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Vacant

Water Lines



Featured Water System:

Barrick Goldstrike, Newmont Leeville, Newmont Mill 1

By Evan Fonger, P.E., CWO, Tetra Tech

Tetra Tech, Inc., formerly Rothberg, Tamburini & Winsor, Inc. (RTW) has been operating water systems in Nevada since 2002.

The water used for potable water systems at mining facilities typically comes from underground sources close to the mineralized areas of the mining operations. The mineralized lithology of the aquifer results in water quality that has contaminant concentrations above the respective maximum contaminant levels (MCLs). Arsenic, iron and manganese are the typical culprits that exceed the MCL. As a result, Tetra Tech's operators have operated a wide variety of treatment technologies. Some of the treatment technologies include reverse osmosis, iron-based adsorption, coagulation/microfiltration, carbon dioxide injection, carbon filters, pressure filters, and ion exchange.

The Leeville Public Water System utilizes a reverse osmosis system to remove iron and arsenic from the well water. Antiscalant is injected into the raw water prior to treatment and then passes through the reverse osmosis system. The raw water coming into the facility is above the 10 ppb arsenic MCL at approximately 120 ppb arsenic. A calcite filter is then used after the reverse osmosis equipment to increase the pH. The

system was also designed to inject carbon dioxide for additional pH control but is no longer needed.



The well water for the Barrick Goldstrike Potable Water System is 140° Fahrenheit when it is pumped out of the ground. The first step in the treatment plant is a set of heat exchangers to cool the water down to 70-80° Fahrenheit. Sodium hypochlorite is injected in the raw water stream to act primarily as an oxidant and then also as a disinfectant. A coagulant, ferric chloride is the second chemical added to form a particle that is too big to pass through the subsequent microfilter. The microfilter effluent is then pumped through an ion exchange system to remove radionuclides. The treatment capacity of this water system is 120 gallons per minute. The distribution system consists of four storage tanks and four booster systems. The water leaving the treatment plant was moderately corrosive as indicated by lead and copper concentrations above the

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Water Lines is the resource newsletter of the Nevada Drinking Water and Waste Water Training Coalition.

Water Lines is produced and funded by the Nevada Division of Environmental Protection

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Safety Zone: Slips, Trips and Falls

By Stevan Palmer, RCAC

Did you know that slips and falls are the number two cause of accidental deaths and disability in the United States, following behind automobile accidents? Nationwide, slips and falls are responsible for more worker deaths than all other on the job fatalities combined. Nationwide, about 15% of all disabling injuries are due to slips, trips, or falls, and the average direct cost from one disabling injury approaches \$28,000. Add to this the personal and family costs and trauma, and it is evident that it is important for utility operators to avoid slips, trips and falls.

The back is the most frequently injured part of the body, followed by the joints (wrists, elbows, shoulders, hips, knees, and ankles). Most injuries are strains and sprains, followed by bruises and contusions, but fractures may also occur. There are two basic types of falls: elevated falls and same level falls. Same level falls are most frequent, but elevated level falls are most severe. Same level falls are generally slips or trips. Utility workers may trip on a misplaced object, or uneven floor surface. Slick or wet surfaces may cause slipping. Injury can occur when someone strikes a floor or working surface or some other object during the fall.

Elevated level falls often occur when working from vehicles or equipment, or ladders, stairs or elevated floor surfaces. About

60% of all elevated falls are from less than 10 feet.

Factors that contribute to falls in the utility workplace include poor housekeeping, poor lighting, uneven or slick floor surfaces, and poor maintenance. Certain behaviors also contribute to falls, such as wearing improper footwear, carrying oversize objects that obstruct vision, walking too fast or running, wearing sunglasses in low lit areas, or failure to use handrails. Bad habits, impatience, and lack of knowledge can all contribute to injuries.

In preventing same level falls, good housekeeping is important. Keep walkway surfaces clean and dry, and free of trash or other objects that may cause trip hazards. Clean up any spills immediately. Repair any loose flooring or uneven surfaces, and apply abrasive, anti slip coatings or skid resistant rubber mats to floor surfaces where slipping may be a problem. Do not use hard rubber mats, as they may become very slippery when wet. Safety signs to remind workers of potential slipping or fall hazards are always useful, especially when a hazard cannot be eliminated or reduced. Yellow striping may be applied to walking and work surfaces to identify these areas and reinforce the need to keep them clean and free of objects.

Preventing elevated level falls When climbing or mounting a machine or piece of equipment, use the "3-point system". Make sure

that three of your limbs are in contact with a step or handrail at all times, and only one limb is in motion while climbing. Always face the vehicle or equipment when mounting and dismounting. Inspect equipment to ensure that steps and hand rails are in good repair and free of grease or oils. Make sure that ladders are clean and in good repair as well, and set your ladder as near to a 4:1 angle as possible. For every four feet of rise, the base of the ladder should be one foot away from the surface being climbed. For example, if a 12 foot ladder is resting against a wall, the base of the ladder should be 3 feet from the wall. Avoid reaching too far to the left or right when working from a ladder, and never stand on the top step of a step ladder. When working in stairs or fixed ladders or platforms, make sure to use handrails, and avoid carrying heavy or bulky objects that require the use of both hands or obstruct vision. Use fall protective devices, such as lifelines, lanyards, or safety belts/harnesses where appropriate. Check with you safety equipment supplier for information on the correct system for your workplace. Proper training, use of appropriate safety equipment, regular and frequent inspections, and immediate correction of safety deficiencies can dramatically reduce the risks of injuries due to slips, trips, and falls.

The Spigot

Q & A:

Focus on

Laboratory Procedures



Q. 1. What is a meniscus?

- A closed container used for drying samples in preparation for weighing
- A substance that gives a visible change at a desired point in a chemical reaction
- The curved surface of a column of liquid in a small tube
- An insoluble, finely divided substance

Q. 2. What is the chemical compound name for CaCO_3 ?

- Calcium Carbonate
- Calcium Concentration
- Calcium Anoxide
- Carbonide Concentration

Q. 3. What factors can cause errors when counting bacteria colonies on membrane filters?

- Connected colonies
- Water condensate
- Particulate matter
- All of the above

Q. 4. Why is sodium thiosulfate added to coliform sample bottles?

- To sterilize the bottles before use
- To provide nutrients for coliform to multiply
- To neutralize chlorine compounds in the sample
- To neutralize coliform in the sample

Q. 5. What are the principal hardness-causing ions in water? (Choose Two)

- Calcium
- Sodium
- Magnesium
- Nickel

Cont' Featured Water System: Barrick Goldstrike, Newmont Leeville, Newmont Mill 1

action level. Zinc orthophosphate was added to the finished water to assist in compliance with the Lead and Copper Rule.



The raw water chemistry often changes in aquifers that are being dewatered. In fact, the original arsenic concentration has nearly doubled at the Goldstrike system since the treatment plant was commissioned in January 2006. Originally the arsenic concentration was around 100 ppb and has an upward trend. Currently the raw water's arsenic concentration is 175 ppb. According to the Tetra Tech Operator, Jim Tharp, another operational consideration is the level of hydrogen sulfide. When asked about the biggest operational challenges regarding the Barrick treatment plant Jim responded, "Maintaining the proper chlorine residual with hydrogen sulfide coming in and out and changing levels of arsenic." In fact the ferric chloride dose requirement also changes with the arsenic concentration.

Another treatment plant Jim has operated is the Newmont Mill 1 water treatment plant. Water is pumped from a well located several miles from the distribution system, which is then transferred to a storage tank. The water is pumped to the water treatment plant by a set of booster pumps. The raw water arsenic concentration fluctuates around 20 ppb. The water chemistry coming from the well met drinking water requirements prior to the new Arsenic Rule, when the previous MCL for arsenic was 50 ppb and treatment was not necessary. Given the new 10 ppb standard, Newmont relies on iron based adsorption technology to remove the arsenic from the water to levels below the drinking water standard.

Jim said he enjoys, "the challenges of learning something new all the time." One of the things that Jim does not enjoy is all of the travel time from site to site. The closest water system that Jim operates is just a couple miles from Tetra Tech's Elko office and the farthest is over 150 miles. Another challenge Jim deals with is the nature of a mine site and getting from point A to point B when the roads change constantly from the mining operations.



Answers to the Spigot questions

The Spigot is prepared by Crystel Montecinos, Environmental Consultant for Tigren, Inc. You can contact her at 775-240-1396

Many thanks to author K. Kerri and the book 'Small System Operation and Maintenance' for the material used in this quiz.

Answers: 1.c, 2.a, 3.d, 4.c, 5.a & c

Regulatory Update:

Stimulus Money Comes to Nevada for Water and Wastewater Infrastructure

By Adele Basham, NDEP SRF Manager

Nevada received stimulus money for water and wastewater infrastructure through the State Revolving Fund Program. Nevada's Clean Water (Wastewater) State Revolving Fund (SRF) received \$19.2 million and Drinking Water SRF received \$19.5 million in American Recovery and Reinvestment Act (aka Stimulus) money from the federal government. Although this amount of money is small compared to the demand in Nevada which is close to a billion dollars for wastewater and half a billion dollars for drinking water, the money will help some small rural communities. The SRF programs provides low interest loans for the construction of infrastructure. The American Recovery and Reinvestment Act (ARRA) money is in addition to the traditional SRF programs but the

focus differs from the traditional SRF program. The ARRA is focused on job creation by quickly delivering assistance to "ready to go" projects.

One of the requirements of the ARRA is that the states provide "additional subsidization". Nevada opted to offer the additional subsidization in the form of 100% principal forgiveness (essentially a grant) to "disadvantaged" communities. Nevada's Drinking Water SRF defines a disadvantaged community as a community where the local median household income is 80% or less of the state median household income. For ARRA, Nevada applied this definition to both drinking water and wastewater. Many small rural communities in Nevada meet the definition of a disadvantaged community and will benefit from the additional subsidy.

Nevada has used the infusion of federal money and the ability to provide additional subsidy to address as many drinking water arsenic mitigation projects as possible. It seemed appropriate to use federal dollars to fund projects necessary to comply with an "unfunded" federal mandate. Since finding a solution to the arsenic issue takes time, especially if treatment and pilot testing are required, only those communities that have been working to find a solution to the arsenic issue will benefit from the ARRA funds. For those communities that have been taking steps to address arsenic compliance, it paid off, literally.

At this time, all of the ARRA funds have been committed to projects; however, funds remain available in the traditional SRF programs.

Clean Water State Revolving Fund Program ARRA Projects

Alamo Sewer & Water GID	Rehab. & improvements of treatment ponds & eff. reuse	1,034,600
Canyon GID	Reuse water pipeline and equipment	1,361,000
Churchill County	Sewer extension to Oasis MHP	2,490,000
Clark Co. - Indian Springs	Wastewater Treatment Plant upgrade	5,700,000
Esmeralda Co. - Goldfield	Relining treatment ponds	427,220
Henderson	Relocate sewer out of Pitman Wash	2,600,000
McDermitt Sewer Dist.	Design & reline sewer ponds	284,647
Mineral Co. - Hawthorne	Rehab. Of wastewater treatment ponds	1,531,500
Nye Co. - South Gabbs	Sewer rehab. & replacements	710,000
West Wendover	Replacement of headworks	710,000

Drinking Water State Revolving Fund Program ARRA Projects

Alamo Sewer & Water GID	Arsenic mitigation	302,000
Beatty Water & San. Dist	Arsenic treatment	2,910,000
Carson City	Upgrade wells & water mains	3,400,000
Elko Co - Jackpot	Uranium mitigation	737,000
Hawthorne Utilities	Construction of new well	470,000
McDermitt Water System	Hydro. eval, well mod. and/or construction of new well	492,000
Mineral Co—Schurz School Dist.	Arsenic & uranium treatment	327,000
Silver Springs Mutual Water/1	Installation of central arsenic treatment system	3,662,350
Silver Springs Mutual Water/2	Water line to connect MHP to treatment system	791,000
Southern Nevada Water Auth.	Energy audit of 2 treatment facilities-for conservation benefits	2,000,000
Tolas Water Works	Arsenic treatment & new well	720,000
Topaz Lake Water Co.	Central arsenic treatment system	780,000
Truckee Meadows Water Auth.	Replace flume destroyed by a 2008 earthquake	2,000,000

*** All DWSRF ARRA funds have been allocated, however not all contracts have been fully signed.**

Hawthorne Utilities Project - Photos courtesy of Hawthorne Utilities and NDEP
 The Hawthorne Project started drilling the new well on July 15, 2009



Water Lines is edited and produced by NDEP Office of Financial Assistance. Questions or suggestions should be addressed to Adele Basham abasham@ndep.nv.gov or 775-687-9488

Wastewater Operators Certified



These wastewater operators passed certification exams for treatment and collection grades 1, 2, 3 and 4.

Congratulations to all!

WASTEWATER TREATMENT GRADES

Grade 1: Travis M. Hall, Elise V. Hoover, Lenny A. Kimm, Andrew T. Marshall, Armando Mendoza, Greg L. Nilson, Susan A. Reaser.

Grade 2: David M. Bruketta, Daniel J. Dorlack, William J. McInnis, Arthur J. Porreca.

NEVADA COLLECTION

Grade 1: Thomas Taflin, Brian C. Wight

Grade 2: Steve J. Rippe

WASTEWATER LABORATORY ANALYST

Grade 1: Adrian K. Johnson

Grade 2: Lawrence R. Layman

NEVADA PLANT MAINTENANCE

Grade 1: Albert L. De Los Santos

Grade 2: Johnny L. Davis

Next Wastewater Certification Exam is December 10, 2009.

The deadline for applications is November 10, 2009. For more information on the exams and testing sites please visit www.nvwea.org

Change of Address Requested

Operator Certification Administrators have noted that a large number of certificates are being returned to the State, because Operators have not updated their mailing addresses after moving.

Operators are asked to promptly notify the State when they have changed addresses.

Please contact Nan Paulson at 775-687-9447 or

New Water Operators Certified



These water operators passed certification exams for treatment and distribution grades 1, 2, 3, and 4.

Congratulations to all!

WATER DISTRIBUTION GRADES

D-1: Jay Bart, Jeff Catlett, Chip B. Colpitts, John De Jesus, Shaun L. Forsberg, Thomas L. Gilmore, Charlie Gomes, John Gordon, Randy N. Greenwell, Kyle Habberstad, Bruce Harland, Ozwald I. Henke, Glen Highfield, Casey O. Jones, Ryan A. Kolda, Joel D. Mangrobang, Luis Martinez, Brian Mason, Milton T. Miller, Byron D. Moss, Pablo M. Ortega, Tom Parli, James Pauley, Scott C. Payne, James Richardson, Sandra Sears-Lavallee, James Souba, Colleen K Thomas

D-2: David Albertson, Jeff Cady, Eleodoro Colocho, John Day, Amber D. Dehn, Allen Dodson, Joseph B. Esenarro, Dale Groves, Jason Hudak, Kris Kaltenbacher, Damon M. Poelstra, Victor Rosales, Gregg Ruiz, Scott Schunter, Joshua Thomason

D-3: Randen Buckles, Michael Devenere, Dale Johnson, Michael A. Milligan, Keith Ristinen, Eugene T. Rockwell, Sean E. Sinclair, Ryan A Swirczek, Bryce Twichell

D-4: Philip A. Gebhardt, Gregory P. Kodweis

WATER TREATMENT GRADES

T-1: Jessie W. Barto, Jeff Cady, James L. Frazier, Wekianos Hailu, Duane Johnson, Kathleen Kinkade, Garrett Kooyers, John A. Lanza, Franklin Little, Ryan Luzier, Doyle Nicholson, Salvador Quinones, Paul G. Sanchez, Scott Schunter, William C. Stockman, Samantha Sue Stoughtenger, Joshua Thomason

T-2: Christy Broadway, Victor Duarte, John H. Fassman, M. Brandon Garden, James M. Imperial, Frank Lescher, Patrick N. Marker, Scott C. Payne, Allen R. Waggoner Sr.

T-3: Charles D. Atkinson, Ronald Barrett, Randen B. Buckles, Dennis McCormick, Patrick McKay, Keith Ristinen, Michael Witt

T-4: Philip A. Gebhardt, Jeremy J. Lustig

Next Drinking Water Operator Certification Exam is in March 2010.

It's not too early to start studying. Do you have your books? Are you reading them?

TRAINING CALENDAR FOR 2009

Sept. 15 Tonopah and 17 Ely- Water Rights Boot-camp. Contact: [NvRWA 775-841-4222](tel:775-841-4222).

Sept. 18 Various locations - UNR video conference. Topic: Backflow and Cross Connection Prevention. Info: [Crystel Montecinos 775-240-1396](tel:775-240-1396).

Oct. 9 Kings Beach CA - Water Conservation. Contact: [Stevan Palmer 775-750-1884](tel:775-750-1884).

Oct. 16 Various locations - UNR video conference. Topic: Pumping Efficiency. Info: [Crystel Montecinos 775-240-1396](tel:775-240-1396).

Nov. 13 Various locations - UNR video conference. Topic: Hot Tapping Pipes. Info: [Crystel Montecinos 775-240-1396](tel:775-240-1396).

Nov. 18 Kings Beach CA - Workshop on Water Treatment Test Prep. Grades 1 & 2. Contact: [Stevan Palmer 775-750-1884](tel:775-750-1884).

Dec. 4-7 Reno - Distribution and Treatment Operator Cert. Review - AWWA. Contact: [Jennifer Bauza 909-481-4688 ext 2113](tel:909-481-4688) or <http://ca-nv-awwa.org/CA-NV/calendar>.

Dec. 11 Various locations - UNR video conference. Topic: Regulations Update. Info: [Crystel Montecinos 775-240-1396](tel:775-240-1396).

Dec. 29 Kings Beach CA - Surface Water Treatment Rule. Contact: [Stevan Palmer 775-750-1884](tel:775-750-1884).

Ongoing Online - Various training topics - RCAC. For more information. Contact: [Stevan Palmer 775-750-1884](tel:775-750-1884).

Ongoing On Site - Various training topics - NvRWA. Contact: [Bob Foerster at 775-841-4222](tel:775-841-4222).

March 9-12, 2010 - GSR Reno, NvRWA Annual Training & Technical Conf.

Useful Training Contacts

University of Nevada, Reno

CABNR & Cooperative Extension

UNR videoconference classes for water system operators and managers are available in most communities. To request a workshop in your area, call Crystel Montecinos at 775-240-1396 or email at: xtelle@aol.com

Community College of Southern Nevada Wastewater * Water Technology Program

LeAnna Risso at 702-434-6600 ext. 6418

WWET Training in Clark County

Training for water treatment plant and distribution system operators, wastewater treatment plant and collection system operators, and other professionals working within these fields. Contact Jeff Butler 702-258-3296. For the current training calendar see www.wwet.org.

State of Nevada Water Certification Exams

All exams will be proctored on the date listed. Applications and fees are due to the State Bureau of Safe Drinking Water 45 days before exam dates. A proctor will contact examinees to schedule testing. Contact Ron Penrose at 775-834-8017 for information about the 2009 exam dates.

*Water exams are scheduled in the first three calendar quarters of each year at locations throughout the state. For additional information on

Drinking water call: 775-687-9527 or go to http://ndep.nv.gov/bsdw/cert_home.htm

Wastewater call: 775-465-2045 or go to www.nvwea.org

Nevada Rural Water Association

Please send requests for training to www.nvrwa.org or contact staff directly at 775-841-4222.

For more training information for both drinking and wastewater, please visit the new training calendar on the NWEA website: www.nvwea.org * Click on "getting certified" then check out the training calendar.

This symbol designates Nevada Division of Environmental Protection pre-approved training for certified renewal contact hours.

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STATE OF NEVADA
DIVISION OF ENVIRONMENTAL PROTECTION
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RETURN SERVICE REQUESTED

Water Lines

Fall 2009

Nevada Drinking Water and Wastewater Training Coalition

American Water Works Association

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909-291-2101

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775-687-9436
Michelle Stamates
AB198 Water Grant Program
775-687-9331
My-Lihn Nguyen, Wellhead Protection
775-687-9422

Nevada Water Environment Association

www.nvwea.org, 775-465-2045
Starlin Jones, 775-861-4104
Eric Leveque, 702-792-3711

USDA Rural Development

www.usda.gov/rus/water/index.htm
Cheryl Couch, 775-887-1222, ext 22
Kay Vermatter, 775-887-1222, ext. 28

Public Utilities Commission

www.puc.state.nv.us
Mark Clarkson, P.E., Water Engineer
775-684-6132

Bureau of Safe Drinking Water

<http://ndep.nv.gov/bsdw/index.htm>
Jim Balderson, SWAP, 775-687-9517
CEU approval 775-687-9527
Patty Lechler, 775-687-9529
Bert Bellows, arsenic
775-687-9525

Nevada Rural Water Association

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Teresa Taylor
Andy Anderson
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David Willard
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UNR Dept. of Civil Engineering

Dean Adams, 775-784-1474

UNR Colleges of Natural Resources and Environmental Science, and Cooperative Extension

www.unce.unr.edu/swp
Mark Walker, 775-784-1938

NDEP Board For Financing Water Projects

<http://ndep.nv.gov/bffwp/index.htm>

Water/Wastewater Education and Training Consortium of Southern Nevada—WWET

www.wwet.org
Jeff Butler, 702-258-3296

Tigren, Inc.

Crystal Montecinos, 775-240-1396

Indian Health Services

Dominic Wolf, 775-784-5327

U.S. Environmental Protection Agency, Region 9

www.epa.gov/region9
Sara Jacobs, 415-972-3564

Rural Community Assistance Corporation

www.rcac.org
775-323-8882
Stevan Palmer
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