

WATER LOGGED

SPRING 2021



THE OFFICIAL PUBLICATION OF THE NEVADA RURAL WATER ASSOCIATION

One company.
One community.



Building a future together.

Founded in 1964, Western Nevada Supply has grown successfully over the past five decades by adhering to the philosophy that good service is people-oriented, loyal to its customers and proactive in the community. We're here to make a positive difference in people's lives – whether that means supporting local kids and charitable organizations or providing the highest quality service as a one-stop supplier for contractors and builders throughout Nevada and California.



950 S. Rock Blvd., Sparks, NV • [775] 359-5800 • [800] 648-1230 • www.goblue team.com
SPARKS • SUSANVILLE • SOUTH LAKE TAHOE • ELKO • CARSON CITY • TRUCKEE • BISHOP • WINNEMUCCA
Plumbing • Water Works • HVAC • Irrigation • Hydronics • Industrial (PVF) • Tools • Kitchen and Bath Showroom



NvRWA President
Cameron McKay, Kingsbury GID
NvRWA Vice-President
Nathan Adams, Pioche Public Utilities
Secretary and Treasurer
Grant Perkins, Panaca Farmstead Association
Directors
Joe Davis, Moapa Valley Water District
Jason Wierzbicki
Storey County Public Works
Associate Director
Barney Arneson, Western NV Supply

Staff

Executive Director
Stacey Van Diest
Administrative Assistant
Jaemi Hendrickson
Training and Technical Assistance Specialist
Joe Mathein
Max Sosa
Source Water Protection Specialist
Kelli Nevills
Wastewater Technical Assistant
Michael Boney
Circuit Rider
Lance Goodman
Robert Weyher

SPRING 2021

WATER LOGGED

THE OFFICIAL PUBLICATION OF THE NEVADA RURAL WATER ASSOCIATION

Features

Humboldt County Nevada Places Arsenic Removal System On Line..	5
Spare the Water – Don't Drain the Tank ..	6-7
Sludge Volume Index ..	8-9
Tools for AWIA Compliance ..	10-11
Affinity Program.....	12
NvRWA Annual Conference Schedule.....	13-17
Wastewater System Restart or Initial Start Up?.....	18-19
The Emergency Callout: A Guide To Handling Emergency Repairs.....	20-21
The New Lead and Copper Rule.....	22-23
Water and Climate Change.....	24-25
Cleaning, Disinfection and Flushing of Drinking Water Storage Tanks.....	26

Advertisers

Black Mountain Software..	9
Heggen Lentz ..	18
Instrument Technology Corporation ..	27
Pittsburg Tank & Tower Group.....	7
RCI - Resource Concept Inc. ..	23
USA Bluebook ..	28
Western Nevada Supply.....	2



Send editorial and advertising inquiries to:
NvRWA
363 Fairview Drive
Carson City, NV 89701
P: (775) 841-4222 | F: (775) 841-4243
jaemih@nvrwa.org

Our Mission:

"To provide the best available technology, resources, support, assistance and training to our members serving Nevada Communities."

www.nvrwa.org | Water Logged | 3

NEVADA RURAL WATER ASSOCIATE MEMBERS

AMERICAN AVK COMPANY

Charles "Chip" Reimer
(775) 552-1400

BIOLYNCEUS LLC

Kathy Kelly
(970) 586-3391

BLACK MOUNTAIN SOFTWARE, INC.

Heather Neff
(800) 353-8829

BROADBENT & ASSOCIATES, INC.

Scott Keeseey
(775) 322-7696

CAROLLO ENGINEERS

Karen Steed
(702) 792-3711

CASHMAN EQUIPMENT

Mike McGraw
(702) 633-4683

DAY ENGINEERING

Dean Day
(775) 293-1743

DN TANKS

Valerie Milbourne
(619) 440-8181

DR. PIPELINE

Jenna Barnes
(208) 860-8033

EJ USA, INC.

Kirk Stoltzner
(509) 209-0353

ENERGY LABORATORIES, INC.

Shari Endy
(406) 252-6325

EOS POSITIONING SYSTEMS

Jean-Yves Lauture
(450) 824-3325

FARR WEST ENGINEERING

Brent Farr
(775) 851-4788

FERGUSON WATERWORKS

Mike Erlendson
(775) 856-7083

FORD METER BOX

Kolby Campbell
(916) 402-6120

G3 ENGINEERING

Jim Billings
(916) 797-1880

HEGGEN LENTZ ENGINEERING

Ingrid Heggen
(530) 584-2599

HOSE SOLUTIONS

Angelica Rogers
(480) 607-1507

HUBBELL - QUAZITE/HOTBOX

Greg Isaacson
(760) 305-3149

HYDRO RESOURCES WEST

Shane Nelson
(775) 623-5259

INDUSTRIAL SERVICE & SUPPLY

T.G. Bliss
888-253-7122

INSTRUMENT TECHNOLOGY CORPORATION

Stan DuBois
(800) 519-1998

LANDERS CONSULTING, INC.

Mike Landers
(415) 302-1883

LUMOS AND ASSOCIATES

Mike Hardy
(775) 827-6111

MASTER METER, INC

Jennifer Nunez
(817) 842-8000

MCGINLEY & ASSOCIATES, INC

Joseph McGinley
(775) 829-2245

PITTSBURG TANK & TOWER

Kris Wilkerson
(270) 826-9000

POOL/PACT

Zaria Hanses
(775) 885-7475

RESOURCE CONCEPTS, INC.

Jill Sutherland
(775) 883-1600

ROSE WATER SYSTEM MANAGEMENT, LLC

Paul Rose
(775) 530-7266

RYAN PROCESS, INC.

Dave White
(925) 837-0670

SCHROEDER LAW OFFICE, P.C.

Therese Ure
(775) 786-8800

SHAW ENGINEERING

Steve Brigman
(775) 329-5559

SIGNA MECHANICAL

Joseph Tortorello
(949) 548-1125

SIERRA ENVIRONMENTAL MONITORING

Joe Nava
(775) 857-2400

SPB UTILITY SERVICES, INC

Kirk Peterson
(775) 329-7757

SPIESS CONSTRUCTION COMPANY

Barry L. Matchett
(800) 292-6260

SUEZ ADVANCED SOLUTIONS

Sarah Johnson
(678) 705-6702

SUNRISE ENGINEERING, INC.

Joe Phillips
(435) 652-8450

TECHNOFLO SYSTEMS

Steve Huth
(559) 783-1207

TESCO CONTROLS, INC.

Jerry Horst
(916) 395-8800

USA BLUEBOOK

Earlene Langston
(847) 377-5162

UTILITY SERVICES, INC.

Krista Daines
(702) 556-8069

WESTERN ENVIRONMENTAL TESTING LAB

Nick Ross
(775) 355-0202

Humboldt County Nevada Places Arsenic Removal System On Line

By Robert Weyher

My Father's family originally settled in California in 1848, travelling along the course of the Humboldt River as it meanders thru Northern Nevada. As a child, my family often traveled along this same route between Salt Lake City and Groveland, California, where my Uncle had a Cattle Ranch. By the time I was eighteen I was an avid student of the Nevada Basin and Range Country.

John Mc Phee, a Princeton University Professor's book, Basin and Range, introduced me to the geology of the Carlin Trend. In this book I became aware of the symbiotic relationship between arsenic and gold. Gold mannerization occurs when arsenic is present in the soils. The present robust economy in Northern Nevada could not have occurred without high concentrations of arsenic below our feet.

As the water table lowers in many Northern Nevada communities, these high concentrations of arsenic leach into culinary and agricultural wells. The lower the wells are drilled, the concentration becomes higher, often many times greater than the current level of arsenic allowed by the EPA of, 10 parts per billion.

Humboldt County has just completed an Arsenic Removal System at one of its water facilities in a remote Northern township. The system is feed by two municipal wells. Overtime and as EPA regulations on arsenic levels have lowered, the concentrations increased to well above the EPA maximum. The County Public Works Department engaged Farr West Engineering Company to design a filtration system to lower the level of arsenic present in the water system to below the EPA standard.

This month the new filtration system came on line. Startup of the plant was completed the week of March 22nd to the 26th. Starting in April the townships water supply will be in compliance with the EPA standard. This milestone was accomplished utilizing a pressure treatment system

manufactured by Hungerford and Terry, Inc, of Clayton, New Jersey. The system utilizes a bottom layer of Ferrosand or Manganese and a top layer of Andradite. Ferric Chloride is injected into the pressurized tank using a solenoid pump and then mixed using an internal static mixer. The system is currently treating 25,000 gallons of water per hour.

Overseeing the startup were Don Kalkoske, Humboldt County Public Works Director, and Eric Haslett, Water Maintenance Technician. Assisting them were representatives from the Contractor, the Design Engineers, the Manufacturer and the Nevada Rural Water Association. The Operations and Maintenance Manual for the new Treatment Plant was compiled and written by Mike Boney of the Nevada Rural Water Association. Project Funding was provided by the USDA.



NvRWA NOW OFFERS

SMOKE TESTING

Why do you need to do smoke testing on your collection system?

If you aren't doing it, you need it! Smoke testing is a simple & inexpensive way to find Inflow & Infiltration to your collection system from ground water & rain events. I & I causes hydraulic overloading in your plant, it can bring in massive amounts of grit & dirt into your treatment plant & cause you to have to construct a new plant years before it is really necessary. It can also cause water to backup into homes & cause sanitary sewer overflows. You may have it increase the size of sewer interceptors to carry excess water to the plant. Sanitary sewer overflows are violations & also a health risk, as well as possibly polluting groundwater & waterways.

To learn more about what to look for, the benefits and how to get started with NvRWA Smoke Testing, contact the NvRWA office for details.



Spare the Water – Don't Drain the Tank

Erin Schmitt, Technical Writer/Media Director, Pittsburg Tank & Tower

Water is a precious commodity. It would seem water is abundant since it covers more than two-thirds of the Earth. However, only about 2.5 percent is freshwater, including glacier ice and underground water, according to the United States Geological Survey. So, only about 1 percent of the world's water supply is readily available.

In the United States, some communities have better access to water than others, depending on how readily available freshwater is, the quality of the water, and the state of the infrastructure storing and delivering the water to residences and businesses. Most communities store water for drinking, fire protection, and process purposes, usually in aboveground or underground storage tanks.

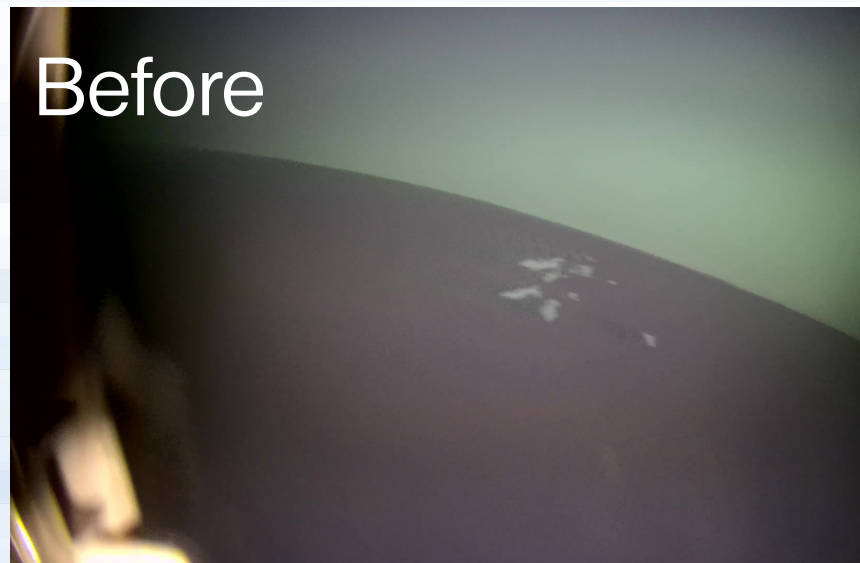
The National Fire Protection Association calls for inspections on fire protection tanks without cathodic protection every three years at a minimum. If tanks do have cathodic protection, they can go five years without inspections. The American Water Works Association also recommends that storage tanks be inspected every three to five years, at least. Tank inspections help gauge the integrity and safety of a storage tank. Professional inspectors also have a worklist of applicable AWWA, NFPA, and other codes that they refer to make sure the tank is up to code.

While inspecting tanks is necessary to ensure their integrity, it's costly and wasteful to take a tank out of service. If it's a fire protection tank, a backup must be immediately available in case of a fire. That might mean putting an old tank temporarily back online or employing a portable tank – which is an added expense. If it's a potable water tank, it's not quite as critical that the water is immediately available, so backup tanks are rarely necessary.

Over the past decade, people have been increasingly turning to remotely operated underwater vehicles to inspect or clean their water storage tanks. The compact robots can be easily sanitized and dropped inside a full water tank without emptying it and taking the tank out of service. Inspectors don't have to set foot inside the tank – preventing any potential confined space safety hazard. Instead, they remotely control the compact robots from outside the structure.

Operating an ROV is not dissimilar to maneuvering a remote-control plane – except instead of keeping direct eye contact on the robot, the inspector will look at a screen. Equipped with a camera, the robots move methodically to capture video of the tank's interior condition. The images are then projected on the screen so that the inspector can see them.

Companies may own ROVs or drones, but they may not necessarily have a background in inspecting tanks. Plenty of tank inspection companies do have that background while still offering affordable ROV inspections and cleanouts.



ROVs can clean most aboveground and underground storage tanks. Certain styles of tanks – those with bolted floors, an extremely steep bowl, or ones equipped with baffles or other interior equipment that a robot could get hung up on – should be cleaned out using a different method. If there is too much sediment in a tank, the robot might also stall and be unable to clean. It's the contractor's responsibility to explain and warn of any potential problems. Contractors should also recommend what style of cleanout would work best with the tank.

Trained and licensed divers can also inspect and clean tanks without having to drain them. Much like the robots, the divers disinfect their diving suit and equipment before entering the tank to prevent outside contamination. Divers are also equipped with a video that can record what the tank's interior looks like. Having eyes in the tank can be invaluable. The divers can spot smaller trouble spots that the robot might pass over. They will also be able to see better through the cloud of mud and sediment that's stirred up. A dive inspection will take longer on average than one performed by a robot, but it will be thorough. Divers can clean tanks faster than a robot, normally.

ROV inspections are quicker than dive inspections, yet they are still remarkably efficient and economical. Due to the hazards of having a person in a confined space, it's safer to have a robot perform an inspection rather than having someone inside the tank. It is up to the owner to decide between diver and robot.



Whether a robot or diver
inspects the tank, either
method can help conserve
valuable water

Both divers and ROV inspections utilize cameras. The quality of the images captured, whether that's by a diver or a robot, will depend on how murky the water is inside the tank. If the tank is full of sediment, dust and particles will likely be stirred up so that it's hard to get clear images. Since a diver is much larger than a robot, they can stir up more dust. But the diver can also better adapt how they are moving in the water so that they don't disturb the sediment.

Whether a robot or diver inspects the tank, either method can help conserve valuable water.

Sludge Volume Index

By Michael Boney, NvRWA Wastewater Technical Assistance

In the previous articles, we took a look at the settleability test and the Mixed Liquor Suspended Solids. The outcome of these performance procedures can be used to give more information on the plant performance.

Estimating the amount of sludge moved into the sludge holding tanks and / or the aeration basin is a control process to maintain the health of the system. The operator is able to determine the amount of the activated sludge returned into the aeration basin or to remove for wasting.

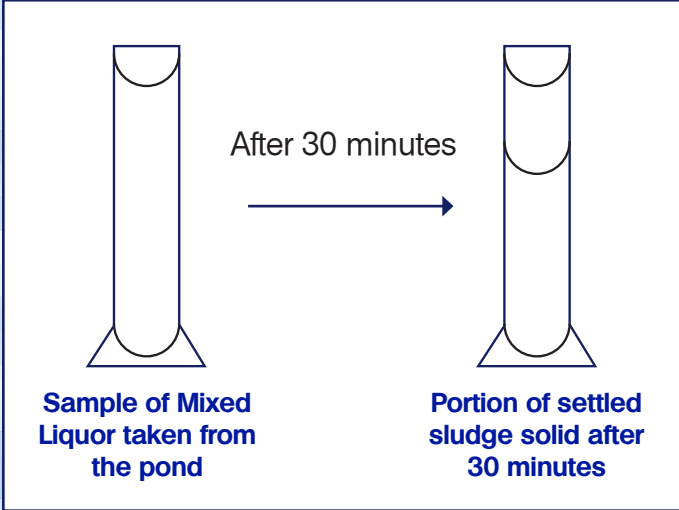
The Sludge Volume Index, SVI, defined in the 2019 Office Water Programs, is

‘A calculation that indicates the tendency of activated sludge solids (aerated solids) to thicken or to become concentrated during the sedimentation/ thickening process. SVI is calculated in the following manner:

1. Allow a mixed liquor sample from the aeration basin to settle for 30 minutes;
2. Determine the suspended solids concentration for a sample of the same mixed liquor;
3. Calculate SVI by dividing the measured (or observed) wet volume (mL/L) of the settled sludge by the dry weight concentration of MLSS in grams/L.’

The collection of the mixed liquor for the settling test is taken from the effluent of the aeration basin. A larger volume than 1 liter of mixed liquor is collected. The sample is taken to the lab where 1 liter of sample is poured into a graduated container.

The sample is left to settle for 30 minutes. The volume of settled sludge is recorded.



The next step is to determine the MLSS concentration from the sample collected. The MLSS concentration can be determined with two different methods. One method can use a MLSS meter to determine the concentration. Otherwise, using the conventional method, a specific amount of the sample is taken, filtered, dried, and weighed. The weight of the sample will need to be multiplied by a factor to make the weight calculated equivalent to the weight for a 1 liter sample. That is, if a 100

8 | Water Logged | Spring 2021



mL sample is used to give a suspended sample dry weight of 0.163 g, then the equivalent weight per 1 liter is 1.63 g/L.

Using the equation below, the operator can determine the SVI of the mixed liquor at that given time of sample collection. If the filtered weight is measured in grams, use the following formula:

$$SVI, \frac{mL}{g} = \frac{\text{Settled Sludge Volume, } \frac{mL}{L}}{MLSS, \frac{g}{L}}$$

If the filtered weight is measured in milligrams, mg, then use the following formula.

$$SVI, \frac{mL}{g} = \frac{\text{Settled Sludge Volume, } \frac{mL}{L}}{MLSS, \frac{mg}{L}} \times 1,000$$

Suppose the settled sludge volume is 350 mL/L, then

$$SVI, = \frac{350 \frac{mL}{L}}{1.63 \frac{g}{L}} = 215 \frac{mL}{g}$$

Now, consider the MLSS is 4,000 mg/L and the settleability test is 750 mL/L, the SVI is 188.

The normal operating range between plants is different. However, the average range for the SVI can show different conditions at the plant. These ranges are taken from <https://www.biologicalwasteexpert.com/blog/what-is-my-ideal-sludge-volume-index-svi-number>.

SVI Ranges

SVI (ml/g)	Sludge Settling & Compacting Characteristics
< 80	Excellent - but can leave “fines” if sludge age is too long
80 – 150	Normal zone - I usually suggest targeting 100 - 120 for best water
> 150	Poor settling - need to check for filaments or less likely viscous bulking

Other characteristics of a low SVI includes:

- Indicates a dense sludge with rapid settling characteristics
- From old, over-oxidized sludge
- Leaves a cloudy appearance in the supernate above the blanket
- High TSS levels
- Effluent BOD below requirement

High SVI levels include:

- Slow settling sludge with poor compaction
- MLSS is light and fluffy
- Filamentous sludge bulking
- Supernate is cloudy with a green / gray appearance

Methods for the control of the SVI will depend on the value of the calculated SVI.

If the SVI is low, less than 80, then the operator should consider increasing the wasting rate. The results of the increased rate can cause the settling rate to slow down and trap more TSS. In turn, this will clear up the effluent.

If the SVI is high, greater than 150, then wasting less sludge will thicken the sludge to give denser particles. This will also clear up the cloudy effluent by trapping the smaller particles causing cloudiness with the denser particle.

Operators at activated sludge plants should keep track of all recorded information to trend the results. Any change made to the process will not show immediate results. The changes will take about 3 to 4 cycles to show results. As the information is graphed, record the cause and effect of each change.

Microscopic evaluation of the bugs should be considered to insure the proper bugs are in the process.

BLACK MOUNTAIN SOFTWARE

UTILITY BILLING DONE BETTER.

Easy-to-use, efficient and effective software solutions for your everyday needs.

Applications include:

- Utility Billing
- AMR Interface
- Email Bills
- Cash Receipting
- Accounts Receivable

- Service Orders
- Budget Prep
- Accounting
- Payroll
- And many more!

- ✔ Built-in interface with most standard meter reading systems
- ✔ Reliable, professional, “small town” friendly client support
- ✔ FREE on-going training

Black Mountain Software

UTILITY BILLING | FUND ACCOUNTING

For more information and to schedule your **FREE** online demo, call **800.353.8829**.

www.blackmountainsoftware.com

Proudly serving Nevada from our offices in Montana.

Tools for AWIA Compliance

By Charlene Kormondy, U.S. Environmental Protection Agency, Office of Water, Water Security Division

Water utilities today face unprecedented threats to the security and resilience of their systems. In Nevada, drinking water utilities may be susceptible to a wide array of extreme weather events, such as wildfires, floods, droughts, and heatwaves that can damage treatment and distribution systems, disrupt power supplies, and potentially contaminate source waters. When disasters do occur, rural water systems serve as a critical lifeline for water systems, public health and the community at large. While responding to natural disasters can be challenging, you can take steps now to prepare your utility and community for future incidents.

America’s Water Infrastructure Act – Section 2013

One of the first steps to prepare for disasters is to conduct a detailed assessment of your risks. The America's Water Infrastructure Act (AWIA) Section 2013 requires Community (drinking) Water Systems (CWSs) serving more than 3,300 people to develop or update a Risk and Resilience Assessment (RRA) and Emergency Response Plan (ERP). The law outlines what components must be included in the RRAs and

ERPs and establishes deadlines by which water systems must send a certification of completion to the United States Environmental Protection Agency (EPA).

The certification deadlines are based on system population size reflected in the Safe Drinking Water Information System as of October 23, 2018, the date when the AWIA was enacted. Compliance deadlines depend on the system size:

System Size	Risk and Resilience Assessment	Emergency Response Plan
If serving over 100,000 people	March 31, 2020	September 30, 2020
If serving 50,000 to 99,999 people	December 31, 2020	June 30, 2021
If serving 3,301 to 49,999 people	June 30, 2021	December 30, 2021

Within six months of certifying completion of the RRA, water systems must also certify completion of the ERP. The AWIA requires systems to consider factors such as monitoring practices, financial systems, chemical storage, and operations and maintenance in their RRAs. For the ERP, the AWIA requires utilities to include items such as strategies and resources to improve resilience and procedures to lessen the impact of malevolent acts or natural hazards. See the following webpage for more information and details about the AWIA - <https://www.epa.gov/waterresilience/americas-water-infrastructure-act-risk-assessments-and-emergency-response-plans>

AWIA Compliance Resources

If CWSs need help meeting these requirements, EPA has several tools available to help systems develop their RRAs and ERPs. EPA does not require water systems to use these or any designated standards, methods or tools to conduct the RRAs or to prepare the ERPs. Rather, these tools are provided as optional support during the process:

- **Baseline Information on Malevolent Acts for Community Water Systems:** The information in this document can help systems identify and assess the likelihood of malevolent acts occurring at their water system as part of their RRA.
- **Vulnerability Self-Assessment Tool (VSAT 2.0):** VSAT 2.0 is a user-friendly tool that can help drinking water utilities of all sizes conduct an RRA.
- **Small System Risk and Resilience Assessment Checklist:** This guidance is intended for small CWSs serving greater than 3,300 but less than 50,000 people to comply with the AWIA requirements for RRAs.
- **Emergency Response Plan Guidance:** This template and instructions will assist water utilities with developing or updating an ERP in accordance with the AWIA.
- **How to Certify Your Risk and Resilience Assessment or Emergency Response Plan:** This webpage explains the three options available to CWSs for submitting certification statements and includes a training video on the electronic certification option.



Other Resources

After completing an RRA and ERP, utilities can further explore how to lower risks and increase resiliency using EPA tools and resources. The Drought Response and Recovery Guide provides practical solutions to help drinking water utilities respond to and recover from drought. The guide presents real-world examples of drought scenarios that Nevada water utilities might face and includes information on staffing, emergency response plans, funding, water supply and demand management, communications, and partnerships.

The Water Utility Response On-The-Go (Response OTG) Application is an interactive tool allowing real time access to response resources to track severe weather, contact response partners, identify key response actions, and document damages.

Learn more about these and many other water utility resilience resources at: <https://www.epa.gov/waterutilityresponse>.

EPA provides regular updates on water security and resilience resources. To learn more, visit www.epa.gov/waterresilience or join the What's Going On newsletter email list by contacting WSD-outreach@epa.gov. Use these free water resilience resources as you continue working toward providing safe and reliable services to customers during emergencies.



Barley Special Risks has partnered with NRWA to provide cyber security insurance to water and wastewater systems. This exclusive program offers



Barley Special Risks, a unique insurance, loss control and risk mitigation service that notifies and protects the customers who have suffered a data breach.

- Coverage Highlights:**
- Data breach notification and credit/identity monitoring services for up to 200,000 affected individuals, with separate coverage limits for third party claims
 - Breach response coverage includes forensic and legal assistance, notification costs, credit monitoring services, loss prevention services and identity theft-related fraud resolution
 - Crisis management sublimit for public relations and extraordinary notification expenses
 - Low per-incident retentions
 - Policy also provides a separate \$1 million limit of liability for privacy, network security and media claims

Contact your State Association today!



NRWA has created partnerships with the Ford Motor Company and the Chrysler Group to offer special fleet discounts to State Rural Water Associations and their utility system members. Member utilities should contact their State Rural Water Association to access the Rural Water Fleet Program. Vehicles may be purchased at your local dealer or through the national fleet auto group at www.rwfleet.com.

- Program Details:**
- Limited to Water/Wastewater utilities that are current members of a State RWAA
 - There is no limit to the number of vehicles that can be purchased under the program
 - Incentive pricing is deducted off the factory invoice. Fleet vehicles must be in service for a minimum of 12 months or 20,000 miles
 - Vehicles must be registered and operated in the 50 United States

Call your State Association today to get your Fleet Identification Number (FIN)



ServLine is a unique insurance program that will cover water lost with no deductible, repair or replace a customer's water and sewer line in a timely fashion. ServLine is a full service program backed by Hanover Insurance Company and is not a warranty program. The difference is warranty programs only provide water line and sewer line repair products and no leak adjustments.



- ServLine:**
- Designed exclusively for water systems
 - Protects your utility against financial water loss
 - Protects customers from financial loss
 - Offers customized coverage at local level
 - Only available to utilities
 - No direct marketing to utility customers

Contact your State Association to sign up today!



NRWA, in collaboration with Millie Keith Insurance and National Insurance Partners, is pleased to introduce the Lifestyle Health Plans "Healthy Benefits" program to give NRWA members a comprehensive and affordable health benefits option to meet all of the compliance requirements of ACA.



- What makes Healthy Benefits different?**
- Level-funded major medical plan designs
 - Underwritten by "A" rated carriers
 - Premium savings averaging 5-15%
 - Integrated wellness incentives
 - Up to a \$500 deductible credit available to all wellness participants
 - Integrated concierge telemedicine, outpatient lab and diabetic supply benefits

To learn more about lifestyle health plans, visit healthybenefitsnrwa.com or contact Jeanie Cunningham at (800) 530-5229 or via email at jeanie@mliehealth.com

The Power of Association

Only the National Rural Water Association can bring together this unique Products and Services Portfolio. Systems can choose from website design and customer communications, to several insurance packages including health plans, data breach services, line and leak coverage, background screening as well as our Rural Water Loan Fund.

All Designed to Meet the Needs of Utilities

This NRWA Products and Services Portfolio Toolbox was designed to assist State Associations and their members with up-to-date information and provide exclusive, beneficial products and services at an affordable cost.

You can find additional information on each product or service on the NRWA website, www.NRWA.org.

For NRWA assistance, please contact Dawn Nyman, Products & Services Coordinator and Corporate Membership, 2915 South 13th Street, Duncan, OK 73533, 580.251.0081, dawn@nrwa.org



Affinity Program



The Rural Water Loan Fund (RWLF) is a funding program designed to meet the needs of small water and wastewater utilities. The RWLF provides low cost loans for short-term repair costs, small capital projects, or pre-development costs associated with larger projects.

- Eligible Projects:**
- Planning costs for infrastructure projects
 - Replacement equipment, system upgrades, maintenance and small capital projects
 - Energy efficiency projects to lower costs and improve system sustainability
 - Disaster recovery or other emergency loans are available

Visit www.nrwa.org, to find out how you can apply for a loan with reasonable interest rates and no processing fees.



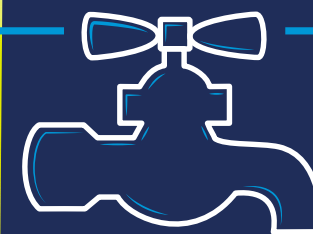
RuralWaterImpact.com and MunicipalImpact.com host beautiful, easy-to-use websites for hundreds of towns and water systems across America. As soon as you sign up, the amazing support team gets to work and launches your new website in just 3 days or less! Then make edits or post alerts yourself anytime you like! Need help? No problem - Support is unlimited!

- Send text alerts
- Post Forms & DOIs
- Easy to Update
- Bill Payment Info
- Mobile Friendly
- Unlimited Support

Sign Up Today!
14 Day Free Trial • Friendly Support • Money-Back Guarantee
Go to RuralImpact.com or MunicipalImpact.com or call 1(888) 551-4815

NvRWA 2021

Annual Conference | May 3-6, 2021



Tap into
NEVADA
Rural Water Association



2021 Virtual Training & Technical Conference - TAP Into Nevada

MONDAY, MAY 3 – ROOM 1		MONDAY, MAY 3 – ROOM 2	
8:00 - 8:30 Welcome From the Executive Director			
8:40 - 9:40 am	NSF 60&61 What Are They and Why are They Important? <i>Repeats On Wed Rm 2 At 8:40</i> Theresa Bellish NSF International	Meter Protection Vs Internal Protection Tim Buxton IVGID	
9:50 - 10:50 am	Getting the Most Benefit from Your Water System from an RTCR Assessment Process Margie Evans Bureau of Safe Drinking Water	Tech New Normal Arnab Bhomick Aakavs Consulting	
11:00 - 12:00 pm	Maintaining Your Storage Tanks Suez	Business - The Show Must Go On Arnab Bhomick Aakavs Consulting	
11:00 pm - 1:30 pm – Lunch/Exhibitor Hall Open – Raffle			
1:40 - 2:40 pm	Ashley Creel Pool/Pact Senior HR Business Partner	PWS Security Nate Diaz	
2:50 - 3:50 pm	AMR/AMI Where Have We Been and Where Are We Going? Kevin Barnes Ferguson Water Works	Spray In Place Pipe and Pipeline Maintenance Suez	
4:00 - 5:00 pm	Wastewater Plant Restart and Start Up Rick Allen Biolynceus Llc	UGSI Ethan Brooke On-site Sodium Hypochlorite Generation	
5:00 pm - 6:00 pm – After Class Social with Vendors			

VIRTUAL CONFERENCE SCHEDULE AT A GLANCE

(Classes and times subject to change)

TUESDAY, MAY 4 – ROOM 1		TUESDAY, MAY 4 – ROOM 2	
8:00 - 8:30 Morning Announcements			
8:40 - 9:40 am	Maximizing Your Investment's Control Valve Accessories Collin Bryant Cla-Val	Water Conservation And Audits Bunny Bishop Nevada Division of Water Resources	
9:50 - 10:50 am	Asset Management Arnab Bhomick Aakavs Consulting 2 Hours	Regulations In A Nutshell-What Gets Forgotten Margie Evans and Brendon Grant Bureau of Safe Drinking Water	
11:00 - 12:00 pm		XoXi SCADA Cloud based	
11:00 pm - 1:30 pm – Lunch/Exhibitor Hall Open – Raffle			
1:40 - 2:40 pm	Round Table NDEP-USDA-IHS	Why Coat Concrete In Potable Water Systems Suez	
2:50 - 3:50 pm	Board Members Guide To Understanding Water Rights Therese Ure Schroeder Law 2 Hours	The Future of AMI Charlie Prosh Metron Farnier	
4:00 - 5:00 pm		Sunrise Engineering	
5:00 pm - 6:00 pm – After Class Social with Vendors			



2021 Virtual Training & Technical Conference - TAP Into Nevada

WEDNESDAY, MAY 5 – ROOM 1		WEDNESDAY, MAY 5 – ROOM 2	
8:00 - 8:30 Morning Announcements			
8:40 - 9:40 am	Source Water Protection	NSF 60&61 What Are They and Why Are They Important? Theresa Bellish NSF International	
9:50 - 10:50 am	Operator Certification Updates Crystel Montecinos Bureau of Safe Drinking Water Katrina Pasqual Bureau of Water Pollution Control	Water Meters - Where Are We Headed? Kevin Barnes Ferguson Water Works	
11:00 - 12:00 pm	External Carbon - BNR, F:M In Wastewater Treatment Operations Rick Allen CEO of BioLynceus	Servline Sustainability	
11:00 pm - 1:30 pm – Lunch/Exhibitor Hall Open – Raffle			
1:40 - 2:40 pm	Dreaded Flushables! Rick Allen CEO of BioLynceus	AMI - Is It Now ITHIN Reach for Small to Mid Sized Utilities? SUEZ	
2:50 - 3:50 pm	Meter Protection Vs Internal Protection Tim Buxton IVGID	Esri (TIS-MAPPING)	
4:00 - 5:00 pm	Wastewater Plant Restart and Start Up Rick Allen CEO of BioLynceus	Water Distribution Basic Math NvRWA Staff	
5:00 pm - 6:00 pm – After Class Social with Vendors			

VIRTUAL CONFERENCE SCHEDULE AT A GLANCE

(Classes and times subject to change)

THURSDAY, MAY 6 – ROOM 1		THURSDAY, MAY 6 – ROOM 2	
8:00 - 8:30 Morning Announcements			
8:40 - 9:40 am	NvRWA Board Meeting		
9:50 - 10:50 am	NVWARN Meeting John Hines Stacey Van Diest		
11:00 - 12:00 pm	Operator Forum Meeting		
11:00 pm - 1:30 pm – Lunch/Exhibitor Hall Open – Raffle			
1:40 - 2:40 pm	Pumps Valves and Motors	Advanced Wastewater Math	
2:50 - 3:50 pm	To Be Announced	Advanced Water Distribution Math	
4:00 - 5:00 pm	Disinfection and Treatment	Treatment	
5:00 pm - 6:00 pm – After Class Social with Vendors			

Wastewater System Restart or Initial Start Up?

By Rick Allen, NvRWA Training and Technical Assistance Specialists, Drinking Water

Another Road Warrior Observation.

In the world of Wastewater these days there are many challenges that will occur. Some you may have already seen and some may appear in the near future. One of these many challenges is how to get your plant activated if it is killed off by known or un-known environmental issues. The reasons can vary from a crystal meth hit to someone dumping diesel in your line or some other caustic in your line. Sometimes these challenges are self-inflicted, by allowing septic or grease haulers to discharge to your system. Be aware that you may have illegal dumping from Septic Haulers, Grease Haulers and other chemicals through your RV dump stations or other access points to your wastewater system. And of course, there is the issue of chemicals that your collection people may be using to clean lines or kill roots.

Some of the more common causes of plant kill off are Industrial Users. Micro-Breweries, Alcohol Distillers, Cannabis Processors and Growers are just a few of many industrial facilities that can kill your plant. Then there are the Significant Industrial Users (SIU's) like meat packing plants and food processors that contribute high volumes and high BOD/COD loading to your plant.

The other scenario could be that you have just finished building that brand new wastewater plant or addition. After spending millions of dollars to complete the new system, how do you get it started and working at optimal parameters as quickly as possible?

There are several options available to most wastewater system, no matter what design you have. You can startup or reactivate Activated Sludge Plants, BNR, Anaerobic digesters and Lagoons, using some or all the methods described below.

There are many accepted methods for a startup or re-start. These include just letting the plant biology develop naturally. If this is the



method you decide to use, the industry estimates are that the plant will be at maximum efficiency somewhere between 90 to 180 days. If you have a lot of time, this method will work. If you need to meet discharge limits quickly, this may not be the best method for you to use.

Another method is to inoculate the system with activated sludge from a neighboring community. This method will work and industry estimates are that this can take between 30 and 90 days to reach full efficiency. There are a few things to consider when using this method of startup or re-start.

1. You will be hauling wastewater sludge into or through your community.
2. The biology in the neighboring community may or may not have all the bacteria that you will need.
3. Every wastewater system has different inflow, so therefore the biology will be different. And if you have industrial dischargers or Significant Industrial Users (SIU), the odds are your neighbor will not have what you need.
4. One of the challenges we have seen with using this method is the introduction of unwanted bacteria in your system. We have seen several incidents where a plant has hauled activated sludge for a start up or restart and they have introduced filamentous bacteria, such as Nocardia and Mycrothrix into their system. This then results in foaming issues if there is FOG (Fats, Oils and Grease) in the system. Anyone interested in a Root Beer Float?

Bio-Augmentation is another method being used to re-start your system or to complete an initial startup of a new plant or system. This process requires purchasing commercially available microbial cultures for your plant. If you purchase a high quality, Species Rich Diversity (SRD) product experts estimate your system may be fully on line in 3 to 30 days. Most of the systems I have seen using this method take about 10 days to populate.

Now you should become aware of some of the differences in the available Bio-Augmentation products on the market, today. You want to look for products that have actual bacteria or microbial counts in them. You want to make sure that the product has large number of colony forming unit (CFU) per milliliter and most importantly a high variety of bacteria Species Richness Diversity (SRD). Some products will only have

one, two or three types of bacteria, while others may have dozens. You want to look for products with high SRD's.

Remember, your system has lots of different materials in the inflow that need to be bio-degraded, so you will need a variety of species to complete the work. You may, also, see products with millions of microbial per gallon or per milliliter. Make sure you do the math. Products with 100 million per milliliter actually have more bacteria than those that have 1 billion per gallon. We always recommend that you use products that are in liquid form. Many of the states' circuit riders and government agencies are now accepting Bio-Augmentation as a viable solution for startup, re-start and also overall plant efficiencies in many areas.

Products that do not have actual bacteria/microbes in them, such as Enzyme products, are considered Bio-Stimulants and will not inoculate your system with new bacteria.

Using commercially available Bio-Augmentation products may be the best solution. Recently an industrial plant in the Dakotas used this method to restart their plant and the operator reported saving \$75,000 in hauling fees, by using Bio-Augmentation and his plant was working to acceptable levels in 3 days.

A western municipality chose to activate a new wastewater plant recently by using six 5,000 gallon tanker loads (30,000 gallons total) of activate sludge which was hauled from over 100 miles away. They may have been able to start the new plant very successfully with only a few hundred gallons of the **appropriate** Bio-Augmentation program. There have been many successful plant startups using Bio-Augmentation as the only source of material.

If, you decide to use commercially available Bio-Augmentation as your startup or restart program, make sure the product has high CFU's and most importantly high SRD's.

In some cases, you may want to utilize a combination of methods. If you need more information or have any questions contact, Rick Allen, voice (303) 888-2008 or Herb Fancher (970) 481-6626 or via email at rick@biolynceus.com or herb@biolynceus.com.

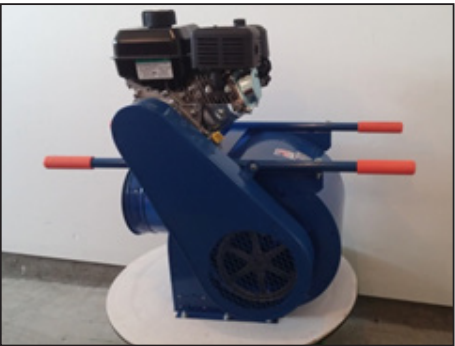
©Copyright Rick Allen and Herb Fancher Aug 1, 2018

NvRWA NOW OFFERS SMOKE TESTING

Why do you need to do smoke testing on your collection system?

If you aren't doing it, you need it! Smoke testing is a simple & inexpensive way to find Inflow & Infiltration to your collection system from ground water & rain events. I & I causes hydraulic overloading in your plant, it can bring in massive amounts of grit & dirt into your treatment plant & cause you to have to construct a new plant years before it is really necessary. It can also cause water to backup into homes & cause sanitary sewer overflows. You may have it increase the size of sewer interceptors to carry excess water to the plant. Sanitary sewer overflows are violations & also a health risk, as well as possibly polluting groundwater & waterways.

To learn more about what to look for, the benefits and how to get started with NvRWA Smoke Testing, contact the NvRWA office for details.





Ingrid Heggen, PE
Principal Engineer

3080 North Lake Blvd
PO Box 1913
Tahoe City, CA 96145
ingrid@heggenlentz.com
M: 775.224.5739
O: 530.584.2599

The Emergency Callout: A Guide To Handling Emergency Repairs

By Joe Mathein, NVWA Technical Assistance and Training Specialist

The emergency callout is a facet of the water and wastewater industry that is a constant, yet unknown after hours return to work activity. Many of the callouts are reported to us by our customers and some alert us by alarm. Generally, there is an answering service that routes the calls or alarms to assigned standby staff. Whatever the means of notification, we have designated standby personnel to respond and determine the course of action.

After spending thirty years in a call back rotation, I have developed some insights I felt were necessary and helpful for those participating in that position and those in the administration part of call backs. One cannot adequately perform without the support of the other. The interaction is not as close as a first line supervisor to staff but there are some key areas that must be kept up to support the success of the emergency call back.

The Duties of Standby

When we designate one of our staff to perform standby for emergency call backs, there are some criteria that must be established for the duty. Above all, the staff should be aware and able to respond and assess the situation. This may sound simple but, the reality is that an inexperienced member of your team may not be able to identify the problem correctly. This could cost the District monies that did not necessarily need to be spent, or worse, compromise the safety and welfare of the public, and the operation of the system.

For some systems they are required to have certified operators on call. This helps the investigation and assessment of the call back situation. A certified operator should bring a level of confidence to the emergency callback.

Many systems have a time requirement for response. Some have a 30-minute response for a callback of the customer or the answering service, and some have a set time to be onsite after the callback is received. Whichever the case may be there is an element of urgency with the associated callback.

It is the responsibility of the standby personnel to be on scene within an appropriate time, capable of performing their duty, and having an assortment of tools for the response.

DO NOT SPEED

When responding to the callback. If you get a ticket or get in an accident the response time is blown and you have put the public in danger. It is natural to want to hurry to the response, but it is reckless and puts the District in a negative perception by the other drivers and passersby. Drive at the posted speed limits and obey all traffic laws on your way to the callback.

Once Onsite

The first thing standby personnel should do once they arrive on scene is perform an assessment of the situation. Is anyone injured or in danger of injury by the emergency situation? Is the situation clear of hazards for the responder and the public? Is there a need for additional assistance and who authorizes and designates who will respond? Will the public be affected by shutdowns or road closures?

There are a lot of considerations for the responder and there are times when there is very little time to make good decisions.

The one thing that I always insisted on was safety first! Do whatever is needed to make the site safe and secure to the public. Traffic control, barricades, caution tape. All these should be immediately available in the responder's vehicle or readily obtainable. There should be all the tools that would be needed to provide first response actions on the call back vehicle. Valve keys, hand tools, multi testers, asbuilts, and phone numbers for key organizations; Dig Alert, the on call supervisor, neighboring utilities, BSDW, police, fire dept. sheriff, highway patrol etc...

The reality is that once your staff get onsite, they will be there to the end of the repair or remediation of the problem, so make sure they have the equipment they need to get the repair started or done.

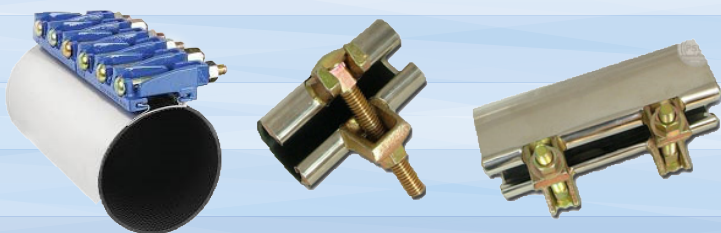
A Typical Scenario

One of the most common call backs in my many years was the waterline leak. There are a couple of different leaks. The service line and the main line. Sometime there is a call for a main leak, and it turns out to be the customer's main line from the meter. This is good for the District but bad for the customer. So, the explanation of who is responsible can be a delicate matter. So, let's say it is in the street and when we arrive, we're not sure if it's a main leak or a service line leak. We have some questions to answer first. Is this presenting a safety hazard to the public and homeowners in the area? Will this have a negative affect on the system's storage and supply capabilities? Can we barricade it off and get it repaired in the morning?

If the answer was no to the first two, then you have gotten lucky and spared the District a huge cost for repair and your customers for not disturbing them in the middle of the night or shutting down their water!

If there was a yes in those first two questions, then you're about to have a long night! If you have a locator that you're able to operate then you can identify where the leak is and whether it is a main or service line. Sometime the location can give you insight. Nevertheless, if you are on a dirt road then start digging! If you are on a paved road it's time to call for help.

Depending on the decision tree of management it is usual for the emergency crew to put a repair clamp on and come back during regular hours and make a permanent repair. Some supervisors and managers will opt to make the permanent repair during the emergency call back. Check with management for the correct procedure where you work.



The Night is Long and Dark

Don't be shortsighted and forget to bring support lighting, more than a flashlight! But don't forget a flashlight! Make sure the cargo light works in the bed of the service truck and the cab light. We don't need a trailer with million candle power lights although they are great! A couple of work lights on an adjustable stand can be purchased for under \$50 and really help the situation. Did I mention an AC converter? These handy little items can power lights and small powered pumps and are minimal costs. The darkness poses additional hazards as we know, people seem to appear out of the darkness when we never expect someone to be there. There is a real hazard with traffic during these late night emergency repairs. Make sure you have taken the precautions to set up traffic control, including a flagger if needed.

What do Customers See?

The customers that are adjacent to or nearby the jobsite are always interested in what is going on. They want to know what is wrong, will my water be turned off, and when will it be turned back on? If the project takes hours they also want to know when are you leaving and stopping all the noise!

Honesty is the best policy! It is usually a good policy to inform customers about the situation with as much information that you have and can share. There will be those customers that are angry and will have demands that are difficult or impossible to meet. There are different responses to these customers that are best suited for supervision or management if they are available. Remember, your job is to restore the integrity of the water distribution system as quickly as possible. And to that end, we need to make good decisions about the situation; can we cone off the site and schedule the repair for the first thing in the morning during regular work hours?

The last thing that we want when we're making a repair after hours is to create a negative perception for our customers. If you're responding staff can't be in uniform, then please be as clean and professional as can be. Think about this, does the fire department, police or paramedics respond without being in uniform?

Administrative Support

During the response nobody is thinking about the administrative actions and support for the emergency call back. This needs to be part of the planning and budgeting processes when management is developing Emergency Response and Preparedness Plans. The cost of supporting after hour work is difficult to forecast for budgeting. When it is all lumped into the salaries budget it can be difficult to track and evaluate. If it's possible to break out the standby costs as well as other emergency overtime it can be tracked and compared to prior years, preventive maintenance activities, and other proactive efforts. The last district I worked in had some old plastic service line that would fail catastrophically, often in the street late at night. It was quite a large effort to make repairs often creating a great deal of difficulty for our customers as well. We developed a service line replacement program



and reduced the monies spent on emergency overtime, equipment, and materials to less than the PM budget for the service line replacements. The savings continued for the following years.

As a manager, be reasonable when your field staff make requests for standby equipment. It is an opportunity for your staff to provide input and feel that they are part of the process as well as appreciated. Of course, there are some requests that can't be fulfilled, so the process of understanding by staff, helps them to understand management's limitations working within a budget.

Lessons Learned

To have an effective response to an afterhours call back is a mix of personnel, equipment, experience, guidance, and preparedness. The infrequent or sometime frequent occurrences can be challenging. If there is time to sit down and talk about the emergency itself, the response, the finished product, and what was encountered along the way, improvement may be possible. Did we have all the parts?

Did we have staff available to assist? Do we have an emergency contractor? Was our equipment in good and working condition? Did we respond and perform in a professional manner? What can we do better?

The ability to rehearse a response or take part in a tabletop exercise helps people understand what management's expectations for certain situations and how they are involved in those situations. This makes a good training session as well as learning experience for your new personnel. It brings together all levels of personnel. From the first responder to managers, giving all involved a chance to communicate and understand, and a chance to make the response better for everyone.

For more information and assistance please contact Joe Mathein at joem@nvrwa.org, or 805-317-5277.

Brought to you by the Nevada Rural Water Association.

The New Lead and Copper Rule

EPA

On December 22, 2020, U.S. Environmental Protection Agency (EPA) finalized the first major update to the Lead and Copper Rule (LCR) in nearly 30 years. EPA's new rule strengthens every aspect of the LCR to better protect children and communities from the risks of lead exposure. The new LCR will **better protect children** at elementary schools and child care facilities, **get the lead out** of our nation's drinking water, and **empower communities** through information.

Better Protecting Children at Elementary Schools and Child Care Facilities

Children spend a large amount of time in elementary schools and child care facilities and lead in the internal plumbing of these facilities can pose a risk to children's health. For the first time, the new Lead and Copper Rule requires that community water systems test for lead in drinking water in elementary schools and child care facilities that they serve. The old rule had no federal requirement for community water systems to test for lead in drinking water in these buildings. This common sense and critical improvement ensures that children—who are at increased risk from lead exposure—are protected where they spend a significant amount of time learning and playing. The water system is also required to provide timely results along with information about the actions the elementary school or child care facility can take to reduce lead in drinking water.

Getting the Lead Out

EPA's new rule uses science-based testing protocols to find more sources of lead in drinking water. The new rule also triggers actions to address lead earlier in more communities and reduces lead by more effectively managing corrosion control treatment, closing loopholes, and replacing more lead service lines in their entirety.

Better Science, Better Testing

The old rule enabled sampling techniques that could underestimate lead in drinking water. Based on better science, the new LCR requires water systems to follow new, improved tap sampling procedures that will better locate elevated levels of lead in drinking water. One key improvement in testing protocols is the new "fifth liter" sampling requirement, which captures lead that can enter drinking water from a lead service line (LSL)—a lead pipe that connects tap-water service between a water main and house or building. Under the new rule, a sampler must draw four liters of water before collecting a test sample so that the water is more likely to come from the lead service line and not the internal plumbing of a building. To get the most accurate test results, the rule also requires wide-mouth bottles for collecting

samples and prohibits sampling instructions that recommend flushing and cleaning or removing the screen (called an aerator) that covers the faucet before collecting samples. Additionally, to target homes with the highest potential for elevated lead levels, systems must collect samples at homes with lead service lines. If there are no LSLs, systems must collect samples from other leaded plumbing. When an individual sample at a home exceeds 15 ppb, systems must conduct follow-up sampling as part of a find-and-fix process to identify sources of lead and actions to reduce lead in the drinking water.

Triggering Actions to Reduce Lead Exposure Earlier and in More Communities

The new LCR jumpstarts corrosion control and actions to replace lead service lines—the primary sources of lead in drinking water—in more communities across the country. Because lead can corrode (or leach) from leaded plumbing as water flows through it, systems that take steps to control that corrosion or remove lead service lines can reduce the amount of lead that makes it into the drinking water supply. The rule establishes a new threshold of 10 ppb, that when exceeded,



In older homes and buildings, lead can leach from service lines, solder, and fixtures into tap water and become a significant source of lead exposure. In children, lead exposure can cause irreversible and life-long health effects, including decreasing IQ, focus, and academic achievement. EPA's new Lead and Copper Rule strengthens regulatory requirements to better protect children and communities from lead in drinking water.

requires more and rapid implementation of corrosion control treatment to reduce lead in drinking water. The old rule allowed up to 48 months—four years—to pass in our small towns after a system exceeded the 15 ppb action level before corrosion control was in place. The new rule's trigger level requires systems that already have corrosion control to re-optimize their treatment. It also requires systems that do not have corrosion control to conduct a corrosion control study to identify the best treatment approach. If that system exceeds the action level in the future, the system must install the treatment it identified in its study right away. The 10 ppb trigger level also requires systems to start lead service line replacement programs.

Closing Loopholes and Replacing More Lead Service Lines in Their Entirety

The new LCR will drive more instances where lead service lines are replaced in their entirety. The old rule created so many loopholes that since 1991—over nearly 30 years—only 1 percent of utilities actually replaced lead pipes as a result of an action level exceedance. Under the new rule, water systems will be required to fully replace at least 3 percent of lead service lines each year when 10 percent of sampling results are above 15 ppb. The new rule's real 3 percent replacement rate will do more to remove lead service lines than the old rule's unmet 7 percent rate by propelling early action, closing loopholes, and strengthening replacement requirements.

Under the new rule, systems:

- Must have a plan in place and must start replacing lines as soon as sample results are above the trigger or action level.
- Cannot avoid replacing lead service lines through testing.
- Are required to replace the water system-owned portion of a lead service line when a customer chooses to replace their customer-owned portion of the line.

Additionally, partial lead service line replacements, which can lead to short term spikes in lead concentrations, will not meet the new requirements. Under the old rule, partial service line replacements were allowed and were common.

Empowering Communities

In order for individuals, communities, water systems, and local governments to effectively take action to reduce lead in drinking water, they need to know where lead service lines are and what resources are available to help address lead in drinking water. The new Lead and Copper Rule builds the information infrastructure needed to empower these decisions.

Public Inventory of Lead Service Lines

Under the new rule, water systems are required to identify and make public the locations of lead service lines, following the example of many cities across the country who have proactively taken this step. By providing thorough and transparent information on where lead service lines exist, communities can make informed decisions to reduce lead exposure. Additionally, residents with a known or potential lead service line will be notified and receive information about steps that they can take to reduce their exposure to lead in drinking water.

Timely Testing Notifications and Lead Reduction Options for Homeowners

If a sample taken from a home has a result over 15 ppb of lead, the water system must notify occupants of the home within three days, so that steps to reduce lead exposure can be taken immediately. Notification of tap sample results under 15 ppb will occur within 30 days. If there is a systemwide action level exceedance, water systems will notify all customers within 24 hours and provide educational materials within 60 days. Water systems will also notify homeowners and building owners about opportunities to replace lead service lines, including information about financial assistance programs, if available, to help pay for replacing the customer-owned side of the line.

Information on Funding Resources to Support Lead Service Line Replacement

To help communities as they make decisions about funding, EPA has compiled information about federal funding, case studies, and other additional resources to assist states, local and tribal governments, and water utilities. These options include EPA's Drinking Water State Revolving Loan Fund, the Water Infrastructure Improvements for the Nation Act (WIIN) Grant, Water Infrastructure Finance and Innovation Act (WIFIA) financing program, as well as the Housing and Urban Development's (HUD) Community Development Block Grants. For a list of funding opportunities and for additional information on how to apply for and meet the funding requirements please visit: www.epa.gov/safewater/pipeplacement.

For more information on the new Lead and Copper Rule visit: <https://tinyurl.com/utkhzap2>



Resource Concepts Inc.
340 N. Minnesota Street
Carson City, NV 89703

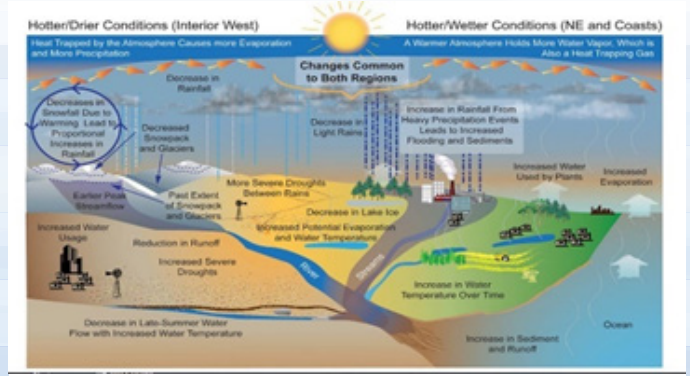


Natural Resources • Environmental Services
Civil Engineering • Surveying • Water Rights
Phone: (775) 883-1600 Website: rci-nv.com

Water and Climate Change

By Kelli Nevills, NvRWA Source Water Protection Specialist

Water- in its various forms- is always on the move, in a complex process known as the water cycle. Global warming is already having a measurable effect on this cycle by altering the amount, distribution, timing, and quality of available water. Water users such as communities, industries and ecosystems are in turn affected because their activities and functions depend either directly or indirectly on water. With climate change, the water cycle is expected to undergo significant changes as well. For example, a warmer climate causes more water to evaporate from both land and oceans. This in turn, a warmer atmosphere can hold more water. (Roughly 4% more water for every 1° rise in temperature!) Changes like this are expected to lead to specific consequences. Some parts of the US, in particular the Northeast and Midwest, can expect increased precipitation and runoff, especially in winter and spring, leading to increased flooding. Other areas, notably the Southwest, can expect less precipitation especially in warmer months, and longer, more severe droughts as storm tracks will tend to shift northward leaving arid areas increasingly dry.



The form precipitation takes is also subject to change in response to warming. Climate projections for many regions of North America suggest less snow overall and more rain. Areas dependent upon the gradual melting of snowpack to supply surface water through the warm months, (such as the Truckee Meadows) will see lower flows and greater water stress in summer. This is already evidenced in parts of the western US. While the effects of climate change on groundwater are not fully understood, rising water competition and stress at the surface are likely to drive greater use, and overuse, of this precious resource.



Overall, wet areas are expected to become wetter and dry areas drier, placing additional stress on the nation's stressed water systems. Declining water quality is another consequence of climate change. Water temperature, for example, will generally rise in streams, lakes, and reservoirs as air temperature rises. This tends to lead to lower levels of dissolved oxygen in water, hence more stress on fish, insects, and other aquatic animals that rely on oxygen. As more

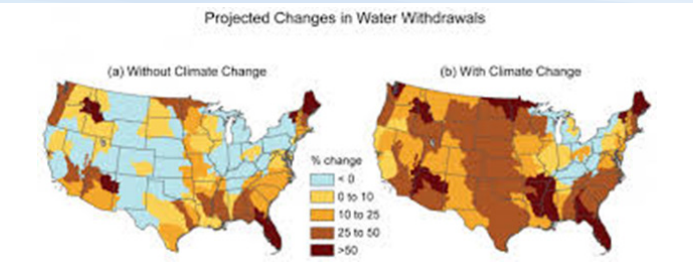
and more intense precipitation leads to increased runoff in certain regions, we can also expect more pollution such as sediments, nitrogen from agriculture, disease pathogens, pesticides and herbicides to become washed into our

waterways. Naturally, the pollution load in streams and rivers will tend to be carried to larger bodies of water downstream to lakes estuaries, and oceans where one of the more dramatic consequences of heavy runoff can be blooms of harmful algae and bacteria. This is occurring throughout the State of Nevada. Pyramid Lake was shut down in July 2020 due to high cyanotoxin levels.

Algal blooms, along with much warmer than normal temperatures created a “whiting effect” on the lake which turned the lake a light blue/white color. The higher levels of calcium carbonate and decrease in the PH was enough to create this phenomenon. An 8/17/20 report by the National Resource Defense Council, shows state agencies are largely unable to keep up with the growing threat of harmful algal blooms. This was in part due to the COVID 19 pandemic as the resources normally used to test recreational freshwater bodies for HAB events, were put on hold. This is concerning because as NRDS's updated What's Lurking in Your Lake assessment shows, state agencies are already under resourced to address harmful algal blooms. (Whiting effect on Pyramid Lake 2020)

Projected Changes in Water Withdrawals

The effects of climate change, primarily associated with increasing temperatures and potential evapotranspiration, are projected to increase water demand across the US. Maps show precent change from 2005 to 2060 in projected demand for water assuming (a) change in population and socioeconomic conditions based on the underlying A1B emissions scenario, but with no change in climate, and (b) combined changes in population, socioeconomic conditions and climate according to the A1B emissions scenario (gradual reductions from current emission trends beginning around midcentury. (Figure source: Brown et al. 2013)



Seasonal Changes

As we know, water quality changes with the seasons. These seasonal changes have both positive and negative impacts on the quality of water, with different seasons having various temperature variations attributed to them. Winter in particular has a tremendous impact on water quality due to the use of sodium chloride (road salt), to de-ice roads in addition to snow melt, which adds the most significant volume seasonally to reservoirs. Sodium chloride monitors are used to determine the quantity in the reservoirs since the compound is soluble in water and does not get broken down. The quality of water changes because of the high value of these chloride particles. Also, during winter, the amount of nitrogen in the water increases. This is due to the high value of nitrogen that snow contains and when it melts it goes right into our water supply systems. The reservoirs experience increased influx from nutrients from the landscape during the winter, resulting in algae blooms in the warmer spring and summer.

Ground Dependent Ecosystems

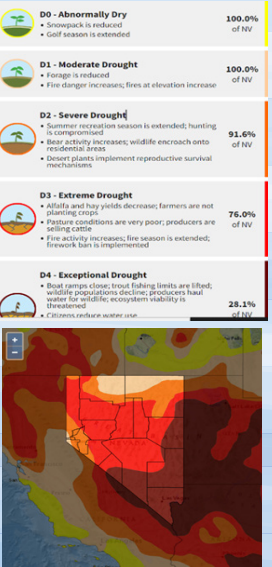
Most of the surface waters in Nevada are groundwater dependent ecosystems. Groundwater is the only perennial source of fresh water in most regions. Groundwater aquifers in Nevada include basin fill aquifers, carbonate rock aquifers and volcanic rock aquifers. These aquifers are susceptible to the combined stresses of climate and water use changes. Precipitation is the main driver of aquifer recharge in water limited environments like our arid Nevada climate. The impacts on aquifer recharge depends on several factors including basin geology, frequency and intensity of high rainfall periods, seasonal timing of recharge and strength of groundwater-surface water interactions. Certain groundwater dependent regions are projected to undergo significant climate change related challenges. Seasonal soil moisture changes are a key aquifer recharge and may provide an early indication of general recharge trends. In many mountainous areas the groundwater recharge is disproportionately generated from snowmelt infiltration, suggesting that the loss of the snowpack will affect the recharge rates and patterns. Modeling of groundwater and its connections to streams, soil vegetation system and atmosphere is needed to represent the potential climate change impacts on groundwater and groundwater reliant systems.

Rising Sea Levels

One of the glaring effects of climate change is the anticipated rise in sea levels worldwide. This occurs for two reasons-the expansion of the ocean as it warms and the increased melt from ice sheets, ice caps and glaciers. Along with the alarming threats to coastal communities, infrastructure, economies and ecosystems, this rise has implications for available freshwater, as rising sea levels drive saltwater into freshwater aquifers. To be useful for drinking water, the water from those aquifers would need to be treated, usually by a more energy intensive process, (desalination). Given the vast range of human activities that depend, directly or indirectly, on water, future climate driven changes in water resources will affect many aspects of our lives.

Drought

Many areas of the US, especially the West, currently face water shortages. These areas have experienced less rain over the past 50 years as well as increased in the severity and length of droughts. According to the National Integrated Drought Information System (NIDIS) Drought.gov, since 2000, the longest duration of drought in Nevada lasted 269 weeks beginning on December 27, 2011 and ended on February 14, 2017. The most intense period of drought occurred the week of January 26, 2021 where it affected 28.98% of Nevada land. The U.S. Drought Monitor (USDM) is updated each Thursday to show the location and intensity of drought across the country. This map shows drought



conditions across Nevada using a five-category system, from Abnormally Dry (D0) conditions to Exceptional Drought (D4). The USDM is a joint effort of the National Drought Mitigation Center, USDA, and NOAA. Current conditions of drought in Nevada <https://tinyurl.com/ndtp7ch4>

Many US regions are expected to face increased drought and flood vulnerabilities and exacerbated water management challenges. Many of Nevada's watersheds have recently experienced drier conditions. Even larger runoff reductions are projected. This will present challenges for management of reservoirs aquifers and other water infrastructure. Rising stream temperatures and longer low flow periods may make electric power plant cooling water withdrawals unreliable and may affect aquatic and riparian ecosystems by degrading those habitats and in turn supporting nonnative, invasive species. Managing the balance between water uses and users will be a complex process, weighing water use benefits, consequences, and risks. Climate adaptation will need to address the risks and opportunities that arise as a result of the climate impacts on water and water resources. Increased resilience and adaptive management practices provide opportunities to strengthen water resource management and plan for climate change impacts.

Nature Based Solutions



Nature based solutions for climate harness the power of nature to reduce greenhouse gas emissions and also help us adapt to the impacts of climate change. They are win=win solutions that involve protecting restoring and sustainably managing ecosystems to address society's challenges and promote human well-being. Nature based approaches are often more cost effective in the long term than purely technical approaches and can produce important additional socioeconomic benefits for the environment, citizens, and the local economy.

Climate change adaptation activities should reflect the importance of water management for reducing vulnerability and building climate resilience. Efforts to reduce greenhouse gas emissions also depend on access to reliable water resources, as all mitigation actions need water to succeed. Promoting investment and implementation that incorporates management, restoration and sustainability of natural infrastructure can support climate, development, and protection goals.

Cleaning, Disinfection and Flushing of Drinking Water Storage Tanks

By Lance Goodman, NvRWA Training and Technical Assistance Specialist

Water tanks are used to provide storage of water for use in many applications, drinking water, irrigation agriculture, fire suppression, agricultural farming, both for plants and livestock, chemical manufacturing, food preparation as well as many other uses. Cleaning and disinfection of a tank is one of the tasks that can be tedious and time consuming. With a well laid out plan though, it can be done in an efficient and time saving way. This article is going to pertain to utilities that have multiple tanks and are able to take one out of service and still have adequate storage and fire protection for their distribution system.

Tanks should be cleaned: Every 5 years (depending on water quality and system); Annually for seasonal water supplies during startup; if sediments and/or biological growth is observed inside the tank; if any repairs or modifications are done to the water system; if coliform bacteria is detected in the water system; If there are any noticeable changes in water quality (taste, odor, color issues).

This is also a good time to check the walls and the floors for corrosion issues that may be starting on the walls, ceiling, or floor. Make sure that new gaskets for the man way hatches are available before you begin this task as sometimes the old ones can rip when removed. This can lead to delays if new gaskets are not on hand when closing the tank back up.

Use a long-handled brush and/or power washer to physically remove any built up debris, corrosion, bio-film and/or sediments accumulated in the tank. Use a portable pump or drain to flush out dirty water from the tank. Before the tank access hatch is opened, the hatch and immediate area around the tank shall be cleaned of all loose dirt and debris to prevent additional contamination to the tank.

One of the most important tools that you will need is an air monitor, this will ensure that the atmosphere in the tank is safe before entering. You may also need a confined space permit. If the atmosphere in the tank is poor, a blower will need to be used to introduce fresh air into tank. When using the blower be sure to keep the intake away from any running engines including portable pumps and generators. If a blower is not an option, open all of the hatches and manways to let natural ventilation take place. This process can take anywhere from an hour to a day. It all depends on the size of the tank, the size of the openings and the wind speed. Opening the top hatch is also a good way to keep air flow into the tank and also a little sunlight helps to make it easier to see.

Be sure to take a look at the floor and the sides of the tank for signs of corrosion. This could be anything from a rust-colored streak or what may look like a small ball on the side or floor. If any corrosion is found, take the time to repair any pits or areas that do not have coating on them. One area in particular to look for severe corrosion is the area between the normal operating water line and the roof. If the

corrosion is severe, take pictures, repair what you can and seek the help of a contractor if the floor, wall, or roof/roof structure needs to be replaced or patched. Now it's time for disinfection.

Using the Disinfection Equation, determine the amount of chlorine bleach to add to the tank that will result in a tank full of water with a free chlorine residual of 10 parts per million (ppm). Add the calculated amount of bleach to the empty tank and fill the tank to the overflow level with water. Leave the tank filled for 24 hours. For alternate tank disinfection methods, see the most recent version of AWWA Standard C652: Disinfection of Water Storage Facilities. Disinfection Equation for Achieving a Concentration of 10ppm Free Chlorine in a Water Storage Tank: Using 8/5% sodium hypochlorite (Concentrated Chlorox)(tank volume in gallons x 10 ppm) / 1,000,000 x 0.85) = # gallons of 8.5% bleach needed.

Example for a 5,000 gallon tank: (5,000 x 10) / (1,000,000 x 0.085) = .6 gallons (a little more than a half a gallon) 50,000 / 85,000 = .59 (rounded to .6)

With the different options available when using this standard it becomes more of what is the best option for each individual utility. Some may want to use calcium hypochlorite while others will be more comfortable with a liquid sodium hypochlorite. When using either disinfectant always remember to dechlorinate any water that will be exiting the tank via the drain. If unsure of how to do the dechlorination process, refer to AWWA standard C655-18 Field Dechlorination.

Filling the tank to the desired level for disinfection is also going to be a personal preference. You may want to start with filling the storage tank to 5% of volume and let it sit for 6 hours and then fill to the overflow level. Others may want to get the appropriate residual in the tank and fill to the overflow level right away. In either case the tank must now sit for 24 hours offline and isolated from the rest of the distribution system. After 24 hours has elapsed, flush out and empty the storage tank. Do not drain the tank into a septic system. Refill the tank and flush all affected taps until chlorine can no longer be smelled. If a portable pump is used, ensure that the intake hose is clean and wiped down with bleach to prevent contamination. Continue flushing until the waste water is clear and no chlorine odor is evident.

After the storage tank has been thoroughly flushed out, test for free chlorine residual to ensure it is non-detectable (or zero). This can be done using an approved HACH DPD color metric test kit. Once a non-detectable chlorine residual has been obtained, collect total coliform bacteria water samples. If the test results are negative for bacteria, the drinking water is considered safe to use and drink

VIVAX
METROTECH

The vLoc3 Series of Utility Locators, Uncompromising Performance for Damage Prevention

The vLoc3 series of utility locators introduces new innovative tools for locating buried utilities assuring damage prevention while gathering information for analysis.



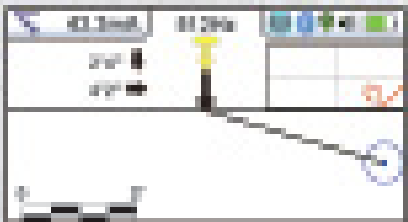
vLoc3-Pro Receiver

- Color-coded EM distortion warnings
- Offset vector locate mode
- Optional receiver/transmitter link
- Cloud-based data warehousing
- Internal data logging
- Optional Bluetooth connectivity

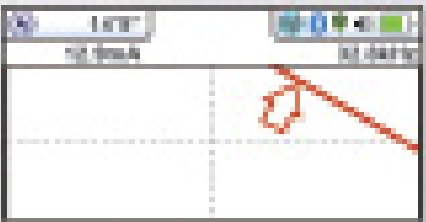


vLoc3-5000 Receiver

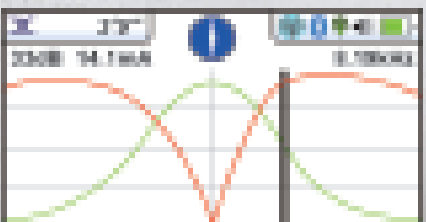
- Internal Bluetooth and GPS
- Shovel-to-earth fault locating (with A-frame accessory)
- Distortion Alert assist in recognizing signal bleed-over
- Offset vector locate mode
- Optional receiver/transmitter link
- Cloud-based data warehousing



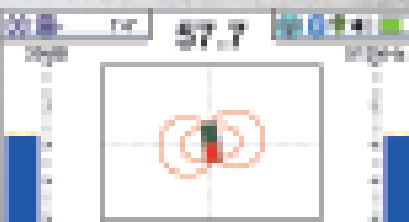
Vector Locate - shows orientation, line position, and distance relative to the locator in 3D



Plan View Screen - displays the theoretical line in 2D from above ground in arendirectional mode



Transverse Plot Screen - is used to display the peak and null to compare distortion shape



Sonde Screen - arrow guidance showing direction to the locate and depth of cover



Call us for a no obligation on-site demonstration!

INSTRUMENT TECHNOLOGY CORPORATION

P.O. Box 670-0000 • info@metroplex.com

Suppliers to the Professional Utility Engineering Community Since 1990



363 Fairview Drive
Carson City, NV 89701
change service requested

Nonprofit Organization
U.S. Postage
Paid
Reno, NV
Permit No. 861

Portable pumps for wet work areas



NEW!

IDEAL FOR STANDING WATER

PlantPRO™ Utili-Pump Meter Pit Pumps make it easy to keep work areas dry — great for meter pits, valve boxes, manholes, excavations and other soggy work areas. They pump 16 gpm and run for an hour per charge on a standard DeWalt® power tool battery (not included).

A USABlueBook Exclusive — Order Today!

18V Utili-Pump	# 385018	\$169.95
20V Utili-Pump	# 385020	\$169.95

plantPRO



FOR MORE PORTABLE PUMPS, see usabluebook.com/portable



HONDA



USABlueBook
Get the Best Treatment™

800.548.1234 • usabluebook.com