none"> <li>Improves water quality</li> <li>Improves plant productivity</li> <li>Increases crop production</li> <li>Reduces pesticide usage</li> <li>Conserves water</li> <li>Improves air quality</li> </ul>
<p><b>Nutrient Management</b></p> <p>Managing soil nutrients to meet crop needs while minimizing the impact on the environment and the soil.</p>		<ul style="list-style-type: none"> <li>Increases plant nutrient uptake</li> <li>Improves the physical, chemical and biological properties of the soil</li> <li>Budgets, supplies, and conserves nutrients for plant production</li> <li>Reduces odors and nitrogen emissions</li> </ul>	<ul style="list-style-type: none"> <li>Improves water quality</li> <li>Improves plant production</li> <li>Improves air quality</li> </ul>
<p><b>Pest Management</b></p> <p>Managing pests by following an ecological approach that promotes the growth of healthy plants with strong defenses, while increasing stress on pests and enhancing the habitat for beneficial organisms.</p>		<ul style="list-style-type: none"> <li>Reduces pesticide risks to water quality</li> <li>Reduces threat of chemicals entering the air</li> <li>Decreases pesticide risk to pollinators and other beneficial organisms</li> <li>Increases soil organic matter</li> </ul>	<ul style="list-style-type: none"> <li>Improves water quality</li> <li>Improves air quality</li> <li>Increases plant pollination</li> <li>Increases plant productivity</li> </ul>

# The State of Our Waters

*Jay Gilbertson, East Dakota Water Development District*

Every year, the people of South Dakota, along with thousands of visitors, make use of the many and varied water resources of the state. Rivers and lakes are tapped by public water suppliers and private citizens for drinking water; irrigation provides water to crops and lawns to augment natural precipitation; anglers scour our lakes and streams in search of fish; and young and old enjoy a quick dip to escape the heat of summer. All of these activities are things we take for granted, but how do we know that the water on which we depend is really up to the task?

The South Dakota Department of Environment and Natural Resources (DENR), in cooperation with the United States Environmental Protection Agency (EPA), have identified a number of general classes of activities, known as beneficial uses, for the waters of the state. These are:

1. Domestic water supply;
2. Coldwater permanent fish life propagation;
3. Coldwater marginal fish life propagation;
4. Warmwater permanent fish life propagation;
5. Warmwater semipermanent fish life propagation;
6. Warmwater marginal fish life propagation;
7. Immersion recreation (swimming);
8. Limited contact recreation (boating and fishing);
9. Fish and wildlife propagation, recreation, and stock watering;
10. Irrigation; and
11. Commerce and industry.

All rivers and streams in South Dakota are assigned the beneficial uses (9) and (10) unless otherwise stated in the Administrative Rules of South Dakota (ARSD) Chapter 74:51:03. Lakes listed in ARSD Chapter 74:51:02 are assigned the beneficial uses of (7), (8) and (9) unless otherwise specified. These water bodies may also be assigned additional beneficial uses depending on local conditions.

For each beneficial use, DENR and EPA have established measurable standards (numeric criteria) to determine if the use can be safely met. For example, if the intended use is Immersion Recreation (swimming), bacteria counts in the water must be below a certain level and dissolved oxygen must be over a particular level. If the water body is to be used as a domestic water supply, concentrations of nitrate, sulfate, total dissolved solids, and other constituents cannot exceed specific levels. Temperature and suspended solids are the primary criteria used to evaluate suitability for the fisheries classifications, (2) through (6).

If most (90% or more) of the analyses from a particular water body meets the numeric criteria, then the resource is considered fully supporting of the designated use. It should be noted that a “fully supporting” designation does not necessarily mean that there were no problems found. It just means that if they were, they were few and far between, and not considered a serious risk to human health and safety. However, if violations of the numeric criteria are frequent (>10%) and/or severe, then the water body is considered impaired, and not supporting one or more of its intended uses.

Every two years, DENR assembles water quality information on the rivers, lakes and streams of the state. The purpose of this report is to assess the water quality of South Dakota's water resources and to identify the impaired water bodies. This report meets the requirements of Sections 305(b), 303(d), and 314 of the federal Clean Water Act, which mandate a biennial report on state water quality to Congress. This report is also intended to inform the citizens of South Dakota on the status of the quality of their water resources. Finally, it serves as the basis for management decisions by natural resource agencies and interested stakeholders to plan and prioritize water pollution control activities. The report is published in even-numbered years. The most recent (2020) South Dakota Integrated Report for Surface Water Quality Assessment is available on the DENR website, [https://denr.sd.gov/documents/SD\\_2020\\_IR\\_approved.pdf](https://denr.sd.gov/documents/SD_2020_IR_approved.pdf).

The Integrated Report breaks the State into fourteen major watersheds. It shows the name and location (county) of each lake and river/stream segment for which information is available. Each specific beneficial use is listed, along with whether or not it is meeting the intended use. In some cases, most often for immersion and/or limited contact recreation, there is insufficient information on which to determine if the use is supported or not. If an impairment exists, the cause is given, and where possible, potential sources of the problem are listed.

In the 2020 Integrated Report, excessive amounts of bacteria (primarily from livestock) and total suspended solids (agricultural and natural sources) were the most common sources of impairments to recreational and fisheries/aquatic life uses respectively. Another significant impairment is mercury found in fish flesh, although as this



is mostly attributed to atmospheric deposition from out-of-state sources, local corrective measures are problematic.

So, what happens when an impairment is found? Once a water body is determined to be impaired, DENR is required to conduct a more thorough investigation to better identify the source(s) of the impairment(s). Although the State maintains a network of over 150 surface water monitoring locations on rivers and streams, and annually samples over 60 lakes, their efforts are designed to function largely as screening tools. Rarely does this system provide sufficient information so that a particular problem can be effectively identified and treated.

These detailed investigations result in the development of something called a total maximum daily load, or TMDL. A TMDL represents the amount of a particular contaminant that can enter a water body in a given day without the beneficial use being impaired. A comparison of the actual pollutant load and the TMDL can give a pretty good idea of the amount of effort needed to correct the problem(s). A TMDL report will include recommendations for what actions may be necessary to address the problem(s) and to reduce the pollutant loadings.

In most cases, non-point source (NPS) pollution sources are responsible for identified impairments. NPS pollution, as its name implies, results from the cumulative impact of many small activities across a watershed, as opposed to emanating from a single, readily identifiable location (point source). In South

Dakota, where agriculture dominates the economy, it is no surprise that a significant amount of the NPS pollution is ag related. However, municipalities and commercial and residential areas can be significant contributors as well. In some instances, natural, or background, sources have caused impairments.

Once a TMDL report has been prepared, DENR works with interested local natural resource agencies and others to develop a project to address the problems. Referred to as watershed implementation projects, they utilize local, state and federal fiscal and technical resources to put into place voluntary changes to problematic land use practices. The changes or best management practices (BMPs), are designed to allow the landowner to continue to use their property in a manner they desire, while also eliminating or at least minimizing, adverse impacts on the public water bodies. In most cases, adoption of BMPs results in improved efficiency and productivity, as well as reducing pollution potential. However, in recognition of the very real public benefit derived from BMP implementation, projects provide

cost-share assistance of up to seventy-five percent (75%) to willing landowners.

The BMPs that may be promoted by a particular project can vary depending on the type(s) of impairment(s) and likelihood of adoption. After all, the best solution is no good unless someone is interested in putting it into practice. Examples of BMPs supported by watershed implementation projects around the state include: upgrading animal waste management systems, installing terraces and grassed waterways, irrigation system upgrades, river bank and shoreline stabilization, long-term or permanent easements along rivers and streams, and public awareness and education. Most projects also have a water quality monitoring component to measure impacts on impaired waters.

Unfortunately, there is rarely a single action, or small set of changes, that can alter the status of a water body. NPS pollution comes from many places over a large area, and so “fixing” such problems involves implementing many BMPs across the watershed. As a result, watershed restoration projects may need to put in place hundreds of BMPs to affect change. The problems they are seeking to correct developed over many years - fixing them can also be a long-term, and very expensive, commitment.

Efforts to address known water quality impairments are currently active in nearly every major watershed in South Dakota. The Big Sioux River Watershed Project has developed innovative riparian buffer activities

that are having demonstrable impact on water quality in the most heavily used watershed in the state. The Belle Fourche River Partnership is working to improve irrigation efficiency, and a subsequent reduction in field runoff. The South Central Watershed Project provides guidance and assistance to landowners in the Vermillion and lower James River basins, along with the watershed of Lewis & Clark Lake, spanning territory from Clearfield to Canova. These are just a few of the efforts underway.

Where do things go from here? DENR, the East Dakota Water Development District and other natural resource agencies continue to monitor the status of our water bodies. For the most part, the problems that have been identified, while real and requiring corrective efforts, do not represent significant threats to human health and safety, provided a little common sense is exercised. Drinking water impairments are rare, and with the ever increasing improvements in treatment technology, public water supplies are unlikely to be seriously harmed. (Provided we are prepared to pay treatment costs.)

**Efforts to address known water quality impairments are currently active in nearly every major watershed in South Dakota.**

## SOUTH DAKOTA ASSOCIATION OF RURAL WATER SYSTEMS

Discussions about rural water began in South Dakota in the late 1960s. By 1972, Butte-Meade Sanitary Water District and Rapid Valley Water Service Company were established and a number of systems were organizing. Lincoln County Rural Water, south of Sioux Falls, was under construction at the time.

Rural water enthusiasts met in Madison, South Dakota, on October 11, 1972. A decision was made to hold a statewide meeting in Pierre on November 30. A letter of invitation went out to 17 systems. The following systems were represented at the November 30, 1972 meeting at the King's Inn in Pierre: Aurora-Brule, Big Sioux, Brookings-Deuel, Minnehaha, Rapid Valley, Sioux, TC & G, and Tripp County.

It was unanimously decided to form a "Steering Committee" and name it the "South Dakota Association of Rural Water Systems." The purpose of the organization was to monitor legislation, avoid duplication of efforts by sharing problems and solutions, and communicate with state and federal agencies concerning funding and regulations. The Association operated as a Steering Committee until January 1976, at which time the State of South Dakota granted a nonprofit corporation charter.

SDARWS, Inc., immediately became involved in forming a national organization. In April 1976, South Dakota joined six other states in Oklahoma City, Oklahoma, to establish the National Rural Water Association. An office was opened in Sioux Falls, South Dakota. South Dakota hosted the second National Rural Water Annual Meeting in Sioux Falls on September 12-13, 1977.

In April 1982, the Association expanded into water system technical assistance. Water treatment and distribution system on-site expertise could now be offered to the many smaller systems. In 1991, with the inclusion of Sanitary Districts, a Wastewater Technician position was added, moving the association forward in its work of preventing water pollution.

As the Association continued to grow and increase in

membership, the Board of Directors expanded the Association for the purpose of assisting systems in western South Dakota by establishing the West River Regional Office in January 1991. The West River Office extended benefits and services to members statewide.

The Association is showing growth and movement toward set goals. SDARWS has grown from 2 to 12 employees and has expanded its membership to include nearly 300 organizations. With continued support from members, the challenges and opportunities of the future can and will be met with enthusiasm and cooperation. In February of 2010, the Association returned

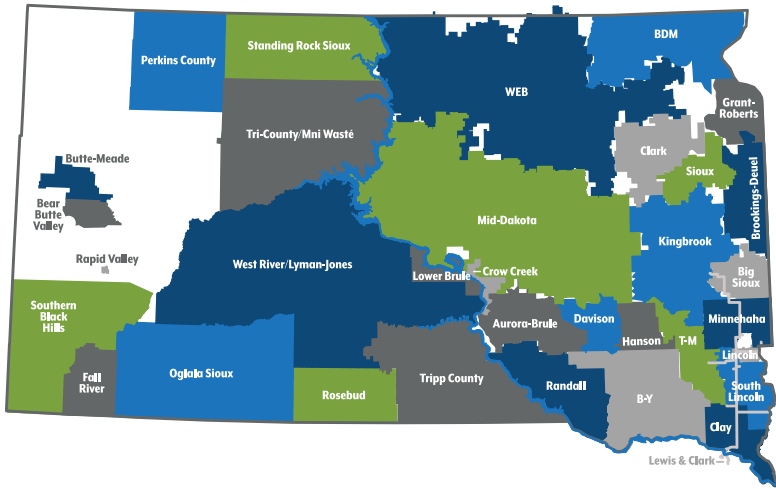
to Madison where it all started at that meeting in 1972 when an office building was purchased as a headquarters. In 2014 a second office/storage space was purchased in Spearfish as a West River headquarters.

Currently, the Association focuses its efforts on training and technical assistance for water and wastewater systems, source water protection, and public outreach. They host a three-day Annual Technical Conference every January

in Pierre, as well as hold seminars for water/wastewater operations specialists, rural water managers, board members, and office personnel. South Dakota Rural Water is the only water and wastewater association monitoring legislation in both Pierre and Washington, DC. SDARWS registers three lobbyists each year during the state Legislative Session and monitors all bills affecting municipalities, rural water and wastewater systems. SDARWS's lobbyists can be found in Pierre during the entire session and are prepared to activate their legislative network on issues that affect the water/wastewater industry.

SDARWS is proud to produce the *Quality on Tap!* magazine in cooperation with 15 Rural Water Systems: Aurora-Brule, BDM, Big Sioux, Brookings-Deuel, Clark, Clay, Davison, Grant-Roberts, Kingbrook, Mid-Dakota, Sioux, TM, Tripp County, WEB, and West River/Lyman-Jones. The magazine, now in its 16th year of publication, is produced out of the Madison office by Communications & Marketing Coordinator Jennifer Bame.





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- Minnehaha Community Water Corporation – Lloyd A. Rave
- Oglala Sioux Rural Water Supply System – Chuck Jacobs
- Perkins County Rural Water System – Lynn Frey
- Randall Community Water District – Dave Meyerink
- Rapid Valley Sanitary District/Water Service – Bobby Sanner
- TM Rural Water District – Greg Nugteren
- Tri-County/Mni Wasté Water Association – J.R. Holloway
- Tripp County Water User District – Louis Kehn
- WEB Water Development Association – Les Hinds
- West River/Lyman-Jones Rural Water System – Rick Doud
- Class B East River – Brad Lawrence
- Class B West River – Jeff Crockett
- Class C – VACANT

# STAFF:

- Kurt Pfeifle – Executive Director
- Robyn Brothers – Office Manager
- Jennifer Bame – Communications & Marketing
- Jeremiah Corbin – Source Water Protection Specialist
- Jim Zeck – Training Specialist
- Steve Attema – Training Specialist
- Mike Moeller – Technical Assistance/Training Specialist
- Bill Thorson – Technical Assistance/Training Specialist
- Greg Gross – East River Circuit Rider
- Jeff Fossum – East River Circuit Rider
- Nick Jackson – West River Circuit Rider
- Danny Ayers – Wastewater Technician

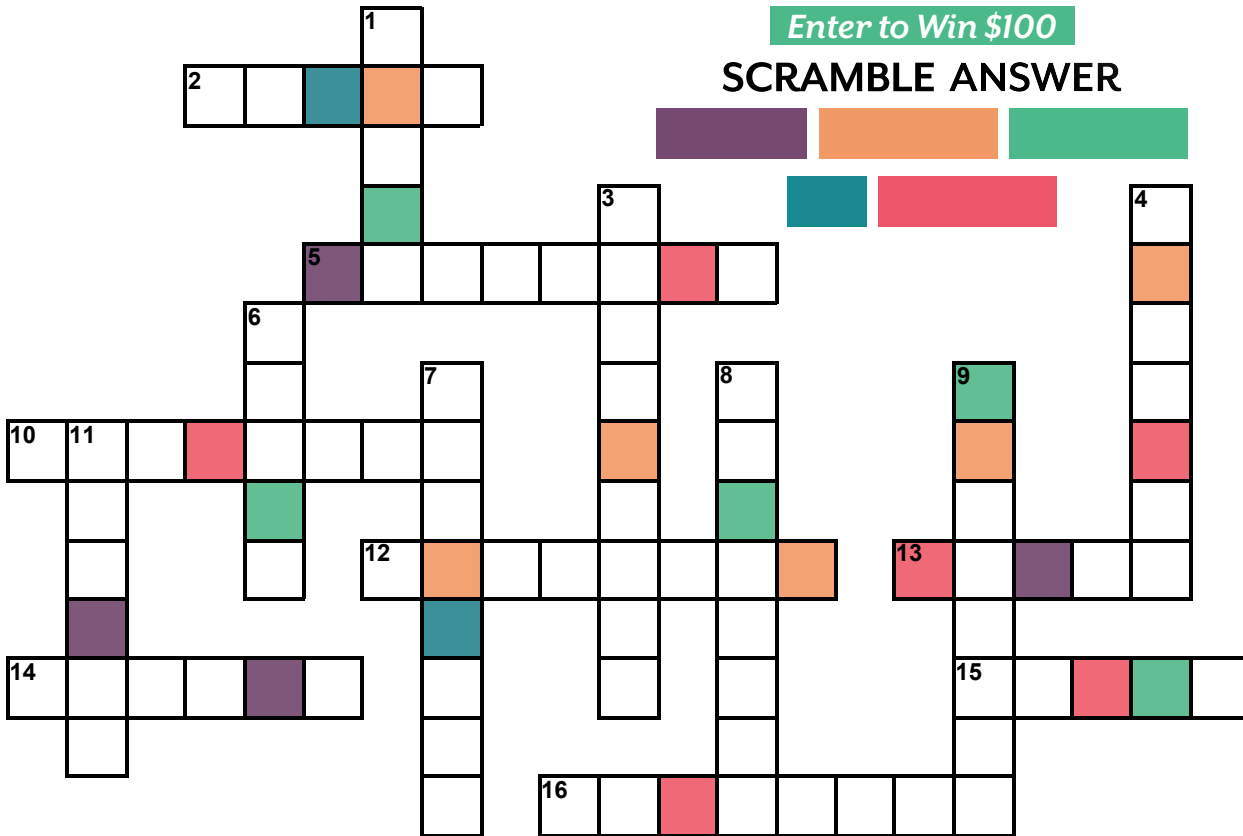


# RURAL WATER CROSSWORD & WORD SCRAMBLE CONTEST

## SPRING FLOWERS

Enter to Win \$100

### SCRAMBLE ANSWER



### WORD BANK

- ASTER
- DAFFODIL
- DAISY
- DAYLILY
- FOXGLOVE
- GARDENIA
- GERANIUM
- HOLLYHOCK
- MARIGOLD
- ORCHID
- PANSY
- PEONY
- PRIMROSE
- SWEETPEA
- TULIP
- VIOLET

### DOWN

1. A plant of the daisy family that has bright rayed flowers, typically of purple or pink.
3. A tall Eurasian plant of the mallow family, widely cultivated for its large showy flowers.
4. A lily that bears large yellow, red, or orange flowers, each flower lasting only one day.
6. A bulbous spring-flowering plant of the lily family, with boldly colored cup-shaped flowers.
7. A herbaceous plant or small shrub of a genus that comprises the cranesbills and their relatives.
8. A plant of the daisy family, typically with yellow, orange, or copper-brown flowers, that is widely cultivated as an ornamental.
9. A climbing plant of the pea family, widely cultivated for its colorful fragrant flowers.
11. A plant with complex flowers that are often showy or bizarrely shaped, having a large specialized lip and frequently a spur.

### ACROSS

2. A small grassland plant that has flowers with a yellow disk and white rays.
5. A commonly cultivated plant of European woodlands that produces pale yellow flowers in the early spring.
10. A tall Eurasian plant with erect spikes of flowers, typically pinkish-purple or white, shaped like the fingers of gloves.
12. A bulbous plant that typically bears bright yellow flowers with a long trumpet-shaped center.
13. A herbaceous or shrubby plant of north temperate regions, which has long been cultivated for its showy flowers.
14. A herbaceous plant of temperate regions, typically having purple, blue, or white five-petaled flowers, one of which forms a landing pad for pollinating insects.
15. A popular cultivated viola with flowers in rich colors, with both summer- and winter flowering varieties.
16. A tree or shrub of the bedstraw family, with large fragrant white or yellow flowers.

**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](http://www.sdarws.com/crossword.html) with the correct phrase by April 9, 2021 to be entered into the \$100 drawing.

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 Darlene Lauck who had the correct phrase of "NOTHING BURNS LIKE THE COLD" for January 2021.

# RURAL WATER

ACROSS SOUTH DAKOTA

## GROUND WATER & SURFACE WATER INTERACTION STUDY

Many of the public water suppliers serving residents of the Big Sioux River basin draw water from the Big Sioux Aquifer. The aquifer is composed of sands and gravels deposited by glacial meltwaters during the last ice age, in the same valley now occupied by the river. Because of their close proximity, the river and the aquifer are interconnected, and water is known to move from the river to the aquifer, or the aquifer to the river.

To better understand this interaction, the Geological Survey Program of the SD Department of Environment & Natural Resources has initiated a detailed investigation of just how this movement of surface water (river) and ground water (aquifer). They are looking at this phenomena at two well fields located in the aquifer in close proximity to the river: the Clark Rural Water System well field north of Watertown, and the Big Sioux Community Water System well field at Egan. At each location, production wells are located close enough to the river that they might induce flow under intense pumping.

The study will involve collecting and comparing the chemistry and physical properties of water from the river and the adjacent aquifer. The intent is to identify parameters that are distinct to each source, defining what would be uniquely river water versus ground water. Then they will look at the characteristics of the water in between the river and the production wells, and determine if there is evidence of induced recharge, i.e., river water being 'pulled into' the aquifer. Detailed water level measurements will also be taken to monitor the direction of ground water flow in the well fields.

Initial field work began last fall, with the installation of dedicated observation wells at each location, as well as rehabilitation of wells already in the area. Staff from the SD Association of Rural Water Systems assisted by surveying the locations (latitude/longitude) and elevation of many of the wells at the Egan well field. The East Dakota Water Development District is providing support for the acquisition of dedicated data collection equipment to monitor water temperature and levels in the observation wells and the river. Water quality sampling is expected to begin this spring.





## FROM THE EXECUTIVE DIRECTOR

Kurt Pfeifle, Executive Director  
South Dakota Association of Rural Water Systems

### DIARY OF A CORONAVIRUS SURVIVOR

You know how you wake up in the morning and you're assaulted by your own "morning breath?" Well, the morning of December 13, 2020, I woke and immediately noticed the absence of the offending morning breath. I thought to myself "that's weird" I seem to have lost my sense of smell.

I told my spouse of this weirdness and she immediately became concerned. She left, then came back with a tube of something, she waved it under my nose... "can you smell that?" Nope, I got nothing. She sighed, and said it was Vick's Vapor Rub, and that I should've smelled something! We made arrangement to drive to Sioux Falls and get tested for Covid at GS Labs, they advertised a short turn-around for Covid testing. Within an hour of having the test, I received a confidential email with the word "POSITIVE" emblazoned in the test results field.

For the next couple of days, I felt relatively good, the only symptoms I was having was loss of taste and smell and some fatigue. I remember thinking "looks like I'm one of the lucky ones that only have mild symptoms." I shouldn't have spoken so soon. Over the next five days, the symptoms of my Covid steadily increased. On the seventh day, I was still not smelling or tasting anything, my fatigue had increased to utter exhaustion, the headaches were excruciating, nausea had set in and my appetite was gone. However harsh and unwanted those symptoms were, I was unprepared for the breathing problems I would be experiencing. I had noticed my breathing becoming more-shallow by the day and taking a deep breath (like when yawning) was impossible to do. On that seventh day, I was showering in the morning, and found myself having to cut my shower short because I literally could not stand in the shower any longer. I had to stop, get out and lie down. It took all I could muster to even get dried off.

For days 7 - 12, my symptoms remained about the same, and I was worried that I may not get the relief for which I had been praying, anytime soon. As I sat on the couch, swaddled with a blanket in my sweats, my wife asked me on a couple of occasions "do you need to go to the emergency room/hospital." To be quite honest, I didn't know, but at times, I questioned my wisdom of not answering in the affirmative and have myself admitted. This is a good place to note, that my wife did not escape the Covid experience either, she had tested "POSITIVE" two days after I did. She had many of the same symptoms, but she's clearly stronger than I am, and was

able to push through her symptoms and keep our household running and tended to me and my symptoms. Bless her for her caring nature and her strength as she muddled through both our illnesses.

The Lab information told me that I was clear to discontinue quarantine after 10 days. For those who believe that after 10 days you're cured and ready to return to work, I can only say, "if you're lucky." My symptoms continued through day 16, only afterwards did I begin to feel that I'd be ready to report to work and actually be productive. Not being contagious, is not the same as being recovered. In fact, to this day, more than a month out, both my wife and I have lingering symptoms, they're not debilitating, but they are there, and they're noticeable, nonetheless.



### The advice I give to others after experiencing Covid is:

- 1.) Avoid it, it is real and there is no guarantee you or your loved one won't contract it and have a bad experience. Mask up, keep your distance, wait for the vaccine, it's not that far away.
- 2.) Don't be fooled by early mild symptoms, the worst of Covid can sneak up on you and it is best to be prepared.
- 3.) Don't play the macho card. If you're having difficulties, go to see your primary care provider and get help.
- 4.) Search for things you can do to help stave off some of the worst of Covid. I was baffled and disappointed that the only advice I received was to quarantine and talk to my doctor if I felt I needed to... nothing else... We had to search the internet to find things to do to "self-treat." We kept up with taking Tylenol and Ibuprofen for head and body aches. We made a routine of taking our temperature and checking our oxygen levels. We regularly got up, moved around, and stretched. There were other things we were told we could do, but I'll not mention them here as I don't subscribe to the belief that everything on the internet is accurate or true.

I'll end this chronical by saying, both my wife and I are fine today. We survived Covid that's for sure, but we have a healthy respect for the disease. Vaccines are on the way, and there's a light at the end of the tunnel... let's just hope that the light we see isn't another train barreling down the track heading straight for us; I'm teasing of course. Happy New Year to you all, let's hope and pray 2021 is a much better and uneventful year than 2020 was!



# OPERATOR CERTIFICATION TRAINING AND EXAMS

**More classes/exam sessions will be scheduled for 2021.  
All classes/exams are tentative based on the status of the pandemic.**

Course	Date	Location
Wastewater Collection	March 9-11 (MT)	Zoom Webinar by SDARWS
OpCert Exam (Exam session full)	March 18 @ 1:00 pm (MT)	Rapid City Ramkota Rushmore Room
Basic Wastewater Treatment	March 23-25 (CT)	Zoom Webinar by SDARWS
OpCert Exam (15 Seats Left)	March 25 @ 1:00 pm (CT)	Watertown Ramkota Kampeska Room
Basic Water Treatment	April 6-8 (CT)	Zoom Webinar by SDARWS
OpCert Exam	April 8 @ 1:00 pm (CT)	Sioux Falls Ramkota Harvest Room
Small System Water Treatment Workshop	April 27 (CT)	Zoom Webinar by SDARWS
Small System Water Treatment Workshop	April 29 (CT)	Zoom Webinar by SDARWS
Intermediate Water Treatment	May 4-6 (CT)	Zoom Webinar by SDARWS
OpCert Exam	May 6 @ 1:00 pm (CT)	Sioux Falls Ramkota Harvest Room
Advanced Water Treatment	May 18-20 (CT)	Zoom Webinar by SDARWS
OpCert Exam (18 Seats Available)	May 25 @ 12:30 pm (CT)	Pierre Matthew Center/Foss Bldg
Stabilization Pond Workshop	June 1 (CT)	Zoom Webinar by SDARWS

*Online classes will start at 8:00 am Tuesday through Thursday and end at approximately 4:30 pm on Tuesday and Wednesday and noon on Thursday. One-day workshops start at 8:30 am and end at 4:30 pm.*

### How DO I ATTEND AN ONLINE WEBINAR?

First, register for the class online at [www.sdarws.com](http://www.sdarws.com). Upon registration you will need to enter a valid email address for each registrant or we will not be able to send you the following: After you are registered, SDARWS Trainer Jim Zeck will send you a link with instructions on how to get signed up for the online course using Zoom. When registering on Zoom we ask that you use your full name instead of a handle so we know who you are when you logon to the course. You will also get instructions on how to access the course materials to download and which material you may want to print off (typically the ABC Formula Conversion Table and the Math Handout) prior to the day of the course. If you have multiple participants from one system, please fill out a registration for each attendee. During

the start of the course you may be asked to use the chat function to let trainer Jim Zeck know who is in attendance at your site if you have more than one person. You will also need a pen/pencil, notepad, and calculator available. The webinars are accessible via computer (may need headphones or speakers if not built in), smartphone, or tablet (the bigger the screen the better). During the webinar, if you have questions you are able to ask them by typing your question in the Q&A box. There is a possibility to request to turn on and use a microphone on your end if you have a very specific question or comment. Attendance will be taken periodically during the duration of the webinar. Certification webinars are not recorded - you must attend on the day the class is given for credit.

**For Study materials, visit: [www.abccert.org/testing\\_services/ExamReferences.asp](http://www.abccert.org/testing_services/ExamReferences.asp)  
For more information contact SDARWS Trainer Jim Zeck: 605-201-9568 or [jzeck@sdarws.com](mailto:jzeck@sdarws.com)  
**REGISTER FOR CLASSES ONLINE: [sdarws.com/certification-classes.html](http://sdarws.com/certification-classes.html)****



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# WATER MATTERS

## Aquifers 101



For most South Dakotans, the water that comes out of your tap started out in the ground. This ‘ground water’ has been drawn from geologic materials referred to as aquifers. As such, the importance of aquifers to all of us can not be exaggerated, but just what are they exactly?

### What is an Aquifer?

An aquifer is a body of saturated rock from which water can be extracted in useful quantities. Aquifers must be both porous (have lots of open spaces in which water can be held) and permeable (able to let water move easily through it). In South Dakota, most aquifers consist of unconsolidated sand and gravel found along the courses of current, or former, rivers and streams. In certain areas, aquifers are made up of layers of sandstone or fractured limestone. Rocks such as granite and quartzite are generally poor aquifers because they have a very low porosity. However, if these rocks are highly fractured, they make very good aquifers.

### How Does Water Get In An Aquifer?

Aquifers fill with water that soaks into the ground, having started out as rainfall, runoff or melting snow. The amount of water in storage in the aquifer can vary from season to season and year to year. Ground water may flow through an aquifer at a rate of 50 feet per year or 50 inches per century, depending on the permeability. But no matter how fast or slow, water will eventually discharge or leave an aquifer and must be replaced by new water to replenish or recharge the aquifer.

### How Do We Get Water Out of an Aquifer?

Holes are drilled into the material that makes up the aquifer and a well is installed. Normally such water must be pumped to the surface, but in some cases the water will actually rise to the surface naturally (artesian aquifers). When water is pumped from a well, the water table (the top of the saturated part of the aquifer) is generally lowered around the well. Hydrologists call this a cone of depression. If water is pumped from a well faster than it is replenished, the water table is lowered and the well may go dry.

### TRY THIS AT HOME:

Take a clear glass jar and fill it with gravel. Now pour water slowly into the jar. Watch as the water fills in the spaces between the bits of gravel. A jar “full” of gravel can actually hold quite a bit of water. You have created an aquifer!



**Back page content provided by:**  
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