

JUNE 2021

ServiceLine

— The Official Publication of the South Dakota Association of Rural Water Systems —


What is Water Pressure, What is Water Flow, and What is the Difference?



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Cover Photo: Opening morning of the SDARWS Fishing Tournament. Photo Credit Mike Moeller

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FROM THE SDARWS PRESIDENT

RON GILLEN, SDARWS PRESIDENT

NRWA IN-SERVICE

In June, most of the Association staff are traveling to Orlando, Florida for the National Rural Water In-Service Training. At In-Service, rural water professionals from around the nation gather together to train and discuss their work with others in their peer group. The goal of in-service is to learn about new techniques unique to each position, share expertise, and learn about new funding sources. If you see our guys around, ask them what new things they've learned.

GOLF TOURNAMENT

Join us on July 20th for the 35th Annual SDARWS 4-Person Scramble Golf Tournament at Elmwood in Sioux Falls. The tournament is a great opportunity to gather together with other Rural Water folks for a day of camaraderie and fun. You can register your four-person team online at tinyurl.com/SDARWSGOLF. Tee times will be assigned to each team. You can find more information on pages 13-15. We hope to see you on the course!

WATER PRO

It isn't too early to start thinking about attending this year's WaterPro Conference in Milwaukee, Wisconsin September 13-16, 2021. NRWA puts on a fantastic show which brings in hundreds of vendors and hosts informative training sessions in operations, management, boardmanship and governance for those involved in water and wastewater utility systems – large and small, municipal and rural. WaterPro features expert speakers from across the water/wastewater industry. Want to hear about new USDA projects or EPA priorities? You can find out at the WaterPro Conference. The WaterPro exhibit hall is filled with vendors and service-providers dedicated to offering high-quality solutions for small and rural water utilities. Find out about all the best solutions for rural water today and tomorrow. For more information on this conference, including registration and hotel reservations, please visit waterproconference.org.



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OPERATOR CERTIFICATION TRAINING AND EXAMS

IN-PERSON CERTIFICATION CLASSES RESUME SUMMER 2021

Pre-Registration is required and will be limited based on the chart below. Those who have not pre-registered will not be able to attend in person training since we have a hard limit as to the number of tables and chairs that are being setup for the room size. During the registration process the operator will be able to choose if they wish to attend in person or online. Once the in-person limit has been reached any additional registrants will be for the online course. Those who either selected online training or were moved to online training will receive

information on how to register for the online course through Zoom and a link to download the course materials. **All class times will take place in the time zone of the in-person class.**

Vaccination rates and the course of the COVID-19 pandemic will determine when we can relax our social distancing requirements. If vaccination rates are high and the rate of new cases is low it may be possible to increase the number of people we can accommodate for in person training. Those operators who have pre-registered and were moved to online training will be notified in the event we can increase the number of in person attendees.

Course	Date	Location	In-Person Limit
Wastewater 101	June 29, 2021	Winner City Hall	No Registration Limit
OpCert Exam	July 6, 2021	Pierre: Matthew Center/Foss Bldg	18 Seats Left
OpCert Exam	July 8, 2021	Rapid City Ramkota: Rushmore Room	49 Seats Left
Water Distribution	July 13-15, 2021	Watertown: Ramkota	30 Registration Limit
Wastewater Collection	August 3-5, 2021	Aberdeen: Ramkota Arikara Room	30 Registration Limit
OpCert Exam	August 5, 2021	Aberdeen: Ramkota Arikara Room	30 Seats Left
Basic Water Treatment	August 17-19, 2021	Huron: Events Center	30 Registration Limit
Intermediate Water Treatment	September 28-30, 2021	Rapid City: Ramkota Sylvan Room	40 Registration Limit
OpCert Exam	September 30, 2021	Rapid City: Ramkota Sylvan Room	40 Seats Left
Stabilization Pond Workshop	October 10, 2021	Aberdeen: Ramkota Arikara Room	20 Registration Limit
Stabilization Pond Workshop	October 14, 2021	Mitchell: Highland Conference Center	20 Registration Limit
Water Distribution	November 16-18, 2021	Spearfish: Holiday Inn 76/Swarm Room	40 Registration Limit
Wastewater Collection	December 7-9, 2021	Sioux Falls: Ramkota Harvest Room	40 Registration Limit

Classes start at 8:00 AM Tuesday through Thursday. Classes 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. 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
For more information contact SDARWS Trainer Jim Zeck: 605-201-9568 or jzeck@sdarws.com
REGISTER FOR CLASSES ONLINE: sdarws.com/certification-classes.html

CHANGES TO CERTIFICATION EXAM COSTS

TO ALL WATER/WASTEWATER SYSTEMS/OPERATORS: Since 1970, DENR has been charging \$10 or less to take an Operator Certification Exam. The annual charge to renew a certificate has been \$6 or less. Obviously costs have increased since the 70's and DENR has been taking a significant loss every time a certification exam has been taken. The costs for an exam include the cost to have the exam corrected, exam room rental, per diem, and mileage.

SB 53 was proposed by DENR to allow us to charge what the actual cost of each exam is which is approximately \$60. The bill also eliminated the annual renewal fee. SB53 passed both houses of the Legislature and was signed by the Governor on February 24, 2021. The effect is that any OpCert exam taken after July 1, 2021 will cost \$60. With the renewal fee being eliminated, all operators that have the proper number of contact hours and are still working in the water/wastewater field will have their certificates renewed automatically by DENR on July 1, 2021 and every February 1 after that. The operator does not have to do anything other than ensure they have adequate contact hours based on the certificates held. The operator will receive a notice via email or regular mail noting this.

Just to note that according to the SD Department of Labor and Regulation, the cost of a Journeyman Plumbers exam is \$205, Sewer and Water Contractor exam is \$335, and Plumbing Contractor exam is \$375.

Also please note that the certification classes offered by South Dakota Rural Water are still free and supported by a contract with DENR.

AS A REMINDER, THE FOLLOWING CONTACT HOUR REQUIREMENTS HAVE BEEN IN PLACE SINCE 2010:

Number and Type of Certificates	Contact Hours Required
Operator has one certificate (Class I or II)	10 contact hours every three years
Operator has one certificate (Class III or IV)	20 contact hours every three years
Operator has more than one certificate and all are Class I and II	15 contact hours every three years
Operator has more than one certificate and at least one certificate is a Class III or IV	30 contact hours every three years

The three year period runs from February 1 of the renewal year back to February 1 three years previous. For example, for the 2022 renewal only the contact hours acquired between February 1, 2019 thru February 1, 2022 are considered.

HOW DO I REGISTER FOR AN EXAM?

Application must be received by the Secretary at least TWO WEEKS BEFORE THE EXAM DATE. One exam per application. This application is for exams only-NOT classes. You can download an application at: <https://denr.sd.gov/des/dw/PDF/E0470LDV1-opcertapp.pdf>.

Questions about operator certification should be directed to Rob Kittay at the Drinking Water Program in Pierre at 605-773-4208 or via email at SDDrinkingWater@state.sd.us.

Exams at Matthew Center/Foss Building-Pierre:

- You may not enter the building without an escort. At 25 minutes before the exam start time, please line up at the front door of the Foss Building on Capitol Avenue observing social distancing. A proctor will meet you at the front door and escort you to the exam room. DENR rules require that upon entering the building, you must sign in and have your temperature taken. If you are late, you risk not getting into the building to take the exam.

Exams at Other Locations such as Motels/Water/WW Plants:

- No-one enters exam room before proctor. All materials/people will clear room after class has ended if applicable. Please remain in parking lot or lobby maintaining social distances. Line up at the front door of the exam room 20 minutes before the exam start time and observing social distancing.
- When exam room is ready, proctor will invite each examinee

into room to an assigned seat with exam already in place.

- When you get seated, you are not to start your exam. You are to wait until all examinees are seated, exam instructions are given, and exam session will start.
- Pencils/calculators/pencil sharpeners will not be provided. You must bring your own.
- No receipts/exam applications/schedules will be available. For a receipt, call 605-773-4208 or email rob.kittay@state.sd.us after the exams and one will be emailed to you.
- Examinees needing to leave exam room during exam such as bathroom use will be allowed to do so; however, only one person may leave at a time.
- Examinees with a question on exam will come forward to the proctor's table (maintaining social distancing) to ask question.
- When examinee is done with exam, they will come up to proctor's table and hold up their exam booklet/answer sheet so proctor can determine that answer sheet has been completed properly. After proctor gives OK, they will put answer sheet inside booklet and leave on table without proctor touching exam.
- Examinees are then to leave exam room at motels/water/WW plants or the Foss Building/Matthew Center directly.

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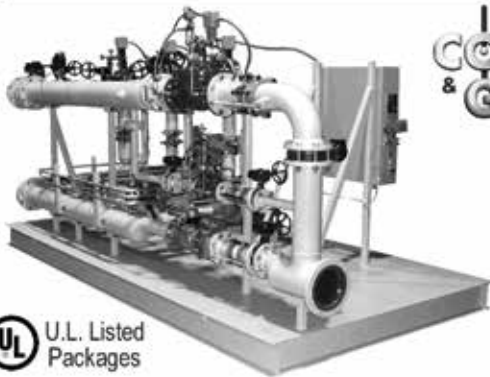
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SDARWS Conferences & Events



Rural Water Open Golf Tourney | July 20, 2021

The Annual Rural Water Open will take place at the Elmwood Golf Course in Sioux Falls. This tournament is open to Utility Members, Associate Members, and Corporate Partners of SDARWS. Registration is \$75/player and includes golf, cart, lunch, and awards.

For more information, visit www.sdarws.com/golf-tournament.html or email golf@sdarws.com

Elmwood Golf Course
2604 W. Russell St • Sioux Falls, SD • 605-367-7092



Leadership Seminar | November 17-18, 2021

This seminar is geared towards Rural Water System Directors and covers a gamut of topics pertaining to rural water boards.

For more information, visit www.sdarws.com/leadership.html or email jcorbin@sdarws.com

Pierre Ramkota Hotel & Convention Center
920 W Sioux Ave. • Pierre, SD • 605-224-6877



Annual Technical Conference | January 11-13, 2022

The ATC is the annual conference of the South Dakota Association of Rural Water Systems, and is the largest water/wastewater conference in South Dakota. This event is designed to bring together water and wastewater utility systems – both large and small, municipal and rural – for sessions in operations, management, boardmanship and governance. This conference is held every year during the first week of the South Dakota Legislative session in Pierre, SD and hosts over 500 attendees.

To learn more, visit www.sdarws.com/annual-conference.html or email atc@sdarws.com

Pierre Ramkota Hotel & Convention Center
920 W Sioux Ave. • Pierre, SD • 605-224-6877



Rural Water EXPO | April 27-28, 2022

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. Many will be displaying the recent advances in technology our industry has witnessed over the past several years.

To learn more, visit www.sdarws.com/rural-water-expo.html or email expo@sdarws.com

Rapid City Ramkota
2111 N Lacrosse Street • Rapid City, SD • 605-343-8550



Rural Water Fishing Tourney | April 29-30, 2022

The Annual Rural Water Warriors Fishing Tournament takes place at the Outpost Lodge on Cow Creek Bay in 2022. Teams consist of 2-3 people with at least one person who is a current water/wastewater, associate member or corporate partner of the SDARWS. This tournament is limited to 50 teams. There is an eight fish maximum per boat with the largest seven fish weighed, and all South Dakota fishing regulations must be followed. A mandatory rules meeting is held at 8:00pm the night before the tournament.

For more information, visit www.sdarws.com/fishing-tournament.html or email fishing@sdarws.com

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Tee times will be assigned to each team

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Turn the page to see what's available!



TAKE A SHOT WITH A SPONSORSHIP!

The South Dakota Association of Rural Water Systems is pleased to invite you as an individual or your business to participate in our 35th Annual Rural Water Open by taking advantage of one of the following sponsorship opportunities:

BOX LUNCH SPONSOR

\$2,000 (1 available)

Help feed the masses and take a shot at sponsoring the Rural Water Open Awards Luncheon. Sponsorship includes signage, your logo on each boxed lunch, and recognition in our *ServiceLine* magazine.

BEVERAGE CART SPONSOR

\$1,500 (1 available)

Sponsor the beverage cart - includes two free drinks for every golfer (beer, soda, water, sports drink, malt beverage). Sponsorship includes logo on drink tickets, signage on beverage cart, and recognition in our *ServiceLine* magazine.

BALL SPONSOR

\$750 (1 available)

A sleeve of four numbered balls will be handed out to every golfer at the tournament. Sponsorship also includes recognition in our *ServiceLine* magazine.

DONUTS & COFFEE SPONSOR

\$500 (1 available)

Make everyone's morning with fresh Flyboy donuts and coffee. Sponsorship includes signage at the breakfast table which will be located near the outside entrance of the clubhouse, and recognition in our *ServiceLine* magazine.

19TH HOLE SPONSOR

\$500 (1 available)

Sponsorship of the 19th Hole Putt Challenge features a keg, as well as signage at the hole, and recognition in our *ServiceLine* magazine.

WATERPAC HOLE KEG SPONSOR

\$500 (2 available)

A keg with your name on it will be chilled and ready to serve our thirsty golfers. Sponsorship also includes recognition in our *ServiceLine* magazine.

GPS CART SPONSOR

\$500 (1 available)

Have your ad pop up on the golf carts when the players arrive at each hole. Sponsorship includes recognition during luncheon/awards and in our *ServiceLine* magazine.

GOLF CHALLENGE SPONSORSHIP

Prize Donation (27 available)

Sponsorship is \$100 or equivalent prize. Sponsorship includes signage at the challenge hole, and recognition and recognition in our *ServiceLine* magazine.

TEE BOX SPONSORSHIP

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\$500 (1 available)

GOLF CHALLENGE SPONSORSHIP

Prize: _____

GPS CART SPONSOR

\$500 (1 available)

WATERPAC HOLE KEG SPONSOR

\$500 (2 available)

TEE BOX SPONSORSHIP

Gold (\$750) Silver (\$500) Bronze (\$250)

For more information on sponsorships or the tournament, please contact Jeremiah at jcorbin@sdarws.com, or call 605-556-7219

MAIL FORM WITH PAYMENT TO:

South Dakota Association of Rural Water Systems, PO Box 287, Madison, SD 57042

FAX 605-556-1497 • SCAN AND EMAIL golf@sdarws.com

REGISTER ONLINE sdarws.com/golf-tournament.html

RURAL WATER EXPO 2022 RECAP

Jennifer Bame,
Communications & Marketing Coordinator

SDARWS was pleased to be able to host the 9th Annual Water Technology EXPO in-person (and virtually) in Rapid City April 28-29, 2021. This event is designed to provide training opportunities and certification credit hours for municipal, small, and rural water systems located throughout western South Dakota. This was our first major in-person indoor event, and it went off without a hitch. We received a lot of comments from both attendees and exhibitors who were very pleased that we were able to hold an in-person event with a few minor changes. In order to spread people out, we utilized two rooms - one to host our exhibit hall, and the other to allow for spaced out seating between attendees. Over 225 water and wastewater utility staff, board/council members, engineers, state and federal employees attended this year's event, either virtually, or in-person.

The EXPO's annual goal is to provide an opportunity for water system personnel to network with manufacturers, suppliers, and one another to exchange ideas on how to effectively operate and maintain systems. Over this day and a half

training event, attendees were provided ample opportunities to network with EXPO presenters and exhibitors. Fourteen presentations were given over the day and a half event covering topics ranging from backflow prevention, to tank mixing, Rural Development funding, and Risk Assessment & Emergency Response Plans. Most of our training presentations were able to be in-person, but a few did have to speak virtually due to travel restrictions in place by their states or through their employers. In addition to the valuable knowledge gained, attendees were approved to earn 10 certification credit hours approved by the State of South Dakota.

Along with the training sessions, the EXPO showcased many of our industry's manufacturer and supplier leaders in our Exhibit Hall. Many will be displaying the recent advances in technology our industry has witnessed over the past several years. The EXPO would not be possible without the support from the 39 tabletop exhibitors. We offer special thanks for their support in bringing valuable training and professional resources that truly benefited EXPO attendees.

Plans are already underway for the 2022 EXPO. Watch for details on our website, in eNews, and future issues of *ServiceLine*.💧



THANK YOU TO OUR EXHIBITORS FOR MAKING THIS EVENT POSSIBLE:

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- Northwestern Power Equipment
- Preload, LLC.
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- Risty Benefits Inc.
- Sioux Valley Environmental
- SUEZ Advanced Solutions
- WL Plastics





2021 RECAP

Mike Moeller, SDARWS Technical Assistance Training Specialist

The South Dakota Association of Rural Water Systems held their 5th Annual Fishing Tournament at the Outpost Lodge on Lake Oahe April 30th and May 1st, 2021. The 24 teams caught a total of 151.51 pounds of walleye! The weather this year was very nice to say the least with light winds and highs reaching in the 80's.

The largest walleye caught this year was caught by Aaron Wilke; the walleye weighed in at 4.95 pounds. Aaron was a member of the team "The Sons of Nick Jackson" and received a \$500 prize for his catch.

Riley Dalzell of Team Perkins County Rural Water reeled in a 9.05-pound catfish earning him a \$300 prize for the largest non-walleye.

The top four teams weighed in a total of 58.3 pounds of the total 151.51 pounds. The first-place team was the "Pierre Warriors" who weighed in 15.5 pounds of walleye and took home a cash prize of \$1,500.

The "Sons of Nick Jackson" team out of Keystone, SD took second place with 14.8 pounds of walleye and took home a cash prize of \$1,000.

The third-place team was team "Grant-Roberts" out of Milbank, SD. They reeled in 14.05 pounds of walleye and took home a cash prize of \$750.

Team "Bartlett and West" out of the Pierre and Mellette area weighed in 13.95 pounds of walleye and took home fourth place and a cash prize of \$500.

The tournament ended with a meal in the events center at the Outpost Lodge. It was a good tournament with great weather and lots of fun. The tournament dates for next year will be April 29th and 30th, 2022. Tournament information will be posted on the South Dakota Association of Rural Water Systems website www.sdarws.com just before the first of the year.

A special thanks goes out to the sponsors; without you this would not be possible.

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To see more pictures of the 2019 Fishing tournament, check out our Facebook page at www.facebook.com/SDRuralWater



1st Place – Team Pierre Warriors



2nd Place – Team Son's of Nick Jackson



3rd Place – Team Grant Roberts



Largest Non-Walleye – Riley Dalzell



Largest Walleye – Aaron Wilke

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HAPPY NEW YEAR!

Jeff Fossum, Circuit Rider

I'm sure you think that our editor has placed the wrong article from me in this issue ServiceLine because it's June 2021! Hang on, and let's go on a ride to look back at the lessons we've learned over the past year. I have a habit of rehashing experiences that have happened over the course of my life. Back in my past life as Water and Wastewater Superintendent, I often talked myself through a project or incident that had just happened to get a better feel for how I did or how I could have done better. One gift I did not receive was a gift to talk on my



feet. So, I would essentially work past what did and did not work; this laid a good foundation to help me to be ready for the next challenge.

Back in early 2020, you'll remember that we were getting reports of a strange virus. If we dust off our memory banks, the term "strange virus" reminds us of other "strange viruses" that popped up through history, including the 1919 Spanish Flu (H1N1), 1976 Swine Flu (H1N1), and 2005 Bird Flu (H5N1). During the Swine Flu, 40 million people were vaccinated with the A/New Jersey/1976 H1N1 vaccine. The Swine Flu was the world's last pandemic way back in 2009. But do not forget about Bird Flu (avian influenza). According to Helen Branswell, Senior Writer, Infectious Disease. "The H5N1 virus has not gone away. It's just changed into different versions of itself." Just remember, the Swine Flu was the world's last pandemic in 2009, and

that lasted about 19 months. One disease that did not reach pandemic status was the Western African Ebola Virus of 2013. The main thing that I remember is how contagious and deadly this particular virus was. The African Ebola virus wiped out complete villages, killing 11,000 people. And yes, the African Ebola virus still is active, with one death out of every three people who contract the disease.

The facts that stand out when you compare all the viruses – the people who are most at risk are those who care for infected people and the front-line workers that keep our world in a nice orderly rhythm (i.e., YOU). All the viruses I've listed are still here and still active – just not to the extreme that makes us think about an aggressive infectious disease. The answer to keeping viruses under control is vaccines, much like the ones most of us received as small children: chickenpox, measles, whooping cough, polio, diphtheria, Hepatitis A&B, and the Flu... you get the picture. All of the diseases that I've named were a very serious part of our virus history.

Now that we refreshed our memory on viruses. What have we learned to keep us (the majority of the population) safe? I understand that not everyone can take the shots. But if those of us who can get the shot do, then maybe the past year will fade into something that was not too bad. I did what I could to bring this to an end. I look at this place we are at today, like holding the door open for your neighbor, letting the person in the checkout line behind you go first, or paying for the food in the car behind you at the fast-food place! Why do we do those things? It's because WE are good people, and WE want to help our neighbors. Let's start a new year! 💧



JEFF FOSSUM joined the SDARWS staff in February 2018, as a Circuit Rider. He previously worked for 32 years at the City of Canton, SD as the Water/Wastewater Superintendent. Jeff holds a Class II Water Treatment, Class II Water Distribution, Class II Wastewater Treatment and Class II Wastewater Collection. His interests include gardening, woodworking and talking.



What is Water Pressure, What is Water Flow and What is the Difference?

Nick Jackson, Circuit Rider

For over 25 years working within the water industry, I've heard many of the same questions asked. What is water pressure, what does it do? What is flow and what does it do? And then what is the difference between pressure and flow, how do they work together? Let's try to sum this up and some other common questions.

Water pressure and water flow: simply these are the two things that power your plumbing system, whether a home, business or within a distribution system.

But what is the difference between water pressure and water flow exactly? Sure, you may understand how each process works in your pipes, but do you fully know their unique importance, and how they work together to affect your plumbing?

According to the American Water Works Association Drinking Water Dictionary, "Pressure is the force pushing on a unit area. Water pressure is normally measured in pounds per square inch or feet of head." So, water pressure specifically is the force exerted on your water to push it through your pipes and the distribution system. Water pressure is modulated through either altitude or a pump. Example being, if you live in an area where a water tower, a tank higher than the area or a booster pump, the greater amount of pressure you will find in your water system. Water pressure is also affected by gravity. Because water is denser in the air, water pressure can change through even slight adjustments in the position and height of your plumbing equipment.

Flow, meanwhile, "The movement of a stream of water or other

fluid from place to place; movement of silt, water, or other material." When it comes to plumbing, your water flow is the amount of water passing through your pipes or distribution system at any given time. The flow of water in your plumbing system is determined largely by the size of your pipes and the amount of pressure surging through them. Pipes with a smaller diameter, for instance, supply water at a lower flow rate than pipes of a larger size. Simultaneously, higher water pressure will disperse water at a greater flow rate. The more taps and plumbing equipment you have in use at the same time, the harder it will be for your system to disperse pressure evenly, meaning that the water you receive will come out at a lower flow rate. That is why at night, less users generally mean more water pressure and flow.

What is pressure and flow difference? When you get right down to it, the easiest way to describe the difference between water pressure and water flow is that water pressure is how hard water comes out of your pipes while water flow is how much water comes out of your pipes. Both pressure and flow can be affected by friction, not so much as the number of angles and turns, but the inside of your pipes or other plumbing equipment that is covered in sediment, hardness or corrosion. Thus, your water will come up against more friction and therefore your water pressure and flow will be lower. Yes, when you first turn the valve and a gush of water pressure and flow come out, that is static head pressure, it will dwindle down to a much less volume of flow and water pressure due to the restriction. Again, pipes with a greater size usually allow for greater flow. However, if there is something affecting your water pressure, the size and structure of the pipe won't matter, and your flow will still suffer.

COMMON QUESTIONS OVER THE YEARS

DOES WATER PRESSURE AFFECT FLOW RATE?

Simultaneously, higher water pressure will disperse water at a greater flow rate. The more taps and plumbing equipment you have in use at the same time, the harder it will be for your system to disperse pressure evenly, meaning that the water you receive will come out at a lower flow rate.

DOES INCREASING PRESSURE INCREASE FLOW RATE?

Pressure is the cause. Flow rate is the effect. Higher pressure causes increased flow rate. If the flow rate increases, it is caused by increased pressure.

WHAT IS GOOD WATER PRESSURE FOR A HOUSE?

The Uniform Plumbing Code states a minimum of 15 psi and a maximum of 80 psi. Normal water pressure is generally between 40 and 60 psi, most homeowners prefer something right in the middle around 50 psi.

HOW DO I KNOW IF THE WATER PRESSURE IS TOO HIGH?

According to statistics, water pressure above 80 psi can cause the failure of water fixtures. The most common signs are spitting or leaking faucets, especially if it's out of the cold tap. Another telltale sign is when a small stream of spraying water appears at the sides of the stream.

DO I REALLY NEED A PRESSURE REDUCING VALVE?

Yes, in areas with high water pressure such as in the Black Hills or a Rural Water System with higher water pressure, a PRV (pressure reducing valve) helps protect pipes, fixtures and water-using appliances from damage or breaks. PRVs can save you money by reducing the amount of wasted water in your home due to high water pressure.

HOW LONG SHOULD A PRV (PRESSURE REDUCING VALVE) LAST?

A pressure reducing valve can last anywhere from three to five years without any problem, many have lasted a lot longer depending on the initial water pressure on the system. A home with a faulty pressure reducing valve may have problems.

DOES A PRESSURE REDUCING VALVE REDUCE FLOW?

The best way to control high pressure is by installing a pressure reducing valve (PRV). These take a high pressure at the inlet, then the valve reduces it to a lower pressure at the outlet as desired, under both flow and no-flow conditions.

WHY DO I SUDDENLY HAVE NO WATER? Leaks are one of the most common causes of no water coming from a tap. If your tap is not running, it may be due to a leak in your plumbing pipes. A leak can lower your water pressure and stop the flow of water completely.

WHAT IS CAUSING LOW WATER PRESSURE IN MY HOUSE?

Closed Valves: Your water pressure may have dropped due to a closed or partially closed valve from work that had been previously done.

Clogged Pipes: If pipes become clogged, these blockages can disrupt water flow through your pipes. With the flow

disrupted, water pressure will also go down. Pipes need to be cleaned out or replaced to address the issue. (can be from a build-up of iron or manganese or corroded galvanized piping.)

Hot Water Issues: The cold-water pressure is good, but the hot water is not. Hot water heaters or tanks need to be flushed periodically to remove the sediment built up within. This sediment can flow within your hot-water piping and clog fixtures.

WHAT CAUSES WATER PRESSURE TO DROP IN A HOUSE?

If the low water pressure seems restricted to a single faucet or shower head, the problem isn't with your pipes or water supply, but with the fixture itself. If it's a sink, the most common causes are a clogged aerator or clogged cartridge.

CAN HARD WATER CAUSE LOW WATER PRESSURE?

Hard water leaves mineral deposits building as it passes through your pipes and faucets. Over time, this buildup can choke the flow of water, resulting in decreased pressure.

DOES WATER PRESSURE GO UP AT NIGHT? Pressure is higher at night, when fewer people are using water. If your pressure reads over 80 psi, you need to take action to protect your plumbing system.

WHY IS MY WATER SPATTERING? Sputtering faucets, irregular water flow and vibrating pipes may indicate that you have air in your water lines. The high-water demand created by turning on all your faucets causes a rush of water through your pipes that carries the air bubbles out of your water supply.

HOW TO GET RID OF AIR IN WATER PIPES? Shut off the main water valve. Open all faucets in your home. Turn the main water supply back on. Turn the faucets off one by one once there is a steady flow of water coming from all of them.

HOW DO YOU REMOVE THE GREEN FROM COPPER PIPES? Wear proper protective equipment to protect yourself. Wet a rag with acetone, wipe the green section to remove the oxidation or patina from the copper pipe. Acetone counteracts the patina and restores the copper coloring.

HOW DO YOU STOP GREEN CORROSION ON COPPER PIPES? For significant corrosion on the copper, make a paste of equal parts of vinegar, flour and salt. Rub it all over the affected area and allow it to sit for about 30 minutes. Once the paste has sat for a while on the affected metal, wipe it clean with soapy water and dry the area well.

HOW MANY FEET IS 1 PSI? The relationship between psi and feet of head is that 2.31 feet of head = 1 psi. Translated, that means that a column of water that's 1-inch square and 2.31 feet tall will weigh 1 pound.

What is the psi of water per foot? You can work this out with a simple rule: 1 foot of water creates 0.433 psi of pressure, and it takes 2.31 feet of water to create 1 psi of pressure.

I have a pressure tank; how much psi is in a water tank? Your tank's pressure should be set at 2 psi below the pressure



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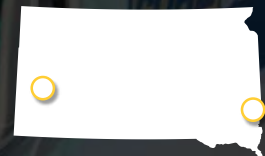
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switch's cut-on point. This differs depending on your tank's pressure settings. Example, most tanks come set at 30/50. The cut-on pressure for the pump is 30 psi, so the pressure of the tank should have a pressure of 28 psi.

Approximately what is the GPM rate in a pipe?

Flow in GPM through a hole diameter measured in inches (leak)

Pipe Size	0 psi	40 psi	50 psi	60 psi	75 psi
1.00"	26 gpm	38 gpm	43 gpm	47 gpm	53 gpm
1.25"	47 gpm	58 gpm	68 gpm	77 gpm	85 gpm
1.50"	76 gpm	94 gpm	110 gpm	124 gpm	137 gpm
2.00"	161 gpm	200 gpm	234 gpm	264 gpm	291 gpm
2.50"	290 gpm	360 gpm	421 gpm	475 gpm	524 gpm
3.00"	468 gpm	582 gpm	680 gpm	767 gpm	846 gpm
4.00"	997 gpm	1240 gpm	1449 gpm	1635 gpm	1804 gpm
5.00"	2895 gpm	3603 gpm	4209 gpm	4748 gpm	5239 gpm

Within a pipe with normal restrictions and wear at about 12f/s flow velocity:

Pipe Size "ID"	GPM	GPH
½"	14	840
¾"	23	1410
1"	37	2220
1¼"	62	3750
1½"	81	4830
2"	127	7650
2½"	190	11400

Pipe Size "ID"	GPM	GPH
3"	273	16350
4"	480	28800
6"	1100	66000
8"	1900	114000

Keep in mind, where you live also affects water pressure depending on the type and location of your system. Now also for anywhere experiencing problems relating, if you and your neighbors are all experiencing poor water pressure, there's a good chance the issue is related to a problem in your municipal or rural water supply, give them time to restore pressures back to the norm. ●



NICK JACKSON joined the SDARWS staff on 2001. He previously worked for seven years at the City of Custer Supervisor for the Water Department. Nick holds a Class II Water Distribution, Class II Water Treatment, Class II Wastewater Collection, Class II Wastewater Treatment and Stabilization Pond certifications. He is a certified instructor in First Aid, CPR, and AED instructor through the American Heart Association and the National Safety Council, and a certified South Dakota Restricted Plumbing Contractor since 2004. Nick also served 14 years in the United States Marine Corps, and then served 25 years in the South Dakota Army National Guard. Nick also volunteers with small Ambulance Services in south-western South Dakota.



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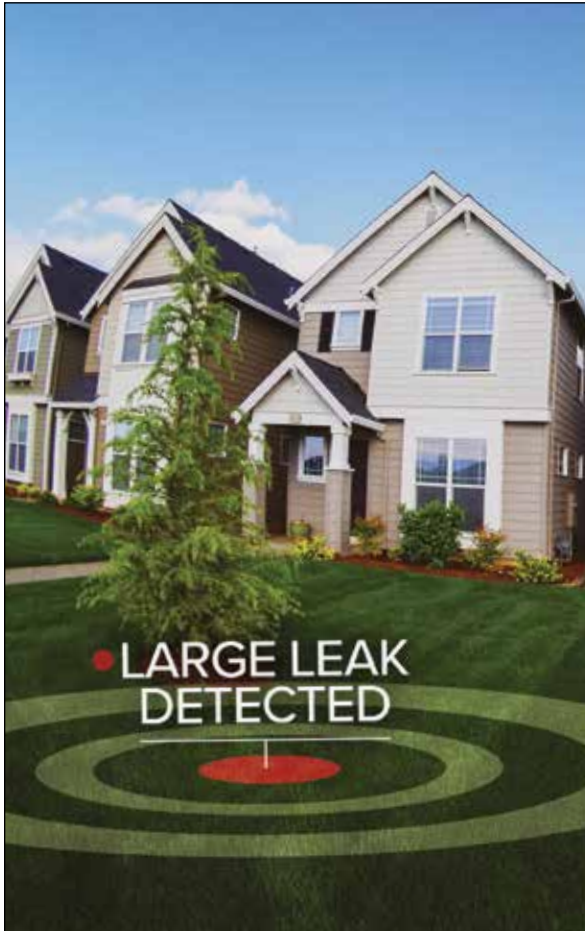


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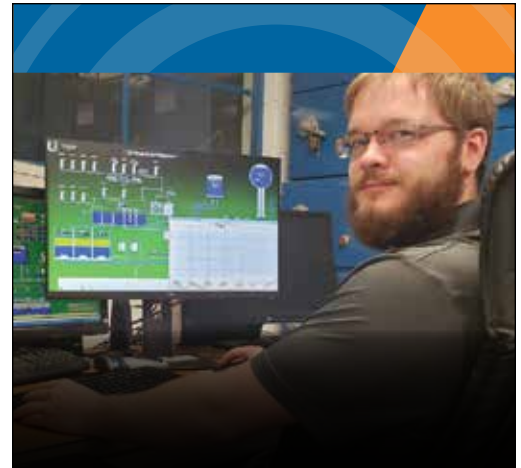




CERTIFICATION PRACTICE QUESTIONS

1. If you want to fill a new section of distribution system before putting it into service and the pipe is 10 inches in diameter and 1500 feet long. How long will it take to fill in minutes, if your flow into the pipe is 200 gpm?
 - a. 2.4 hours
 - b. 0.5 hours
 - c. 140 minutes
 - d. 31 minutes
2. A water tower has a total height of 145 feet to the tank overflow, the dimensions of the tank at the top are 24 feet in diameter by 25 feet tall. If the tank is full to the overflow, how many psi would this represent at a pressure gauge at the base of the tower?
 - a. 37 psi
 - b. 63 psi
 - c. 52 psi
 - d. 48 psi
3. During hydrant flushing an operator flushes a 8 inch water main and achieves a flow of 800 gpm, what is the velocity of the water in the main during flushing?
 - a. 1.5 ft/sec
 - b. 2.8 ft/sec
 - c. 4.65 ft/sec
 - d. 5.2 ft/sec
4. The flow from your pump is 1400 gpm at a pressure of 125 psi. Your pump efficiency is 93% and your motor efficiency is 88%. What is the motor Hp?
 - a. 125 Hp
 - b. 150 Hp
 - c. 75 Hp
 - d. 50 Hp
5. Your system installs a new sodium hypochlorite (bleach) generator that produces a 0.8 % solution of sodium hypochlorite. In the past 24 hours you used 300 gallons of this hypochlorite solution and pumped an average of 900 gpm. What is your chlorine dosage (mg/L)? (Assume the hypochlorite solution has a specific gravity of 1)
 - a. 1.9 mg/L
 - b. 2.35 mg/L
 - c. 0.85 mg/L
 - d. 3.55 mg/L
6. Specifications allow for a maximum of 0.5 gallons/hr/1000 feet of leakage in a new water main during hydrostatic testing. What would be the maximum allowable leakage (in gph) for 1 mile of new water main?
 - a. 1.85 gph
 - b. 2.32 gph
 - c. 8.3 gph
 - d. 2.6 gph
7. Your motor uses 30 KW of electrical power and has water Hp of 35 Hp. What is the overall efficiency of the pump and motor?
 - a. 74%
 - b. 36%
 - c. 13%
 - d. 87%
8. The flow from your pump is 1400 gpm at a pressure of 125 psi. Your pump efficiency is 93% and your motor efficiency is 88%. What is the motor Hp?
 - a. 125 Hp
 - b. 150 Hp
 - c. 75 Hp
 - d. 50 Hp
9. If the pump in problem #8 runs for an average of 18 hours/day and your electric rate is \$0.045/KW, what would be the electric cost to run that pump for one year?
 - a. \$2,500.32
 - b. \$27,569.36
 - c. \$18,345.82
 - d. \$42,155.18
10. Checking the Meter in the well house (meter measures in 1000 gallons units) you find the meter reading on the first of the month was 102830 and 108996 on the last day of the month. After checking with the billing clerk you find that they billed out for 5,885,000 gallons. What is the % water loss for the month?
 - a. 95.5 %
 - b. 85.5 %
 - c. 4.5 %
 - d. 14.5 %

1. D; 2. B; 3. D; 4. A; 5. A; 6. D; 7. D; 8. A; 9. A; 10. C



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The City of Harrisburg was recently named the Best Tasting Drinking Water in South Dakota. Harrisburg has also received this award in 2018 and 2020.

A panel of judges selected Harrisburg's water sample as the best tasting out of samples submitted by rural and municipal water systems throughout South Dakota during the Rural Water EXPO in Rapid City on April 28th. Each sample was judged on clarity, bouquet and taste. Harrisburg will go on to represent South Dakota in the Great American Water Taste Test at the National Rural Water Rally held in Washington, DC, in February 2022.

Harrisburg's water is provided by the Lewis & Clark Regional Water System and is overseen by Assistant Public Works Director Dustin Preheim.

Dustin Preheim, Assistant Public Works Director for the City of Harrisburg is pictured with the Best Tasting Water in South Dakota award. Harrisburg will represent South Dakota in the National Rural Water Taste Test in Washington DC in February, 2022.



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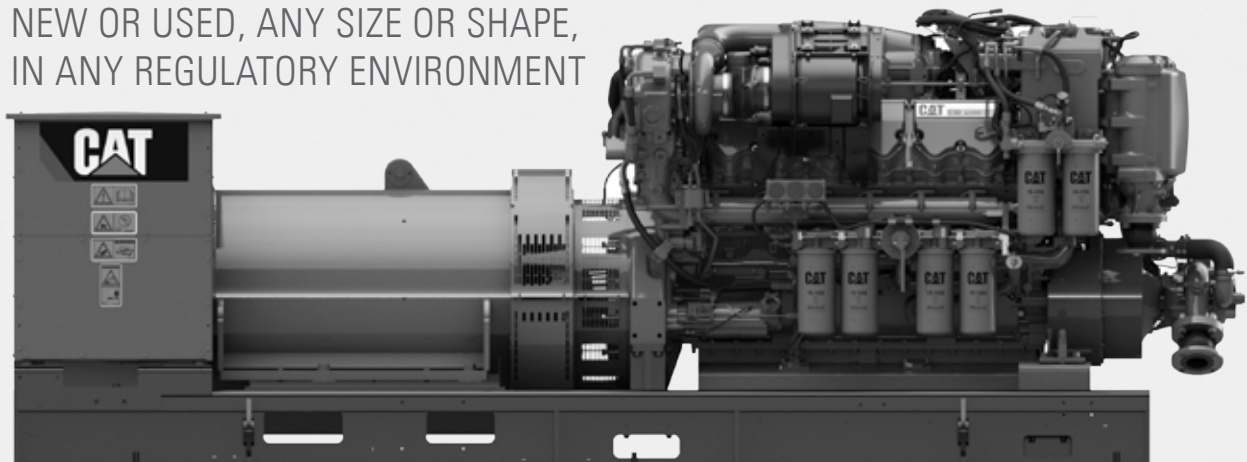
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PHOTOS FROM THE FIELD



SDARWS, Region 8 EPA, and H&S Environmental put on some hands-on lagoon optimization training in Wagner and Rosebud.

The official water taste test competition took place at the 2021 Rural Water EXPO in Rapid City on April 28th.

The City of Harrisburg was declared the winner for the second year in a row.

Judges (from left to right): Hannah Kast, SD DENR; Erin Fagnan, SD DENR; and Malcom McDonald, Dakota Supply Group



To see more pictures of SDARWS in action, follow us on Facebook at www.facebook.com/SDRuralWater



FROM THE EXECUTIVE DIRECTOR

KURT PFEIFLE, EXECUTIVE DIRECTOR

BUDGETING 101

The SDARWS fiscal year is October 1 through September 30. SDARWS starts its annual budgeting process in April or May each year (about halfway through a fiscal year). As we get started planning for the next fiscal year, I thought this would be a good time to outline the budget process we use at SDARWS.

Let's answer the most basic question first; what is a business budget? Simply put, the budget is a detailed plan that outlines where you'll spend your company's money monthly or annually. You assign every dollar of a "job" based on what you believe is the best use of those funds. At the end of the year, you look back and compare your plan (the budget) with how you actually did... you adjust for the next year.

The budget can be broken down into two essential elements. First, how much money you will take in over the year aka, revenue. Second, how much money you will spend over the year aka, expense. The difference between the two (revenue v expenses) will make up your profit margin. There are a multitude of nuances found in each of the aforementioned budget segments, but the fundamental calculation remains the same... revenue minus expense.

SDARWS starts its annual budget process with a question to staff... what are your needs and wants for the next fiscal year? We often refer to this list as the "wish list." Staff will write down things from computers to vehicles to the latest in other technologies that will help in doing their job. We don't promise that all items on the wish list will be granted, but we do promise it will be looked at and considered. We follow the staff question with a board question... The SDARWS Advisory Board is queried and asked to provide some "budget direction" to staff typically this direction is provided following the June meeting.

We then gather up all the information we can to try and gauge our revenues for the next fiscal year. For us, revenues come in many forms, including program funds awarded through governmental programs (e.g., Circuit Rider, Source Water etc...); internally generated funds through dues, conventions & events, advertising, equipment charges etc... All sources of revenues are important, but it should be noted that revenues emanating from programs and dues account for a very high percentage of the SDARWS revenues.

Once we have an idea of how much money will be coming in, we begin to plan on how these dollars will be expended. SDARWS uses a modified "zero-based budget" technique for determining expenditures. Zero-based budgeting means that all budget line items are set to zero at the beginning of the process and each line item is reexamined and justified rather than taking last year's budget and simply adding a percent escalation factor. I say it's a modified version of the zero-based

budget method because for employment costs (e.g., salaries, benefits, taxes etc...) we generally do apply a percent increase to last year's dollar amount.

SDARWS staff will take the revenues and expenses and construct a draft budget. The preliminary document will be presented to the SDARWS Advisory Board (acting as the budget committee) at a meeting in June or July. The Advisory Board's input will be incorporated into the budget and the

document will be tweaked here and there to accommodate the Advisory Board's input. Once complete, the budget will again be presented to the Advisory Board for further action and input. Final touches will be made to the budget and the document will be readied for presentation to the full board of directors at the September board meeting, which is the last regular meeting before the beginning of the next fiscal year.

It's often said that "budgets are moral documents" meaning that it tells us "mathematically," what areas, issues, things, or people are most important to the authors of that budget. While I believe that's true (that budgets are a moral document), I prefer to believe that budgets are more than that – they're also an existential exercise of reality! Learning to live within your means and make plans for the good times as well as the bad.

So, the next time you take pencil to paper, and whether for business, personal or family, remember that a budget is great tool to help guide your priorities and activities for the next year. However, remember too that ultimately a budget is just that "a guide" and that plans can alter, priorities can change, and your budget should be nimble enough to adjust with the changing environment. ♦





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