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SPRING 2023 (We are BLESSED!!!)

By Kevin Baughman, NvRWA Executive Director
2023 Conference!

**Declaration of Emergency, due to approaching
warmup and probable flooding!**

PFAS!

Lead and Copper!

Cybersecurity!

Consumer Confidence Report!

Well, is all of *this* enough to ensure you are having fun? With the spring season surrounding us in welcomed precipitation here in Northern Nevada, we are happy to finally be experiencing some relief from our seemingly never-ending drought. 713.6" of snow around the Sierra Nevada Mountains this winter (second highest in recorded history) and counting. With the weather forecast showing probabilities of precipitation continuing into the foreseeable future, summer could see some great water recreation times!

The big question I have now is how did YOU like the conference? WE sure enjoyed bringing it to you. I am actively seeking your input to help improve the event as we move forward. It was only our second LIVE conference since 2020. Most people really seemed happy to get to see each other in person again. It is my goal to supplement this activity by dispersing some "networking sessions" throughout the year. The first one will be starting in June, here in Northern Nevada, and then moving around the state over the course of the year. Please watch our website for future updates on session information.

One new thing I tried in this year's conference was the "vendor interview" program. It was my first attempt at cataloging your time spent with the vendors. The companies that supply parts and services invest a lot of time and money into improving their products and services. They share these changes and updates with us through the tradeshow vendors at our conferences. I wanted to get some real tracking on your interactions and time spent by eliminating the "stamp my book" task from future tradeshows. It was my intention to see your logging skills as you write down a few short words and sentences about what you learned from the salespeople. I plan on continuing to work on this. The more documented contact time we get, the more power and influence you will wield in helping to get more vendors and products at your conference. In my opinion, this all translated into a bigger, more enjoyable, and varied experience at the conference.

Congratulations to Gwen Jones with 21 documented contacts and RCI with 3 contacts!

Both are receiving a \$250 CASH AWARD for participating this year!

Next year, the goal will be to get the highest total of the contact time. Only completed and auditable sheets will count. I will offer a total of \$1 per attendee. This means that if we get 500 people at the conference,

the prize will be \$500! Both the attendees and vendors will be eligible to receive this prize.

Speaking of the conference, did you play any of the games? We had a horseshoe contest that was a big hit and a lot of fun. We are starting to brainstorm what games we can do next year. What would you suggest? What do you want to see at your conference? Did you like the overall layout and schedule of the conference this year? We appreciate any suggestions you might have to improve future

Did you attend any roundtable sessions? I wanted to push these to encourage networking and discussion of the issues that affect all of us. It is my goal to ensure that we are all familiar with each other moving forward. As utility service providers, we might consider it an obligation to get to know each other and help our neighbors in times of need. We charge for our services with the goal in mind that we maintain our ability to continue those services. After all, don't all of us like to drink water, wash our hands, and have the "used" water go away safely and effectively? We benefit in having our neighbors help share the costs of these services, and these services help make modern life possible. By attending roundtables and networking sessions, we as operators and utility staff can get to know each other better and develop a deeper sense of community.

We hope you liked the registration and class attendance tracking with the scanner system this year. This is a part of the process we are incorporating to make your conference attendance the best experience possible. Please give us just a little longer for your certificates. Our staff are building a new system to produce your certificates. I think you will be pleased at the results once we have this new system firmly in place. The GOAL is to have these certificates ready in May. After that, we will be working to deliver a system that makes your CEU certificates available to you anytime, directly through the website!

Looking past the conference, your CCRs should be on your radar. I would like to say farewell to Ross Cooper, who has left the state to start a new adventure in life. This means that when you submit your CCR for a state review before distributing them to your consumers, it might be a little longer turnaround time. We really should try and get these out right now. In a previous work experience, I encouraged a friendly contest with the systems I worked with. It was a fun thing to get people started early and get it knocked out quickly. I am currently waiting for our staff to inform me if we have any of these completed yet in Nevada. Are YOU going to be the first of our systems done this year?

One thing I hope you will notice is that the government is pushing to go electric for EVERYTHING! They are working to remove Internal Combustion Engines (ICE) from cars and even replace gas cooking with electric stoves and ovens. When combined with the Planned Service Outages (PSO), we need to ask, "What effect is this going to have on the grid?" I hope that you are thinking about this and considering whether your facility is prepared for more power outages as we all "plug in." Do you have a backup source of established power? Is it ready to

go? When is the last time your system was tested? Let's get ahead of this problem before it becomes one.

Consider this: There are currently about 284,000,000 cars in America today. If each of these had to plug in tonight and each one contributed ONE SECOND to a power glitch, the result would be a **9 YEAR** power problem!!! Could your facility go without power for that long? I notice that the grid has "challenges" when temperatures get a little warmer or cooler than average. Please feel free to talk to your circuit rider more about this.

Shameless plug: Are you set for PFAS? Do you have it at your facility? The EPA recently established that **4 PPT** is too much! The National Rural Water Association (NRWA) has filed a lawsuit to help water and wastewater systems around the country with the financial burden associated with this. It is a cost to sample and remove this contaminant if it is found. The lawsuit seeks to setup a trust fund to help you with these costs. Our website has a link and the NRWA website has one as well. If you can, please go and register your system to enable you to get some of this money. It's only about a two-minute process to get your system on the list. They are currently set to go to court on June 5th, 2023. If a settlement is reached before this date, you will no longer be able to sign on. PLEASE GO TODAY!

The link is <https://www.napolilaw.com/nrwa-pfas/> .

It may not cover all of the costs, but this will help the chemical manufacturer pay for some of the costs that they created and profited from, instead of you and your customers having to pay the full expense! Please add your name to the list. There are not too many systems in Nevada that have done so at this point (only 4 names the last time I checked). It doesn't cost you anything and can bring your company some money to help deal with these chemicals. Why not invest a few minutes to get some cost savings???

Lastly, are you starting or are you in the middle of a project that you are proud of? Did your crew do some extraordinary work recently? Is there a new "trick" you learned that saves time or money? Have you found a new way to reduce some sort of risk for everyone? If so, please share your experiences with us! We welcome you to write an article and submit it to the office to publish in this magazine. Help your fellow workers out and share your experiences or discoveries!

It is my hope that you like the new / current status that we are providing you as you go about your business. We want to bring you good service and information to help you as much as possible.

Please write me your thoughts on this.

Kevin Baughman
NvRWA Executive Director
kevinb@nvrwa.org

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Lon Dalley
NvRWA Board Member

Welcome

Please welcome our newest NvRWA Board Member Lon Dalley.

Lon Dalley is the Assistant General Manager for Moapa Valley Water District.



Max's Wastewater Corner:

Max Sosa, NvRWA Wastewater Technician

1) Which of the following is part of the preliminary treatment process?

- a) Elutriation, disinfection, and coagulation
- b) Back - siphonage, digestion and disinfection
- c) Grit removal, shredding and screening
- d) Water hammer, back - siphonage and coagulation

2) Why must disinfected wastewater effluent be de-chlorinated?

- a) Prevent erosion
- b) Protect aquatic life
- c) Promote algae growth
- d) Prevent coagulation

3) What is the purpose of an asset management program?

- a) Finance a LIMS system
- b) Establish a chain of command
- c) Maintain a chain of custody
- d) Develop and implement a long-term funding program to maintain financial stability

4) Which kind of fire extinguisher should be kept at a pumping station?

- a) Class A (water)
- b) Class ABC (all purpose)
- c) Class BC (carbon dioxide)
- d) Class D (dry powder)

5) What does a tertiary treatment process remove?

- a) Fats, oil, and grease
- b) Corrosion, dissolved metals, and grit
- c) THM.d) Nitrogen, phosphorus, and suspended solids



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Small Rural Water Utilities Find Value in Space Age Technology

By Paul Gagliardo, MPH, P.E., Gagliacqua Consulting, gagliacqua@cox.net

Rural utilities are typically small and do not have a large customer base where the costs of new technological innovations can be distributed and thus lessen the overall burden to any one client. This can limit the ability of these utilities to deploy potentially valuable solutions in their networks. Large capital expenditures are problematic and committing to long term operating expenses can cause rates to skyrocket.

Small utilities do not have the luxury of having extensive staff resources that can validate the efficacy of new technologies and their appropriateness for solving specific issues. In many instances (not just related to water utilities) small rural areas cannot realize the benefits of their larger urban neighbors. Large utilities have economies of scale that allow them to test new solutions without concern that they will not succeed to the extent the vendor promised. Additionally, innovations can be tried, and, even if they fail or do not achieve the returns anticipated, the cost can be absorbed with less overall impact to the customer.

Companies with new innovative approaches may not want to market to small utilities due to the relatively low revenue and profit to be realized with a fixed cost of customer acquisition. New technologies that don't require large capital investments that can be deployed remotely and be executed with minimally trained staff or contracted operators are the best option for small utilities.

Rural areas are also at a disadvantage in the case of pipeline leak detection, as lower population density makes pinpointing leaks more difficult. When there are fewer listening points, or they are further apart, leaks are less likely to be found. Conversely, rural areas can have less ambient noise, so using acoustic methods to pinpoint leaks can be more successful.

One of the biggest issues facing all water utilities, large and small, is that of non-revenue water (NRW). It is estimated that the average utility experiences 16% real water loss from leaking pipe and up to that amount in apparent water losses from inaccurate meters, billing discrepancies and unauthorized consumption. This causes operating costs to be increased which must be passed on to the customer. It also wastes water, which is doubly problematic in areas where there are water supply constraints or drought. The extra energy to pump water that is leaking generates additional greenhouse gasses (GHG) to be emitted exacerbating global climate change.

Finding and fixing potable water leaks is the lowest cost of new supply that a utility can access. The cost of finding and fixing leaks per thousand gallons is lower than constructing new wells, adding conveyance infrastructure, recycling wastewater, treating brackish water or desalinating seawater.

A technology that can assist small rural utilities reduce real water loss by efficiently finding leaking pipes is ASTERRA. ASTERRA provides a unique service called Recover to locate likely pipe leaking locations using satellite-based synthetic aperture radar (SAR) images. These images can detect potable water underground leaking from water pipes. Water sources such as leaking pipes, lakes and swimming

pools reflect electromagnetic (EM) waves. Every material has unique electric properties called dielectric constants. SAR sensors placed on an elevated platform such as a satellite or an aircraft send EM waves at a known frequency towards an area and read the EM backscatter from that area. The signals are compiled into an image of the area. This includes backscatter from water sources and other landmarks such as buildings, vegetation and topographical features of the area. Unwanted targets (e.g., swimming pools or saltwater) are filtered out or removed from the scan, thus leaving only the signal backscattered from pipeline water leakages (the signal from drinking water mixed with soil).

The Recover leak detection program consists of two tasks: satellite survey of entire system and leak pinpointing by boots-on-the-ground (BOTG) field crews. The satellite survey can encompass up to 1200 square miles of area and all the pipelines within that area. The survey unit cost per mile is lower for a large system than for a small system because large systems have more miles of pipeline within the survey area. The survey analysis identifies 5-10% of the system length as likely leak locations (LLLs) where the BOTG field crew is deployed to pinpoint leaks. The BOTG costs are based on the number of days in the field and cost per crew per day, and are the same unit costs no matter the size of the project. It is reasonable to assume that the overall unit cost to find a leak would be lower for a larger system because the satellite survey cost per mile is lower. However, this is not always the case as the BOTG cost per mile is much larger than the survey cost per mile.

The ASTERRA Recover program uses satellite images which are completely remote and non-invasive. It does not require any utility resource to collect and analyze the image and provide a map of LLLs. When available, the utility provides accurate water system GIS shapefiles early in the project for ASTERRA to use in creating LLL maps for the field crews. If these are not available, the pipelines are assumed to run parallel to roadways. ASTERRA can contract BOTG field crews, or the utility can provide its own crews, which are deployed to pinpoint the leaks. Based on the pinpointing efforts, the utility can schedule work crews to repair the leaks and reduce their cost of production and real water losses from the system.

Two rural utilities have used ASTERRA to find leaking potable water pipes. Each of them have achieved excellent results from a water saved perspective and from a value proposition perspective.

City of Greenville, Mississippi

The City of Greenville, Mississippi is located in west central Mississippi and is the county seat of Washington County. It has a population of approximately 35,000 people and encompasses 27.7 square miles of area. It sits on the eastern bank of Lake Ferguson, an oxbow lake left



over from an old channel of the Mississippi River. See Figure 1 for the location of Greenville and a map of their service area.

Figure 1 – Location Map

The Greenville water system contains 292 miles of pipe mains and delivers 6.6 million gallons per day (MGD) of water to customers. The system experiences approximately a 25% non-revenue water level and does not have a proactive leak detection program.

The satellite images were collected and analyzed, and field BOTG crews were deployed in December 2021 to pinpoint the leak locations. Seventy leaks were found pursuant to this program. The real water loss identified was 0.39 MGD, which is 24% of the NRW level of 1.65 MGD. Fixing these leaks will result in a substantial water and cost savings for the Greenville Water department. Greenville realized a 3-month simple payback based on the cost of service and the value of lost water that was recovered.



Figure 2 – Leak Found on a 16-inch Water Main

A large number of leaks were found on main pipelines. One of these leaks was found on a 16-inch water main and was not visible above the ground surface, see Figure 2. The leak flow rate was estimated to be at least 20 gallons per minute. A pipeline burst from this pipe would have caused catastrophic negative results from property damage, lost water and extensive liability claims, not to mention having to perform an unplanned repair or replacement.

The ASTERRA best practices recommend that the BOTG field inspectors access all listening points available to try and acoustically pinpoint a leak. In rural areas there are fewer listening points per mile of pipe due to the low population density. When there are fewer listening points per mile of pipe the BOTG crews can inspect more miles of pipe per day. There is a direct inverse correlation between miles per day inspected by field crews and leaks found. Traditional leak detection program efforts cover almost 4 miles per day and find 1.3 leaks per day and 0.3 leaks per mile physically inspected. The ASTERRA Recover program was able to find 4.4 leaks per crew day and 2.7 leaks per mile while physically inspecting 1.6 miles of pipe per day. In this case, even in low population areas, the leak detection program was able to outperform the traditional

methodologies.

Another method to calculate value is to compare the cost of water production to the value of the recovered water, or marginal new water supply. The cost of production at Greenville was reported to be \$1.24 per 1000 gallons. Based on the total cost of service and the volume of real water loss reduction amortized over a one-year period, the cost of this recovered water supply was \$0.34 per 1000 gallons. The cost to find and fix leaks is one-third the cost of production showing great value to the utility.

More than 65% of the leaks found were non-surfacing, meaning they would have not been identified at that time except for the satellite survey analysis. Finding and fixing these leaks reduces incalculable real water loss levels from potable water systems.

Kline Township Municipal Authority, Pennsylvania

Kline Township Municipal Authority (KTMA) in east-central Pennsylvania utilized the ASTERRA services in the summer of 2022. Figure 3 shows the district service area. They are a small rural utility with a non-revenue water (NRW) problem that had grown to 63% in calendar year 2021 and no proactive leak detection program in place. The Authority's consulting engineer firm, Systems Design Engineering, Inc. (SDE) brought the ASTERRA technology to the KTMA Manager Aaron DeBalko's attention after viewing an educational webinar presented by the National Rural Water Association (NRWA). Subsequently, KTMA received a grant from the Susquehanna River Basin Commission (SRBC) under their Consumptive Use Mitigation program to pay for the work.



Figure 3

KTMA has a total of 2100 water service connections with a distribution system length of 25 miles. The system is comprised of 3 miles of 12-inch ductile iron pipe that is 20 years old, 22 miles of 3 or 4-inch cast iron pipe and some 6-inch asbestos cement pipe that is over 70 years old. In addition to using the ASTERRA satellite survey, KTMA used a third party BOTG leak detection crew to pinpoint leaks, upgraded their acoustic listening equipment and were trained on best practices for traditional leak detection methodologies.

One satellite survey was performed and a total of 16 POIs were identified and delivered to KTMA, via a GIS map on a web-based platform

Small Rural Water Utilities (continued)

provided by ASTERRA. Rural water systems do not need to have their own GIS system to view the POIs. Over the course of 3.5 days, field leak BOTG crews inspected the pipelines within the POI zone and found 5 leaks: 2 on main pipes, 2 on service lines and 1 on the customer side of the meter. The four leaks on the utility side of the meter can be considered non-revenue water (NRW) leaks. It is estimated that fixing these leaks saved 125,000 gallons per day and over \$33,000 per year in production costs.

The volume of real water loss reduction was based on the baseline production of 900,000 gallons per day prior to the leak detection intervention of which 75,000 gallons per day were being delivered to a lettuce grower for emergency temporary irrigation. This ended in early August 2022. The four NRW leaks were repaired by the end of August. All leaks were non-surfacing leaks with average flowrates of approximately 20-25 gallons per minute. Water delivery was reduced to 700,000 gallons per day, yielding the 125,000 gallons per day as real water loss savings.

The estimate of the value proposition to KTMA comes by calculating the reduction in energy and chemical costs based on the reduction in water treatment and delivery. The system pump run time in the beginning of August was 18.5 hours after deliveries to the lettuce grower had ended. By the end of August, the pump run time had been reduced to 15.5 hours. This is a 16% reduction. Based on an average electricity cost of \$4500 per month, a savings of \$730 per month was realized. The average chemical cost per month was \$12,500 at the beginning

of August. Based on a 16% reduction in flow, a savings of \$2030 was realized. This equates to an average savings of \$2760 per month, or, \$33,120 per year.

These two examples show that even small rural utilities can benefit from new technologies. The technology must have the attributes that can accommodate the particulars of small rural utilities and the vendor must be willing to work with these types of customers. The technology can provide value even if there is minimum system documentation and low staffing levels. It is imperative that the utility maintain good records so that the value proposition can be documented. Utilities may have different goals for a proactive leak detection program, from reducing non-revenue water to saving money. All of these can be achieved when a viable technology backed by a supportive vendor is applied to a dedicated customer.

About the Author

Paul Gagliardo has over 25 years' experience in the water utility business. He created and operated a water technology research center at the city of San Diego and directed the Innovation Program at American Water for 9 years. Paul has been a judge and advisor for ImagineH2O for the past 10 years. Currently he is an independent consultant providing advice to firms interested in the municipal water business, and hosts his own podcast, The Water Entrepreneur, on all major platforms and <https://thewaterentrepreneur.org/>. He is a registered engineer in California and has a Masters' Degree in Public Health.



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Source Water Protection Specialist Intro

Christopher Berkey, Nevada Rural Water Association (NvRWA) Source Water Protection (SWP) Specialist

Hello, I am Christopher Berkey, your Nevada Rural Water Association (NvRWA) Source Water Protection (SWP) Specialist. I currently reside in southern Nevada with my wife and three Boston terriers. After growing up in southern California I joined the United States Marine Corps in 1995.

After serving in the Marines, I worked in Las Vegas as a production coordinator at the Fremont Street Experience before becoming a Union Sheet Metal Worker. When the housing bubble burst, I returned to school and later graduated from the Clarion University of Pennsylvania with a degree in Environmental Geoscience. With my degree in hand, I applied for positions at the PA Dept. of Environmental Protection (PADEP) and was hired as a Sanitarian in the Safe Drinking Water Program. I worked



Rock outcrop near Lake Las Vegas, Clark County – C. Berkey

as an inspector until moving into the position of SWP Facilitator and permitting geologist for the northwest region of PA. After Covid hit, my wife and I decided it was time to change from the dreary humid weather of northwest PA and head back to the sun of the southwest.

We settled in Nevada because of my familial roots here and I began looking to get back into the drinking water game. While enjoying my sabbatical and looking for a position I found an advertisement for a position at NvRWA.



C. Berkey during the travels across the U.S. – Leigha Berkey

I am so happy that I decided to apply; I am back doing the work I love and have a wonderful state to work in. As your Source Water Protection Specialist, I am available to help communities in developing plans to protect their source water, assist in implementing SWP, and provide training and technical assistance regarding source water. These activities include the use of hydrologic modeling, GIS mapping and support, providing outreach, and education which is tailored to the needs of each community. When working with a water system I make myself available when during times that work for them; I know that rural communities rely on their personnel to wear many hats, and I try to make sure SWP is not an inconvenience by working with the systems on their time.



Snow covered mountains in northern Lincoln Co. – Christopher Berkey

One of the perks of my position is I get to travel Nevada finding spots for my other passions: off-roading and being a rockhound. The availability of outdoor activities in Nevada provides this geologist with many opportunities to get sidetracked. My wife and I love getting off the beaten path to explore historic sites, look for interesting rocks, find picturesque locations, and try to spot different wildlife.

So far, we have explored Valley of Fire, Red Rock, and areas of Lincoln and Nye counties. We look forward to getting out more and visiting the many beautiful areas in the state.



Aztec Sandstone with Petroglyph in Valley of Fire State Park – Christopher Berkey

I hope that my work for NvRWA can help areas become more aware of the value of their source water, operators, and the need for new operators. It has been my experience that most residents take their drinking water for granted; it is something that is out of sight and mind.

I hope that by bringing SWP to populations I can work with them to educate the public on how finite source water can be and how important a public water system is to the health of the community. I want to show the residents how important their system is because there is a need for workforce development; the lack of appreciation of what it takes to provide safe and clean drinking water to the public has led to a shortage of trained operators. Hopefully, with the combined efforts of your NvRWA team, we can help fill this gap and bring more attention to the importance of public water systems. The more a community knows about its water, the better able they are to protect it. Due to the historical neglect of protection of groundwater, there are several areas that have become contaminated. The "new" issue with groundwater contamination that we should all be concerned about is PFAS and PFOS. These forever chemicals have been used in too many products and industries to list. I am especially concerned about the communities where there is known PFAS contamination and how it will potentially affect their sources, sampling, and treatment. Communities are about to incur the cost of testing and potentially treating to remove these chemicals, and I know that for some areas this will be a burdensome cost that they have not prepared for. It is because of this concern that I hope water systems will sign onto the National Rural Water Cost Recovery Program by retaining Napoli Shkolnik PLLC for participation in the current Multi-District Litigation (MDL) proceeding in the Federal District Court for South Carolina (MDL 2873) as well as any other appropriate action in State and Federal Court. (<https://nrwa.org/cost-recovery/>)

It is my pleasure to work with rural water systems to protect their sources and if you would like to reach out to me for SWP assistance please do not hesitate to contact me:

Christopher E. Berkey
Office: (775) 841-4222 | Cell: (702) 540-6107
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Difficult Pipeline Repairs - Repair Fitting Installation Tips

by Mike Scholz, JCM Industries, inc.

Having to repair old, worn, broken, or leaking pipes is bad enough. Having to revisit the repair location a second time to refurbish the original fix is doubly frustrating. Here are some guidelines for getting the best results from pipeline repair efforts and enhancing the durability of the repair effort to match the anticipated service life of the pipeline itself.

“It’s Only Temporary...”

The rationalization that “it’s only temporary” is one of the most misleading pitfalls of repair fittings – unless, of course, 50 years is considered “temporary.” Why risk potentially thousands of dollars invested in equipment and labor to excavate the problem area, replace the part, and refill the trench, by using anything less than a solution that equals the remaining pipe lifespan? With that in mind, here are some guidelines for minimizing potential headaches of having to rework a recent pipeline repair.

Start with Better Choices

1. Fitting selection. Many pipeline fitting failures can be traced back to improper fitting selection. Work with an experienced supplier who can explain the performance considerations behind each design option. Industry manufacturers offer a variety of repair fittings to address different factors: type of pipe, size and type of damage, working pressures, etc. A basic understanding of repair fittings and their limitations can eliminate repair “do-overs.”

2. Gasket type. Repair fittings can vary by gasket type – from a fully encompassing circumferential gasket to an outlet seal gasket or a circular end gasket. Be sure to evaluate the ability of the fitting, gasket, and bolt pattern to ensure a complete seal in the intended application and that the gasket material is compatible with the application environment in which it will be used.

3. Hoop strength. Ensure that the design of the repair part meets or exceeds the hoop strength of the pipe it patches or replaces. In aging cast iron pipe repairs, look for a fitting that will spread the load forces evenly over a broader area to avoid potential cracking or crushing the existing pipe section.

4. Good alignment. In repair instances where the buried pipe configuration is already in a misaligned position, look for fitting designs that can accommodate the specific misalignment and reduce stress of the repair.

5. Reinforcement. Support the pipe repair fitting and the horizontal axis of the pipe, making sure it is sufficient to withstand the strain of the installation and the process of backfilling around the repair.

Complete the Job with Better Follow-Through

Once a proper fitting has been selected for the job at hand, install it with these guidelines in mind:

1. Challenging conditions. Older piping can create installation issues. If it’s brittle, it can crack if repair fittings do not distribute gripping pressure evenly around the circumference of the pipe. Even structurally sound piping that is pitted, corroded, or slightly out-of-round can prevent a fitting from forming a smooth, tight gasket seal. Also, instability at the repair site – caused by shifting sandy soils or marshlands/wetlands that are not appropriately dewatered before repair work – can generate stresses if newly installed repair fittings are not properly supported.

2. Accessibility. Make sure that the trench around the repair provides enough space for the fitting and for worker access around the full perimeter of the fitting. Difficulty in installing, hand-tightening, or final-tightening bolts can lead to improper fit.

3. Pipe preparation. Confirm that the repair location of the pipe is thoroughly clean and prepared for the repair installation so that both the fittings and the gaskets conform evenly to the surface and shape of the pipe.

4. Gasket fit. Look for surface deformities in the pipe that might impair proper fit (e.g., flat spots, indentations, ridges, or being out-of-round). Lubricate gaskets according to manufacturer recommendations to ensure proper seating. Many manufacturers recommend soapy water rather than grease. Using a lubricant that is incompatible with the gasket material can lead to poor sealing or perhaps eventual gasket deterioration. When installing a full circumferential gasket, be sure to tuck the taper in place and rotate the clamp only in the direction of its arrow to smooth the tapered gasket flap.

5. Proper assembly. Read manufacturer installation directions in their entirety before beginning to install a fitting. Even the best fittings can fail to perform according to spec if improperly installed. Keep bolt threads clean. When working in a dirty trench, especially one splashed with mud due to a leak under pressure, grit in the threads can interfere with appropriate bolt tightening and lead to a poorly clinched fit.

6. Precise torque. After finger-tightening mounting bolts, follow the manufacturer’s directions for final tightening. Some manufacturers recommend starting the tightening sequence from the outer edges of the fitting to allow the gasket to form a tight perimeter seal. Tightening the interior bolts first can create a wrinkle in the gasket inside the fitting that can exaggerate the deformation as it works its way to the periphery.

Finish tightening to the **manufacturer-specified torque setting, using a properly calibrated torque wrench.** It is amazing how much variance (and leakage) there can be with under-torqued bolts that were tightened according to the “feel” of maintenance personnel.

Finally, let a tightened fitting set for at least 15 minutes to allow the gasket material to equalize under pressure before making a final torque reading.

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Max's Wastewater Corner Answers:

Max Sosa, NvRWA Wastewater Technician

1) C – Grit removal, shredding and screening.

2) B – Protect aquatic life

High chlorine levels can be toxic to fish and the environment.

3) D – Develop and implement a long-term funding program to maintain financial stability.

It is important to maintain an accurate inventory of plant equipment, maintenance, and repair records to determine the cost required to operate a facility. This information is essential to determining the cost of treatment that needs to be charged and to predict future growth so that funding for repairs and expansion can be obtained.

4) B – Class ABC (all purpose).

This type of fire extinguisher will help stop or slow down electrical, structure and chemical fires until the fire department arrives.

5) D – Nitrogen, phosphorus, and suspended solids.

Tertiary treatment is typically the final or polishing step in a wastewater treatment process. The parameters are based on the effluent permit requirements determined by the regulatory agency.

Lagoon Algae Prevention and Treatment

By Tom Daugherty, Western Regional Manager, Triplepoint Environmental

Algae is common in wastewater lagoons and will proliferate in the summer due to warm temperatures, abundant sunlight, and high nutrient loads. Excessive algal blooms in wastewater lagoons can cause treatment deficiencies, so it is important for lagoon operators to understand some of the options for lagoon algae prevention and treatment.

Why is Lagoon Algae a Problem?

Algal blooms in a wastewater lagoon, especially an aerated lagoon, provide little benefit and can cause numerous problems:

- 1. High TSS and BOD5:** High TSS, or Total Suspended Solids, and high biological oxygen demand go hand in hand, as each mg of algal TSS results in about 0.5 mg of BOD. Most of the effluent TSS and BOD in the lagoon is caused by algae, and can result in levels higher than what came in. The problem with high TSS and BOD in effluent is the oxygen demand created in the receiving waterway.
- 2. Low Oxygen:** Algae create oxygen during the day and use it up at night, leaving less oxygen available for BOD-consuming bacteria to use. Sudden algal die-offs, either natural or caused by an additive, can also deplete oxygen, and cause low dissolved oxygen (DO) conditions.
- 3. Nutrient Feedback:** Algae assimilate ammonia and phosphorus into their cells, and then release it back into the water column as they die off.
- 4. Odors:** Low DO conditions contribute to odors, as do mats of decaying algae. Odors from algae tend to be pungent and earthy or grassy in nature.
- 5. Sludge:** As algal blooms die off, they sink to the bottom and accumulate as sludge.
- 6. Harmful Algal Blooms (HABs):** WWTPs are often blamed for releasing algae and/or nutrients that contribute to HABs. HABs have been blamed for drastically reducing oxygen in downstream waters which leads to death of aquatic organisms. In addition, people

and animals can be sickened because of contact with a HAB.

Options for Lagoon Algae Prevention and Treatment

Since algae interferes with efficient lagoon-based wastewater treatment and can cause odors, it's important to prevent it or at least keep it in check. Here are some popular methods for coping with lagoon algae:

- 1. Chemical Additives:** Chemicals like copper sulfate and chlorine are effective at killing algae, but they may also throw the whole food web out of balance and inhibit bacteria's ability to consume BOD. Some additives, like copper, can accumulate and make sludge disposal more difficult. Regulatory bodies may require a permit for the use of additives to protect fish and other life in the receiving stream. Triplepoint's best advice concerning chemical addition is this: consult your DNR rep before beginning any new chemical treatment program.
- 2. Barley Straw:** Bales of barley straw can be placed in a wastewater lagoon to inhibit algae; as they rot, the organic chemicals that are released inhibit algal growth. The paper *Inhibitory Effect of Decomposing Barley Straw on Algal Growth in Water and Wastewater* states that "good aeration, neutral to alkaline pH, and open sunlit water are essential for optimum algal control by barley straw." Barley straw does not treat existing algae but it does interrupt the creation of new algae. Consequently, it is recommended that it be installed in the spring before water temperatures begin to rise. Barley straw bales will need to be replaced every month or two. An offsetting concern with barley straw is that once it breaks down and falls into a lagoon, it will add to your BOD loading and your sludge blanket.



3. Raking or Screening: Mechanical removal of algae is labor intensive and unlikely to be an effective ongoing strategy.

4. Retention Time: According to the late Linvil Rich, the founder of Clemson University's Department of Environmental Engineering and Science and a pioneer in lagoon technology, hydraulic retention time [HRT] is the most influential factor in controlling the growth of algae. The shorter the retention time, the less opportunity for algae to grow. However, while shorter retention times prevent algae, sufficient HRT is critical to the treatment of BOD and pathogens.

5. Baffling: Adding baffles to subdivide a lagoon into smaller cells prevents short-circuiting, or wastewater traveling along thermoclines and emerging undertreated. It also allows you to discharge from the cell with the best water quality.

6. Shading: Because algae is reliant on photosynthesis to grow, anything natural or artificial that blocks light from entering the water will prevent it. Floating cover materials like Triplepoint's AlgaeProtect can be used to cover all or part of the surface. Additive dyes can also be effective in blocking out sunlight, although some regulators prohibit the discharge of dye into the environment.

7. Duckweed: Duckweed can effectively prevent algal growth by blocking the sunlight algae needs to grow, but causes problems on its own. Duckweed is the fastest-growing plant on earth and it grows so quickly, doubling its biomass every two days, that just a couple of plants can grow to cover an entire acre of lagoon surface in just 45 days. Excessive duckweed lowers DO, inhibits solar disinfection, and will feed back ammonia and phosphorus at it decomposes.

8. Controlled Discharge: This is one of the least expensive ways to keep algal cells from being discharged in effluent. Discharge from the cell having the best water quality, and draw from a few inches below the photic zone, where there are fewer algal cells. Algae moves through the water column vertically in response to light penetration, so discharging at night would likely provide higher effluent quality than in the afternoon. Controlled discharge, however, requires the storage of wastewater during the times you are not discharging and therefore requires additional storage capacity.

9. Filtration: Intermittent sand filtration, while primarily used for nitrification, can also remove algae. However, as lagoon expert Linvil Rich stated in his technical note about algae control, what do you do with the backwash water? Recycling it back to the lagoon will just cause more algae to accumulate, requiring more frequent cycles.

10. Ultrasound: This technology relies on sonic waves to inhibit the growth of algae, and can be programmed to address the specific type of algae that is present. These devices are environmentally friendly, having no effect on fish, plants, insects, or other life forms, and requiring very little power to run. Ultrasound has proven effective in controlling algae in lakes and drinking water reservoirs, but the technology seems challenged by the requirement for a clear line-of-

sight between the algal organism being targeted and the device as well as reduced efficacy due to the inherent turbidity in wastewater.

11. Aeration and Mixing: Adding mechanical aeration and mixing to a lagoon prevents algae in several ways. The turbulent action on the surface of the water blocks the sunlight penetration that fuels algae growth, and helps to off-gas excess CO2. Mixing throughout the water column reduces retention time, keeping slower growing algae from gaining a foothold. In addition, mixing prevents the formation of a thermocline in the ponds.

Algae Prevention

The presence of algal blooms is both an indicator of poor treatment conditions, such as high levels of nutrients like ammonia and phosphorus, and a contributor to poor effluent quality, due to increased BOD and TSS. Rather than contend with the labor and expense of removing algae, it's better to prevent it in the first place by properly aerating and mixing the lagoon.

1. Improve Aeration: A properly aerated lagoon should only experience minimal algae growth around its edges during the hottest summer months. If your existing aeration system is not functioning properly, with aerators or blowers out of service, fixing them is a necessity. Or, if your aeration system needs an upgrade, you may want to consider lagoon aeration alternatives.

2. Increase Lagoon Mixing & Water Turbulence: The natural habitat for algae is at the surface of the water. If you disrupt that habitat, you also disrupt the algae growth in your wastewater lagoon. Different lagoon aeration systems will create differing amounts of turbulence. Fine bubble systems create a mild turbulence at the surface of the water, while coarse bubble systems are perhaps the best, as the large bubbles create vigorous turbulence. Surface aeration creates a tremendous amount of turbulence where the actual aerator is located. However, often that mixing energy is not as well distributed throughout the lagoon as compared to a fine or coarse bubble diffused system, or our Ares Aerator®, which combines a coarse bubble static tube and fine bubble diffusers in a single, portable unit. Either way, the more turbulence in the water, the better your chances are of preventing lagoon algae.

About the Author:

Tom Daugherty is a wastewater industry veteran with thirty years of administrative and managerial experience, including as president of BlueWater Technologies, as National Sales Manager for s:can, and as a lagoon specialist for Triplepoint Environmental. He is a licensed wastewater operator in the state of Washington and holds an MBA in sustainability. Tom's extensive hands-on experience working with lagoon systems has given him a deep understanding of lagoon operational issues and their solutions.

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Getting to know your USDA-RD Drinking Water Circuit Rider #1

By Robert Ferrell, Drinking Water Circuit Rider

My name is Robert Ferrell and I am a USDA-RD Drinking Water Circuit Rider for NvRWA. One of the great things about my position is the interaction with the operators and other individuals that really make these systems run. I am available to offer whatever assistance I can, whether it is simply some guidance over the phone, formal classroom training or other hands-on training opportunities. One of the gaps in training/compliance in the industry that I see often is basic safety and environmental requirement compliance. With my experience in Health, Safety and Environmental Compliance, I hope to assist as many individuals in basic compliance efforts for all applicable rules and regulations that apply to the Drinking Water industry. Anyone with questions or comments can reach me by contacting the NvRWA office at 775-841-4222 or my cell phone 307-333-3601. And, of course, you can email me at robertf@nvrwa.org anytime.



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Emergency Response Plans (ERP): Ensure They Are Useful When You Need Them

By Latricia Lord, Senior Environmental Health Specialist, Washoe County Health District

Considering all the crazy weather phenomena we deal with in Nevada (heat, cold, snow, rain, wind, floods, fires, etc.) Public Water Systems (PWS) must always be prepared to respond to emergencies.

Many emergencies involve calling someone for help. It may be a coworker for an extra set of hands or tools, a lead operator/manager to evaluate a situation and determine next steps or your regulatory agency to advise of a loss of pressure.

Every Nevada PWS is required to develop an organized plan of predetermined activities to restore service in the event of an emergency including any failure of power (mechanical or electrical failure), natural disasters and/or anything else that reduces the capabilities of the PWS to supply the water demanded by its customers. The plan must also include any actions necessary for responding to water main breaks.

Natural disasters, power outages and main breaks can often lead to losses in distribution system pressure. If any part of the distribution system loses all pressure, PWS staff must issue a precautionary Boil Water Order to all affected customers before placing that part of the distribution system back into service. To rescind the BWO, the PWS must collect two consecutive days of bacteriological samples that are negative for Coliform.

ERPs should be specific, concise and be reviewed regularly by PWS staff as service providers may change and personnel retire. Your EPR should include your Facility Manager contact information (BSDW, WCHD, or SNHD) as they need to be aware of any emergency. Many water systems also serve food establishments that may need to be contacted by their local health authority to ensure proper food safety protocols are followed. Having an updated ERP can make a big difference when it comes to reaching the right person as quickly as possible and protecting public health.

Thank you for supporting NvRWA!

The 2022-2023 NvRWA Membership is coming to an end on June 30, 2023.

Invoicing for 2023-2024 NvRWA Membership will start in May 2023.

For more information on becoming a member you can visit our website at www.NvRWA.org (under the Membership Tab)

The deadline is fast approaching for water utilities to register for the NRWA PFAS Cost Recovery Program. Your system does not need to have a positive PFAS detect to participate. If you do not join now, you may risk losing available funds to treat and remove PFAS from your system.

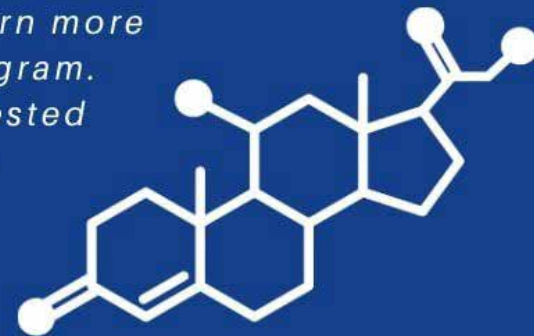
Sign up now for the NRWA PFAS Cost Recovery!
There is **no cost** to utilities to register for this program.

Attention: Is your system financially prepared for PFAS?



EPA recently released proposed MCLs and MCLGs on PFOS and PFOA. If your system is affected, contact us today to learn more about the PFAS Cost Recovery Program. Even if you have not detected or tested for PFAS, you may still be eligible.

Sam Wade, 580-917-1425
www.napolilaw.com/nrwa-pfas



For more information contact:
Kevin Baughman | Nevada Rural Water Association | (775) 841-4222



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PFAS COST RECOVERY PROGRAM

ACTION REQUIRED TO BENEFIT

The PFAS cost recovery program requires utilities to register prior to a settlement being reached in order to benefit from the settlement. The cost recovery program consist of multiple classes of plaintiffs thus it is not considered a class action. In a class action anyone in the identified class may benefit when a settlement is reached. The PFAS cost recovery program is a multi-district litigation (MDL) and in order to benefit, the utility must be registered.

While we cannot guarantee when a settlement will take, a bellwether trial is scheduled for spring 2023. This typically energizes the seriousness of negotiation talks and it is conceivable a settlement could be reached before the end of 2022.

Additional information and registration is available at www.napolilaw.com/nrwa-pfas/ or by contacting Sam Wade at Swade@napolilaw.com or at (580) 917-1425.

The Napoli Shkolnik PFAS Team is available to make a presentation to your utility and works with your local legal representative to represent your system. Register today and protect your utility and ratepayers.

PFAS COST RECOVERY PROGRAM Q&A

- Q - Our attorney said in a class action we do not have to take any action now, that we will be able to benefit when a settlement is reached.**
A - The PFAS cost recovery program is not a class action, it is multi-district litigation and requires a utility to register onto the litigation in order to benefit from a settlement. Register now to ensure your utility is protected. There is no cost to register.
- Q - What are the primary sources of contamination of drinking water supplies?**
A - These manmade "forever compounds" are now in the environment and in items we come into contact with daily. The primary sources of contamination of water sources are airports, military bases, firefighting or fire training facilities, landfills, and manufacturing. Subsequent contamination has been identified from the spreading of wastewater bio-solids.
- Q - How will a settlement be dispersed?**
A - That is dependent on the settlement and decision by the Court. The goal is to establish a fund that will address current and future expenses associated with PFAS contamination. Napoli Shkolnik has vast experience in representing utilities and local governments in major litigation such as the PFAS cost recovery program.
- Q - We have detections but they are under our state's standard, should we register anyway?**
A - Yes, protect your utility from a potential financial burden and there is no cost to register. The EPA is in the process of establishing an enforceable standard at the federal level as well as declaring these substances as a hazardous waste, which will impact wastewater effluent standards and disposal of biosolids.
- Q - What if our board or attorney has a question or concern?**
A - We are available to address any questions, issues, or concerns your board or legal counsel may have. Our goal is to represent your best interests and achieve a settlement that will prevent or lessen the expenses the PFAS requirements will place on your rate payers.
- Q - Is there really no cost to our utility? Sounds too good to be true!**
A - There is zero cost to your utility to register onto the cost recovery rolls. The law firm absorbs all of the upfront cost and if there is no settlement, specifically for your utility, there is zero cost to your utility.



Thank
you

Thank you to all our
attendees, vendors,
presenters, sponsors and staff
for making the 2023 NvRWA
Conference a success!

**Be on the look out for Early Bird
Registration starting in July 2023!**



Best Tasting Water Winner
Cam McKay



Water Operator of the Year
Carl Siemer



Wastewater Op of the Year
William Robbins



New Wastewater Operator of
the Year | Jeff Michalak



New Water Operator of the
Year | Josh Leavitt

25 | Water Logged | Spring 2022

Administrative Staff of the
Year | Ronnie Rector
(no photo available)



Manager of the Year
Peter Baratti
www.nvrwa.org | Water Logged | 25

2023 NvRWA Award of Excellence Winners –

Manager of a System of the Year – Peter Baratti
Wastewater Operator of the Year – William Robbins
New Wastewater Operator of the Year – Josh Leavitt
New Water Operator of the Year – Jeff Michalak
Water Operator of the Year – Carl Siemer
Administrative Staff Person of the Year – Ronnie Rector

2023 NvRWA Best Tasting Water Winner

Cam McKay with Glenbrook Water

Wastewater Horseshoes Winners –

1st place winner – Maria Williams
2nd place winner – Bryan Kambitsch
3rd place winner – Paul Winn





Conference Feedback Survey have been emailed out!

If you attended our 2023 NvRWA Conference back in March, **WE** want your feedback. Your opinion matters to us, so that we can make future conference BETTER for YOU!

Please contact Sheila @ (775) 841-4222, if you did not receive a survey.

2023 Conference Contact Hours are coming, we've been working very hard getting them input into the new system.

Thank you for your patience!

2023 NvRWA Conference Recap

By Sheila Guzzetta and Tabatha Guzzetta, NvRWA Staff

The 2023 NvRWA Conference is now officially wrapped up. Thank you again to all our attendees and vendors that participated in this year's conference. We had a record number of attendees and vendors attend this year. Since we had such a great success with the registration and scanning process for sessions, we will be using the same scanning and registration system next year. We learned a lot of lessons this year that will make next year's conference even better.

Thank you to everyone that participated in the Vendor / Attendee Questionnaire. We had a total of 12 attendees and 28 vendors that participated. Our goal for next year is to have 100% participation from the attendees and the vendors. We plan to provide a CASH PRIZE and possible contact hours for each contact made with the vendors.

Contact Hours are coming! We are excited to announce that we have been working on a new, more convenient way to access your contact hours moving forward. Below you will find a step-by-step guide on how to access your contact hours transcript via our website, www.nvrwa.org.

The guide will allow you to reset your password and access your member portal. The email to reset your password is the email that you provided when registering for the 2023 NvRWA Conference and Trainings. This process should only take about 2 minutes. We will be sending out an official email with the step-by-step guide and how to video once all 2023 NvRWA Conference Contact Hours have been entered into the system.

We look forward to seeing you next year at the 2024 NvRWA Conference & Expo. Please feel free to reach out to us for more information or if you have any issues with accessing your member portal.



Wastewater Horseshoes 1st Place " Maria Williams



Guest Speaker Mark Amodei

Step-by-Step Guide on How to reset your password and access your member portal

Head on over to <https://www.nvrwa.org/>

Click on Access your Member Portal (blue banner at the top) or at the Top of the Page



Click on forgot password

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To: Sheila M. Guzzetta

Reply Reply All Forward

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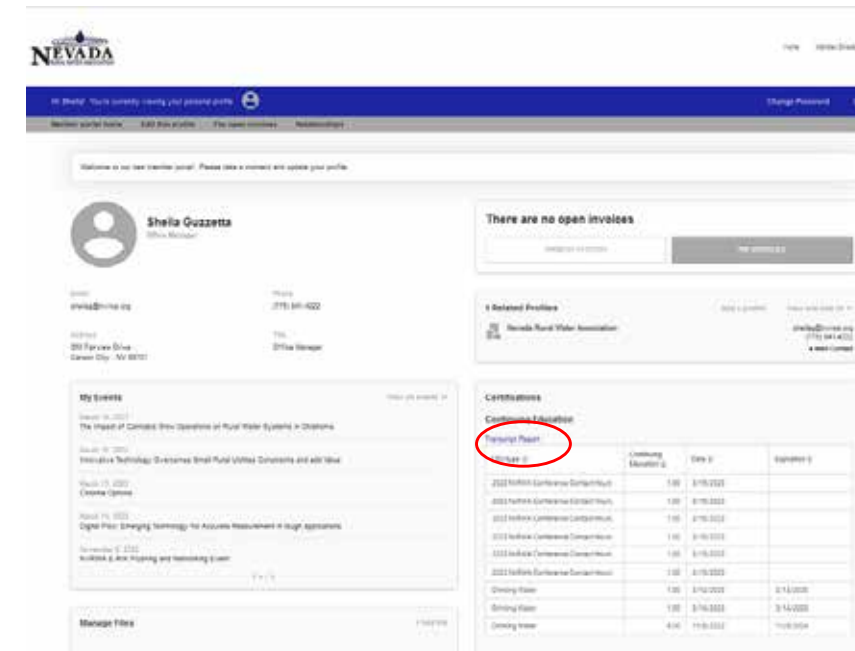
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After you've reset your password you will receive a confirmation that your password has been reset

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Now you may go back to www.NvRWA.org, click on Access your Member Portal, enter your email & password you just created.

Congratulations, you now have access to your NvRWA Member Portal. Here you will be able to update contact information, view events you've registered for and ACCESS YOUR CONTACT HOURS TRANSCRIPT REPORT.



If you have any question or need any help with accessing your member portal, please contact Sheila at (775) 841-4222 or by email at SheilaG@NvRWA.org

Mount Charleston Installs Submersible Pumps on Boreline Flexiriser

Dean Foster – Sales Engineer

On a cool December morning in the beautiful Nevada mountains just north of Las Vegas, snow glistens in the distance, and all is quiet. The only sounds cascading through the valley are coming from diesel trailer pulled behind a RWD Ram2500, and a light duty mobile crane.

The purpose of this expedition is to install a submersible pump along with hundreds of feet of 3" drop pipe into a well at a depth of 450' on Mt. Charleston in the Spring Mountains National Recreation Area.

To reach the well, the vehicles had to conquer steep declines, sharp cliffside turns and a fair amount of off-roading through brush and other wilderness. To say that bringing twenty-three 20' sections of pipe into this location would be "difficult" would be an understatement. Luckily, this install was to be completed using Boreline FlexiRiser.

Boreline FlexiRiser is an alternative drop pipe to the steel pipes used with submersible pumps. Advantages in this case are the ease of mob and demobilization as well as the physical effort of lower the pump into the well.

The reason is that Boreline FlexiRiser is available in one, continuous length so lowering it into the well is quick and easy as because there is no lifting heavy 20ft sections of steel pipe, safe.

The 450ft length of Boreline was on a single drum on the back of a pull-behind trailer, towed to location. After clearing an area in front of the door to the pump-house, the trailer was backed into position as close to the well as possible.

When the trailer was in position and the power cable was spliced, the FlexiRiser Pump Puller began lowering the pump and motor assembly into the well.

Within 20 minutes all 450ft of Boreline FlexiRiser the pump was in position. Due to the location of the well, and limited access to the pump house, this install was a perfect candidate for Boreline FlexiRiser which makes drop pipe installs, pump replacement and removals, and material transport to job site, faster, safer and easier than ever before.



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Inflation: A Financial Shock to the System for Low- and Middle-Income Homeowners

By Bill Coffey

Inflation has soared higher than any point in the last four decades, reaching 7.5% and spurred by supply-chain issues. The cost for food, housing, electricity, and vehicles has increased. Used car prices rose by more than 40% the past couple years and food prices rose by 7%, with the cost of meat and eggs leading the increase. Energy prices including gasoline, oil and electricity increased by 27%. These increases have added up to \$250+ a month in living expenses. The cost of healthcare and childcare also has increased.

Increases in supply, labor and transportation costs are forcing businesses small and large to pass on a portion of these costs to consumers. While wages continue to rise due to a labor shortage, wage gains are being erased by inflation, with real average hourly earnings declining 2.8% from August 2021 to August 2022.

There is a difference between the way inflation impacts wealthier households and low- and middle-income (LMI) households, known as inflation inequality. Higher-income families can cut back on luxury spending during inflation, but LMI families spend a larger portion of their household incomes on necessities like food and gasoline, meaning they have fewer places to cut spending. The Department of Agriculture estimated that a "thrifty" average food budget rose from \$671 in December 2020 to \$863 in December 2021, and those in the lowest fifth of income earners already spend more than 80% of their income on housing, leaving a razor-thin margin. Utility costs have increased by a third, and gasoline has increased by a staggering 58%.

As inflation takes a bigger bite out of LMI household incomes, there is very little (if anything) that local level municipal officials can do but watch. So, what happens when a LMI household is hit by an economic shock or a large, unexpected expense?

Even before this crushing round of inflation, 40 million Americans were living in poverty, with 18.5 million living in extreme poverty, or having an annual income of \$12,000 or less for a family of four.

Over 40% of households don't have the savings to weather an economic shock like a high water bill or broken water or sewer line.

The ServLine Leak Protection Program by HomeServe can help to protect customers from unforeseen expenses related to water leaks. When a customer receives an abnormally huge water bill resulting from a leaking pipe or fixture, this program covers the overage.

The program also offers optional repair/replacement plans for leaking water and sewer service lines, which can also be a considerable unexpected expense. Plan holders have access to a repair hotline 24/7/365 and a nationwide network of pre-vetted, licensed, and insured contractors. When a plan holder has an issue, they make one call, and the program dispatches a qualified contractor to their home. There is



no "call out fee" or deductible. The program pays network contractors directly, so there is no need for the resident to pay out of pocket and wait for reimbursement.

In addition to offering financial protection to customers, ServLine can also save a utility time and money while shielding them from bad debt. The program insures utilities against financial loss resulting from customer water leaks and provides a turnkey administration of leak adjustments that allows utilities to devote limited resources elsewhere. Since 2014, ServLine has shielded utilities from \$24 million in leak adjustments. The program works with over 200 participating water utilities and is supported by the National Rural Water Association and 31 State Rural Water Associations.

For more information on how we can help protect your customers from financial shock, please contact us at watersolutions.homeserve.com/servline-leak-protection/.

About the Author

Bill Coffey currently serves as Regional Account Director, Business Development. He is responsible for working with municipalities and utilities to educate and develop the best program options for their residents. Prior to HomeServe, Bill spent 11 years in sales and business development roles working for water meter and Automated Meter Reading / Automated Metering Infrastructure (AMR/AMI) companies. In these roles he has worked with water municipalities and utilities of all sizes throughout the Western United States. Bill received a Bachelor's Degree in Marketing from Western Illinois University in Macomb, Illinois.

New OSHA Mandates for Water Tank Cleaning

By Mark Moore

Whether you're a small, medium, or larger water district, when it's time to get your water tank(s) cleaned & inspected so that you keep your tanks (bolted, welded, concrete, or Lakes/Dams) storage facilities properly maintained and in compliance with State Agencies. You face one of two paths; you can completely empty your storage facility and do dry inspection, or you hire a OSHA Complaint Commercial Certified dive team to clean the floor and provide a report, along with a video and pictorial findings. Diving your storage needs have shown to be 1/4 the costs and less invasive to your storage facilities as you don't have to drain, set up scaffolding, lighting, replacement of gaskets, nor do you have to take you tank out of service for long periods of time.

Whichever path you choose they are both effected by the OSHA29 Subpart T section of OSHA's safety regulations. You could choose to read the complete standard here www.ecfr.gov/current/title-29/subtitle-B/chapter-XVII/part-1910/subpart-T. In a nutshell it states that all members (three minimum for any dive) of the dive team must be trained in all aspects of commercial diving. The problem for you the water district is that most proclaimed diving firms, engineering tank inspection firms that do dive work, and the such do not meet this the current OSHA regulations as they believe that since they are open water certified, that they are in compliance with OSHA regulations which they are NOT.

The first difference between a trained Commercial Diver and all other diver certificates is that a Commercial Diver has gone to an accredited school a minimum of seven months, focusing full-time on training on all the hazards, complications, tooling, and equipment for the certification. The Commercial Divers are trained for every possible danger working in this environment. Note the difference in a open water / PADI certificate is a minimum certificate for recreational diving. It can take as few as two days to receive this certification at a local resort or vacationing dive shop.

Previously, OSHA 29 regulations was the tank cleaning industry typically comprised of one commercial diver and two non-commercial divers (one diver is the standby diver and the other is the dive supervisor who handles all the equipment from the truck). The most recent regulations state that all three divers MUST be from an accredited Commercial Dive academy. We are finding many companies that still have not complied with this standard. I have even had one company tell me that they don't have to comply with this mandate as they are "grandfathered" around it. I have personally spoken to an OSHA representative and was informed that OSHA does not grandfather around safety.

The below letter from PADI acknowledges the additional training required to work underwater.



Association of Diving Contractors International

5206 FM 1960 W. Ste. 202

Houston, TX 77069

Phone: (281) 893-8388

Fax: (281) 893-5118

As a recreational training organization, PADI courses and programs prepare people for leisure diving. Upper-level programs such as PADI Divemaster and PADI Instructor prepare divers to train and supervise recreational divers. PADI courses (at any level) are not intended, nor designed to prepare people for commercial diving activities.

They do not suffice to meet 29 and 46 CFR regulations directed to the conduct of Commercial Diving Operations.

It is our opinion that those who hold PADI certification credentials and wish to enter into commercial diving employment (such as underwater work include umbilical, light or heavy weight equipment, etc.) need to demonstrate documentation of additional specialized training and expertise to do so safely. Recreational diving certification from PADI alone should not be considered adequate training in bidding for underwater work of the nature described by your standards of operation. PADI encourages the recreational diver to understand his personal training and experience limitations and obtain additional specialized training and experience if interested in pursuing other diving activities outside the scope of their experience.

One major risk that is not worth taking on is the liability of associated with this field. Our industry typically carries up to \$3,000,000 in insurance on workman's compensation and property damage, as well as \$1,000,000 in vehicle insurance. Now let me put you through a scenario: Your diver or standby diver is in a tank and is injured. The insurance company in their diligence asks for the divers certificates to ensure that they were qualified and trained to work in that environment and it is discovered that the crew is simply trained as PADI recreational divers. This means that the dive company has "WILLFULLY" subverted OSHA safety mandates. Does anyone actually think that the insurance company will be a good ole boy and pay off the claim? Not a chance, the liability has just been pushed onto your water district. Some uncertified diving firms and even water districts believe that their General Liability Insurance or Errors and Omissions insurance will cover them in the event of an accident or worse, death during diving a tank. Please note that there is no insurance for 'WILLFUL' violations of OSHA, and that the injured party has been awarded large settlements (tens of millions) for Willfully not following OSHA regulations. Before you hire a dive team for your future cleaning and inspection, always ask for the divers ADCI cards, Army Corp of Engineers Certifications, and/or US Military Commercial Diver certifications. Do not accept anything else. If you have questions, please call me and I will do my best to answer.

About the author:

Mark Moore has spent over 20-years in the Water Tank industry servicing both Steel and concrete tanks for inspections, rehabilitations and Retrofits. He has been an Owner of Blue Locker Commercial Diving for 3-years. He can be reached at mark@bluelockerdiving.com, his cell number is 951-501-6935.

Source Water Protection Assistance for Rural Communities

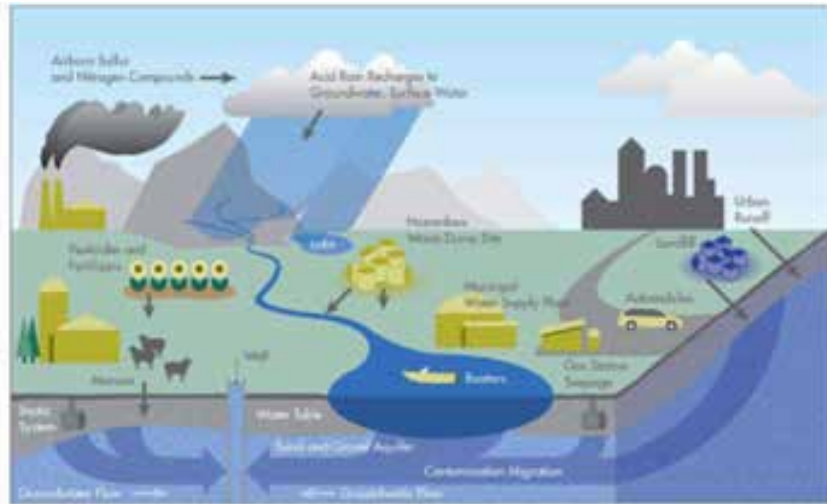
Christopher E. Berkey, Source Water Protection Specialist

Safe clean drinking water is essential to maintaining a thriving community; clean water provides for economic development, agriculture, residential growth, recreation, and tourism. Having reliable source of water ensures a community's future, but how can a community protect their water? Through the development of a source water protection (SWP) plan a community can evaluate their source water, determine potential sources of contamination, and advance measures to protect their source water.

Is SWP mandatory or regulated? Source water protection is a voluntary effort that is encouraged and supported by regulatory agencies without being a regulated activity.

A community is not alone in developing and implementing a source water protection plan. "Through National Rural Water Association (NRWA), full-time rural source water technicians with practical experience are hired. The technicians work with specialists from the USDA Natural Resources Conservation Service (NRCS) and state and county Farm Service Agency staff, to identify areas where pollution prevention is most needed.

Once areas for pollution prevention are identified, technicians work with state rural water associations to create local teams made up of citizens and individuals from federal, state, local, and private organizations. These teams collaborate to create a Rural Source Water Protection plan to promote clean source water." 1 Through this program, Nevada Rural Water Association (NvRWA) has a Source Water Protection (SWP) Specialist on



staff to assist communities develop and implement source water protection plans at no cost to the community.

The NvRWA SWP Specialist will work with communities to delineate source water protection areas, form a SWP committee, facilitate meetings, and implement their SWP goals. These plans are tailored to each community's unique SWP circumstances and goals. For more information regarding the Grassroots Source Water Protection Program in Nevada please Contact:

Christopher E. Berkey
Source Water Protection Specialist
Nevada Rural Water Association
363 Fairview Drive
Carson City, NV 89701
Office: (775) 841-4222
Cell: (702) 540-6107
Email: christopherb@nvrwa.org



"Grassroots" Source Water Protection Program (usda.gov)



The Challenges of Staffing

By Joe Mathein, NvRWA - Training and Technical Assistance Specialist

When referring to your company, what do you identify as your most critical resource?

You and your staff are the resource that make or break your water system. How much of your budget is dedicated to employee development? Where would your district be without the staff that you have come to count on? How do you hire desirable candidates when there is an opening? As a GM or board member in rural Nevada, you are challenged to develop a job posting that often asks for a certified operator to work for less than the market value of that certification.

Before rolling out the ad for your new position, there are a few items that should be looked at.

Are the position qualifications clear and defined in the request for application? Where will it get advertised to attract the most qualified candidates for the position you are looking for? If you have a large enough community and surrounding population, then local advertising is a good start. Also, professional organizations usually have a tab for employment opportunities and links (Nevada Rural Water Association (NvRWA), AWWA, BC Water News, NWEA to name a few). Location can also be a factor in your hiring strategies. There are some people who have intrinsic interests that may be the deciding factor for them choosing your district. Can you distinguish your system in way that would attract the candidates you're looking for?

Is there a key to hiring and retaining the right people for your water system?

Is there one key thing or is it a "package" deal? Is your job description and requirements (i.e., duties, certification, knowledge) appropriate for the position? Do you offer competitive benefit packages, wages, working hours, and/or incentives? Benefit packages that may be more attractive could contain supporting features for your salary offering. Can your district offer a benefit package in lieu of a higher wage that could be a way to entice a qualified and certified operator that has a family? Can you structure a benefit package that utilizes features that entice new employees and strengthens your retention of existing employees? This is an area that is looked at more by today's prospective employee.

The most common problem in rural Nevada water and sanitation systems is the lack of population to support salary budgets that are competitive. The revenue that is collected from the system's customer base is usually just enough to pay a skeleton crew and the actual costs of keeping the system functioning. The ability to increase salaries or build dynamic benefit packages can be challenging in almost any district. In the smaller rural districts, it is almost impossible without raising rates to a level of community discontent.

Is it all just luck?

Is there an element of luck involved? Some say, "It is better to be lucky than good." I have always viewed luck as the meeting of an opportunity with preparedness. How does that apply to hiring and retaining quality personnel? Timing, personal motivation, future developments are all contributing factors for the potential candidate to look at your job opportunity and respond. These can be attributed to the percentile or probability in numbers or... just luck. Was it luck they sat down and found your job flyer? Luck they just had a newborn and need a better benefit package? Luck that they decided they wanted to live in a community close to their family or some other motivating locale? Or, were you prepared with your job posting? Maybe it was developed properly to make this candidate pull the trigger to apply. Luck.

Can your employees find satisfaction and security in their position?

The idea behind basic needs satisfaction is characteristic to the effectiveness of your employees. The satisfaction of the employee's basic needs can develop a base for your employee to be more effective and continue to grow. Without those basic needs satisfied, the employee struggles to be effective and is continually looking for ways to satisfy those basic needs. More often the employee leaves for a position that, in their opinion, helps them meet those needs.

Nobody takes a job and hopes that it will fail so they can look for another. Well, there may be some who look at a position as a steppingstone toward a higher goal but most just want financial security with safe and fair standards.

Well, why can't your system be that goal?

There is no one attribute for defining this. Something I have realized throughout the years is that the first impressions by your new employee are the most lasting and develop the perception of you and your company as that employee evolves within your system. Was your selection process professional and impartial? Was the new hire orientation and training delivered properly by the HR representative? Were the job duties and expectations communicated clearly and fully understood?

Failure to establish these in a professional setting can often lead to a poor perception by the new employee and either the job performance is sub-standard or standard at best. The employee usually develops a transient attitude and will seek out other employment opportunities. Why is this? Fear of missing out on an opportunity with an employer that has the appearance of a higher level of professionalism and the potential of higher wages, probability of long-term employment, advancement opportunity, better benefits, etc. can be effective reasons for their desire to leave.

The Challenges of Staffing (continued)

The reality is that your system could be just as well equipped with identical wages, benefits and will have very similar length of employment, and opportunity for advancement. Essentially, the same needs fulfillment, but perceived differently.

Professional conduct can be difficult when your HR department is also the billing department, the front office, accounting department and whatever else needs to be done. But it can and will be done. It begins with building the perception you want your staff, your community, and other organizations to see.

Perception by your employees, both current and potential, is a powerful decision builder. Do you think it could all be solved by a higher wage scale? Sometimes yes, it can be. Most of the time that can't be offered due to limited revenues, though. Can the staff feel secure? Are their basic needs being met? Are they respected by their peers, management, and the community? Can they see a pathway to self-improvement and long-term employment, essentially satisfying their hierarchy of needs? This develops the motivation to stay or go, apply or pass.

How can you build that pathway to positive perception and basic needs satisfaction? Some important concepts to keep in mind for retaining the key personnel on staff and attracting new employees:

***Training programs to develop and refresh skills and knowledge required for the operation of the system and improvement of your staff**

***Methods for retention and communication of institutional knowledge essential to the system's operation**

***Performance evaluations that are designed to evaluate and provide clear paths for improvement and recognize exemplary performance**

***Foreseeable and attainable positional improvement**

***Flexible workplace parameters**

While each system is characterized by its own community, facilities, and culture, it is the task of the decision-makers to develop their staffing strategies according to its needs and abilities. There is always help for many factors that are associated with hiring and retaining employees. Nevada Rural Water Association offers technical assistance and training, rate reviews, financial planning, Capital Project assistance, and other capacity improvement ideas. The Bureau of Safe Drinking Water has facility managers that can offer assistance and guidance for challenges faced by Nevada's rural water and waste-water systems as well.

For more information, please call 775-841-4222.

Joe Mathein
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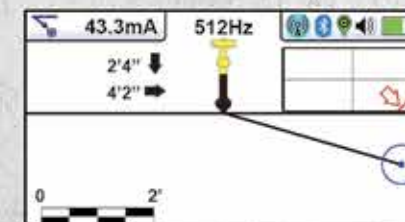
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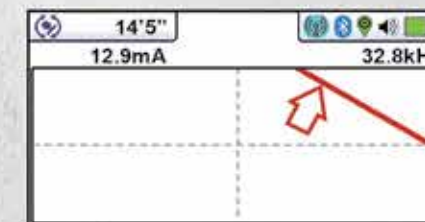


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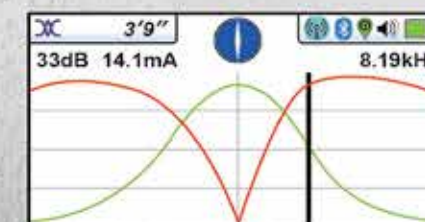
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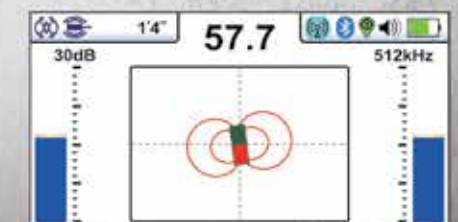
^ **Vector Locate** - shows orientation, line position, and distance relative to the locator in 3D



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