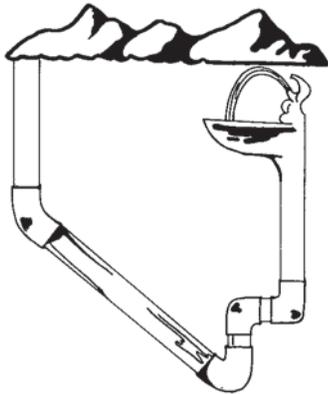


Water Lines



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

Volume 21 Summer 2006 Issue

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Featured System will return in the next issue...

Water Lines is funded by
the Nevada Division of
Environmental Protection

Editor, Brent Farr, P.E.

Editor, and Production, Joe Beard Jr.

Featured Operator: Jim Weeks of Beatty

By Bob Foerster, NvRWA

In Beatty, Nye County, water and sewer utilities are provided by a General Improvement District, the Beatty Water and Sanitation District. James C. Weeks has been District Manager for fifteen years. After thirty years in the hardware business, Jim knew



Jim Weeks

how to run an enterprise. When new to the water and wastewater utilities, he dug in and learned, got certified and has made a success of the District.

Under Jim's leadership, the District has met challenges from treating water to seeing the population grow, decline and rebound. Beatty was founded during the early-twentieth century Nevada gold boom at the Bullfrog mining district. Nearby Rhyolite saw a population over ten thousand in those days, before the boom ended and it became a ghost town. The last big mine, Barrick Bullfrog, closed in the late 1990's. Beatty saw its population drop, and the water system shrank from about six hundred to less than three hundred active connections. Slowly growing again, now there

are four hundred fifty-eight active connections serving a population of just over one thousand.

At the beginning of his water and wastewater career, Jim studied the Ken Kerri/Sacramento State manuals.

Jim is still studying, now for the Water Conservation Practitioner certification. As the Town grows, the limited water supply will be in the hands of a manager trained in efficient use. There is an economic development initiative now in the area, planning to make use of lands once used for gold mining. Proposed plans include wind and solar power generation, and other 'green' initiatives.

Current projects in the District include the replacement of wastewater stabilization ponds. Four new ponds, complete with liners, and a lift station will be constructed to replace two unlined, gravity-fed ponds. The greatest challenge here is locating funding to meet a regulatory mandate. Like most small and rural communities, the economies of scale make any project expensive on a per-user basis. Do the math: an estimated \$800,000 project, spread over less than five hundred users. A CDBG grant of \$50,000 got the project engineering done, and with construction costs going up, the project is looking less affordable as time goes by.

As you might know, in the mineral belts of Nevada, it is not uncommon to find natural arsenic in the

(Continued on page 2)

Featured Operator: Jim Weeks of Beatty *(Continued from page 1)*

groundwater. In the future, Beatty's well water will need to be treated to remove arsenic. One of the three primary drinking water wells contains 30 ppb arsenic, which is now blended down to a concentration in the 20 ppb range. Fortunately, Jim earned a Water Treatment Operator Grade 1 certification years ago, when another well (now abandoned) needed to be treated to remove iron and manganese. An exemption application has been submitted, so the arsenic removal project is still a few years out.

Being involved in a small town means Jim serves in many capacities. He has been fortunate to work with Board members who are willing to learn, and to keep in mind

community interests. Jim serves the community on the Cemetery Board, as Sexton, and W&S crews conduct burials. Recently, Jim was confirmed as a member of the Citizens Advisory Board (CAB) for the Nevada Test Site. The specific CAB division he will be involved with will monitor contaminant migration in the ground water moving down the Amargosa River watershed. Jim is also Chairman of the Beatty Board of Health and Welfare. In this capacity, he helps to oversee maintenance of the local clinic and equipment, and housing for resident medical staff. For nine years, Jim served on the Board of Directors

of the Nevada Rural Water Association, including two terms as President. In addition, Jim served the local Fire Department for twenty-six years.

Commitment to the community is the hallmark of Jim Weeks' career. He has the water and wastewater systems to manage, but also stays involved in meeting other community needs as diverse as purchasing x-ray machines for the clinic. The four other members of the Beatty Water and Sanitation District staff, as well as the five members of the GID Board of Directors know they work with an outstanding leader dedicated to community service. 💧

Effluent Reuse in Nevada

By Joe Maez, NDEP

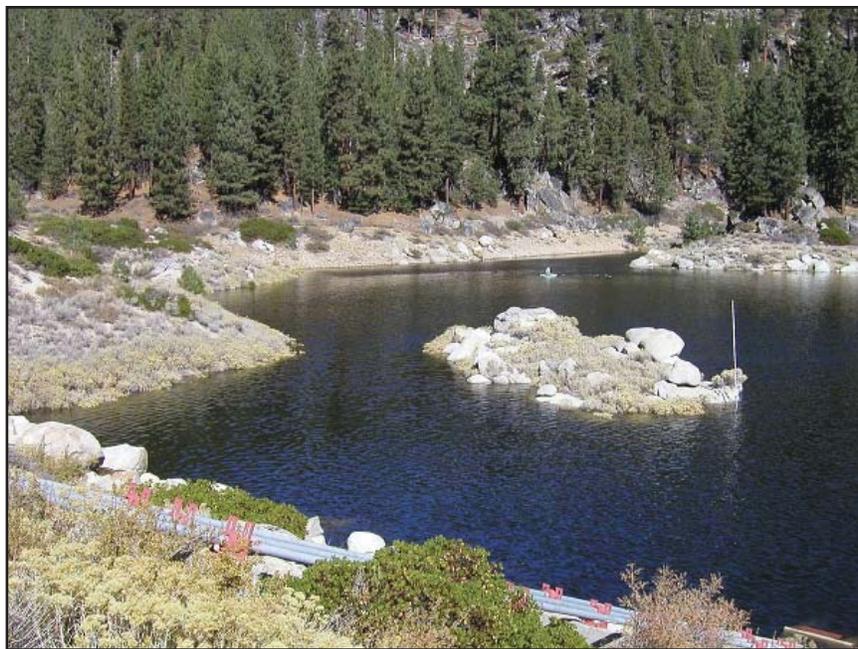
Nevada is the most arid state in the nation; therefore, it is critical that the state conserve its water resources. Effluent reuse is one of the principle water conservation measures that are available to Nevada. Every gallon of treated wastewater that is reused for irrigation or other approved uses is a gallon of potable water saved. This is a critical factor in a state that is seeing rapid growth of its urban centers.

The use of treated effluent from Nevada's wastewater treatment facilities is an ever growing source for irrigation and other recycled water uses. It is common these days to see a local golf course or community park using treated effluent for irrigation. This irrigation is conducted at night, when these areas are not in public use. These areas that use treated effluent are posted with purple effluent reuse signage and have an irrigation system that is totally isolated from the public water system.

To be eligible for reuse, treated effluent must meet the treatment standards

listed under Nevada Administrative Code (NAC) 445A.274-280. These regulations list the quality of treatment and disinfection required for various categories of reuse. A copy of these regulations and the state guidance

A successful effluent reuse program requires the involvement of the wastewater treatment facility, the effluent reuser (generally an irrigator), and government (local and State). It is imperative that the wastewater treatment plant provide a well-treated effluent that meets the standards for reuse, and the reuser follow the requirements listed in the reuse permit. When both of these tasks are met, then the environment and public are protected during reuse activities.



Effluent Storage Reservoir at Lake Tahoe, water piped to Carson Valley

documents for effluent reuse can be downloaded at www.ndep.nv.gov at the Bureau of Water Pollution Control web page of the Nevada Division of Environmental Protection.



By far, the most prevalent method of effluent reuse is irrigation at golf courses and parks. Other uses of treated effluent include agricultural land irrigation for non-edible crops, non-contact cooling water for power generating plants, wetlands creation, and dust control at construction sites. On any given summer day in Nevada, over 40 million gallons of treated effluent are being reused. In the future, the State will see expanded uses of treated effluent providing more conservation, while still safeguarding public health and the environment.

The Spigot

Q & A:



Focus on Waste- Water Treatment

Q.1. Treatment of wastewater may include all of these processes except:

- a. Sedimentation
- b. Flotation
- c. Disengagement
- d. Biological Treatment

Q.2. Which word means 'disease-causing':

- a. Susceptible
- b. Pathogenic
- c. Sterilization
- d. Pathologic

Q.3. The typical primary clarifier is designed to provide:

- a. 0.5 hour detention time
- b. 1.5 to 2 hours detention time
- c. 2.5 to 3 hours detention time
- d. 3 to 5 hours detention time

Q.4. Living organisms are an important part of the treatment cycle and should not be destroyed:

- a. True
- b. False

Q.5. Activated sludge processes remove solids by filtration:

- a. True
- b. False

Crystel Montecinos, Consultant, Tigren Inc., prepares The Spigot.

Questions in this edition were originally published in Operation of Wastewater Treatment Plants, Vol 1, in 1998, written by K. Kerri.

**Answers to Spigot
1.C; 2.B; 3.B; 4.A; 5.B**

Arsenic Exemption Update

By Bert Bellows, NDEP

Now that the January 23, 2006 effective date of the new arsenic rule has come and gone, we are, at this writing, four months into the arsenic exemption period, which runs through January 23, 2009. According to the EPA's Arsenic Guidance Manual (August 2002), Public Water Systems (PWS) must be in the process of attaining compliance with the new arsenic standard of 10 ppb "as expeditiously as practicable." What steps should a PWS be taking to ensure that this happens?

The number one consideration, without a doubt, is MONEY! How can a system with little or no revenue deal with this financially burdensome new rule and in the time frame required? The first order of business for a PWS should be getting on the Drinking Water State Revolving Fund (DWSRF) 2006 Priority List. Money is available for both publicly and privately-owned Public Water Systems through this fund. It will usually take from six to twelve months after an application is received to obtain funds, so it is imperative for PWSs to do this IMMEDIATELY! The application form is available on the internet via this link: <http://ndep.nv.gov/bwpc/dwsrf03.doc>

PWSs will be ranked on this list according to their individual Median Household Income (MHI) compared to that of the State of Nevada. Also considered in the ranking is the system's population and historic high arsenic level. Systems with higher arsenic levels will receive a higher ranking,

because these systems have less time to comply with the new standard. Systems with lower levels of arsenic may be eligible for extensions to the three-year exemption, if they qualify, and, IF they are taking "all practicable steps to achieve compliance."

Publicly-owned water systems also have the option to apply to the United States Department of Agriculture, Rural Development, Rural Utilities Service (RUS) for loans and grants available to those systems. To contact the Nevada office of the RUS program, call 775-887-1222, or use the following link: <http://www.rurdev.usda.gov/nv/index.htm>

Additionally, systems can apply for funding through local or regional private banking concerns with which they have established relationships over the years.

The second most important step to accomplish in the short term is to retain the services of a Nevada Registered Professional Engineer to assist you in planning, selection of a treatment system and design of the facility. Nevada Administrative Code (NAC) requires that any treatment facility built in this state to treat drinking water be designed by an engineer, so this is a must. A lot of work that the engineer will perform could be conducted, at least in part, by a proactive water system owner/operator, with the wealth of information available on the Internet. Perhaps the engineer's bill could be reduced somewhat by

(Continued on page 6)

State of the Industry Report- for Nevada Water Utilities

By Phil Walsack, Farr West Engineering

Nevada has 598 public water systems according to the State Drinking Water Information System (SDWIS, August 2005). Of these 598 systems, 240 are denoted as community water systems, 252 as non-community, and 106 as non-transient non-community.

Nevada regulations state that water systems are to be operated by “certified” operators. Certified operators must have a specified length of experience and must pass a written exam. The regulations denote that those persons in responsible charge of water treatment plants and water distribution systems must be certified.

A Nevada certificate is transferable to any Nevada water system. Because operator’s certificates are transferable between water systems, they are free to live and work where they choose. Provisional Operators are an exception to this is. Provisional Operators are those operators who received specialized training to work in a specific community water system. Those persons working as Provisional Operators do not have the opportunity to work in other water systems or transfer their Provisional certificate to any other water system.

Certified Operator Survey

Farr West Engineering conducted a survey of community water systems serving between 100 and 50,000 people. This analysis details those persons who are certified as operators and those persons that

are not certified. We surveyed 44 potable water systems. These 44 utilities employ 232 personnel. There are currently 54 uncertified people working in the systems surveyed. Uncertified operators make up approximately 23% of the utilities’ staff.

Wastewater Operators

Utility employees may provide many services within a utility’s operation. Utilities that perform wastewater treatment functions may have operators who are certified in this field. Of the 44 utilities surveyed, 17 have wastewater collection and mechanical treatment facilities. Eighteen utilities have wastewater collection and non-mechanical treatment facilities (ponds are an example).

Of the 59 utility operators holding a wastewater collection or treatment certificate (any grade), 41 operators (69%) are also certified in the water industry.

An Aging Workforce

A second element of this survey provided data to address an assertion made by nation-wide utility associations and professionals. In the July 2005 AWWA Journal, they assert that the water utility industry will face, in the very near term, qualified personnel shortages due to an aging workforce. Professional literature states that 20-25% of water utility personnel are heading for retirement in the very near future. In light of this high percentage, the

need for succession planning (i.e., how a utility plans to fill positions) will grow in importance.

Of the 44 water systems surveyed, only 11% have employees that are within 3 years of retirement. This value increases substantially when a ten-year window is analyzed. Thirty-seven percent of water utility employees surveyed are eligible for retirement within the next ten years. While this fact supports the first assertion made by industry experts, it seems that Nevada is several years behind the national trends.

Succession Planning

Another assertion made nationally is that the difference in qualifications between senior management and junior-level staff is significant. This gap is a function of years of experience, level of post-secondary education, and level of treatment / distribution certification. In the October 2006 AWWA Journal, it was reported that workforce issues are a tangle of three issues: an aging workforce, rising skill requirements, and insufficient prestige/salaries to attract new and qualified talent to the industry. Furthermore, water utilities suggest that workforce issues are one of the greatest barriers to being prepared for the future.

Again, Nevada’s situation was compared to this national mold. During the data collection, Farr West found that many utilities do not have second-line managers or staff ready to take future management positions. Farr West used appropriate grade of

State of the Industry: Continued

By Phil Walsack, Farr West Engineering

certification as one determining factor for individuals ready to be in responsible charge. Of the 44 distribution systems surveyed, 32% of utility employees have the appropriate level of certification required to be in responsible charge. This percentage represents 75 of the 232 individuals surveyed.

Conclusion

Approximately 24% of Nevada's community water systems were surveyed during this effort. If this sample size proves to be statistically valid, several conclusions can be made. They are as follows:

Uncertified operators represent 23% of the public utility workforce.

Sixty-nine percent of the wastewater

operators surveyed also have water utility certification. This signifies a trend of operators becoming certified in both disciplines if their utility provides both services.

Eleven percent of Nevada's water utility workers are eligible for retirement in 3 years or less. This fact reveals that Nevada's work force is not adequately described by the national sources of information, which suggest that 20-25% of the work force is retirement eligible in the near future.

Thirty-seven percent of the Nevada's water utility workforce is eligible for retirement in ten years or less. This value suggests that Nevada's work force may experience increased retirement rates from 2009 through 2015.

Thirty-two percent of the current workforce has operator certification equal to or greater than the water system's classification.

Of that thirty-two percent, 4% are eligible to retire in 3 years or less and 20% are eligible to retire in 10 years or less.

In summary, Nevada utilities operate with approximately one quarter of its workforce being un-certified. This fact may suggest that operators may need/desire additional training in order to become certified. In addition, Nevada's utilities will face challenges as the workforce ages. Fortunately, Nevada utilities have time to plan for these challenges. The major period of retiree eligibility starts in 2009 and extends through the year 2015.

Safety Zone: Fatalities Result from Local Trench Collapse

By Stevan Palmer, Rural Community Assistance Corp.

A recent local confined space related accident has ended in tragedy for utility workers. In February, 2006, two utility workers died when the trench they were working in suddenly collapsed. A crew of five men was installing a storm drain in a trench at Somersett Golf Course in Reno, Nevada, when it collapsed, instantly trapping four of the men. One worker was able to quickly escape. Despite the efforts to free the remaining three trapped men, one died in the trench, and another died several days later. The third trapped man, who was buried to the waist, was rescued within 30 minutes. His heart and breathing had stopped, but he responded to CPR administered by rescuers and recovered fully after being treated for a broken ankle.

The incident is under investigation by the Occupational Safety and Health Administration (OSHA), thus all the factors contributing to the collapse are not yet known. However, local news reports state that the trench ranged from four feet to seven feet in depth. The trench walls were characterized as muddy clay with seeping water; and photographs of the excavation do not show any sloping of the walls, or shoring devices in place.

OSHA guidelines provide extensive information designed to protect workers in excavations and trenches that are five feet or more in depth (29 CFR 1926.651 and .652). These standards require that the walls and faces of all excavations in which workers are potentially exposed to danger from moving ground be guarded by a shoring system, safe sloping of the ground, or other protective devices such as trench boxes. OSHA standards contain specific guidelines for sloping the sides of excavations as they relate to specific types of soil. The standards also define minimum requirements for shoring of trenches for various classifications of soils.

(Continued on page 7)

Arsenic Exemption Update

(Continued from page 3)

the owner/operator performing research. There are several organizations that exist to serve people in the business of providing safe drinking water, and you should not hesitate to contact these organizations for assistance. One organization that we work closely with here at the Nevada Bureau of Safe Drinking Water is the Nevada Rural Water Association. Bob Foerster, the Executive Director can be very helpful. You can reach him through the website : <http://www.nvrwa.org/>

For those of you “proactive” types described above, a good source of information to start looking into treatment options comes to me from Rupali Mohansingh of Farr West Engineering (thanks, Rupali) and it is:

http://www.clu-in.org/contaminantfocus/default.focus/sec/arsenic/cat/Treatment_Technologies/

As a reminder to PWSs who have applied for an exemption from the new arsenic rule, it is a requirement of the exemption process that impacted customers be given notification of the opportunity to participate in the exemption approval process. The next meeting of the State Environmental Commission (SEC), at which, it is hoped, all exemption requests will be submitted for approval, is scheduled for September of this year. For more information on the Public Notification process, go to the SEC website: <http://www.sec.nv.gov/main/hearing1005.htm#other> and click on the Additional Information about the meeting process tab. When finalized, the date of the next Commission meeting can be found by clicking on the Meeting Agenda tab.

In conclusion, EVERYBODY needs to be taking steps towards compliance over the next two years and eight months, REGARDLESS of whether or not they may be eligible for an additional extension.

AWWA Recognizes NTWSA

By Joe Beard Jr., Farr West Engineering

The American Water Works Association (AWWA) recently awarded the Exemplary Source Water Protection Award to the Nevada Tahoe Water Suppliers Association (NTWSA). The award recognizes organizations that are taking innovative approaches to solving source water protection challenges. Congratulations!

New Nevada Operators Certified



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

Distribution grades 1, 2, 3 and 4

D-1: Adamson, Adam; Bolling, Kraig; Brown, Joseph; Coffey, John Jr.; Cole, David; Corrente, Charles; Gamboa, Israel; Harkema, Jared; Horton, Charles; Howard, Paul; Hoyer, Arthur; Jenkins, Robert Jr.; Knutson, Eric; Lescher, Frank; Licata, Thomas; Louis, Chris; McMillen, Greg; Moore, Chad; Patrick, George; Royeton, James; Shamblin, Samuel; Sherman, Wayne; Stewart, Vern; Tookey, Mark; Velecheck, Ronald; Wildeman, Martin; Wiley, Harold; Wiley, Michael; Williams, Lisa

D-2: Barney, Bruce; Brown, Robert; Christiansen, Chad; Clore, Hebert; Coe, Jim; Estes, James; Giese, Jeff; Hansen, Ron; Johnson, David; Kirchoff, Randy; Martin, Jeffrey; Milligan, Michael; Mills, Richard; Navarro, Rafael; Neill, James Jr.; Onorato, Robert; Rommerskirchen, Robert; Silverstein, Jan; Sullivan, Michael; Tyler, Linda; Wainscott, James; Welch, Steve; White, Mark; Willenberg, Peter; Williams, Jesse

D-3: Byrom, Jack; Henderson, Steven; Howard, Michael; Joyner, Josh; Renwick, Jeffrey; Zidow, James

D-4: Laughter, Grant

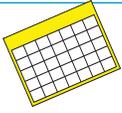
Treatment grades 1, 2, 3 and 4

T-1: Clifton, Tom; Ducker, Matthew; Jost, Theodore; Malewski, Chet; Melandow, Greg; Quintero, Raul; Witt, Michael; Wohlgemuth, Jeff

T-2: Goodnow, Brett; Oettinger, Michael; Onorato, Robert

T-3: Laughter, Grant

T-4: Hulett, John



Training Calendar for 2006

2006

June 20 - Winnemucca -NvRWA Training. CSUS/OWP Small Water System Video Series. Info: 775/841-4222.💧

June 22-Elko -NvRWA Training. CSUS/OWP Small Water System Video Series. Info: 775/841-4222.💧

June 23 - UNR Videoconference- Safety Workshop. Info: Crystel Montecinos at 775/240-1396.💧

June 23 - Nevada Training Coalition Meeting.💧

June 27- Hawthorne -NvRWA Training. Fire Hydrant Training. Info: 775/841-4222.💧

June 28 - Hawthorne -NvRWA Training. Water Sampling Procedures. Info: 775/841-4222.💧



Photo courtesy of Reno-Tahoe, America's Adventure Place

July 6 - Hawthorne -NvRWA Training. CSUS/OWP Small Water System Video Series. Info: 775/841-4222.💧

July 11 - Tonopah -NvRWA Training. CSUS/OWP Small Water System Video Series. Info: 775/841-4222.💧

July 13 - Beatty -NvRWA Training. CSUS/OWP Small Water System Video Series. Info: 775/841-4222.💧

July 21 - UNR Videoconference- Pumps OR Treatment. Info: Crystel Montecinos at 775/240-1396.💧

August 2 - Hawthorne -NvRWA Training. D1/D2 Certification Review. Info: 775/841-4222.💧

August 3 - Hawthorne -NvRWA Training. D3/D4 Certification Review (NOTE: Must attend D1/D2 also). Info: 775/841-4222.💧

August 15 - Tonopah -NvRWA Training. D1/D2 Certification Review. Info: 775/841-4222.💧

August 17 - Beatty -NvRWA Training. D1/D2 Certification Review. Info: 775/841-4222.💧

August 18 - UNR Videoconference- Meters. Info: C. Montecinos at 775/240-1396.💧

September 5,6,7,8 - Reno - AWWA Distribution and Treatment Exam Refreshers. Call CA-NV-AWWA at 909/481-7200 for Info.

September 13 - **State Water Certification Exam.** Check NDEP/BSDW Website for more information.

September 15 - Nevada Training Coalition Meeting.💧

September 22- UNR Videoconference- Fire Hydrants. Info: Crystel Montecinos at 775/240-1396.💧

University of Nevada, Reno
Colleges of Agriculture, Biotechnology and Natural Resources & Cooperative Extension
2005 Videoconference Training Calendar: www.unce.unr.edu/swp.wkshps.htm

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 e-mail: xtelle@aol.com.

Community College of Southern Nevada
Wastewater & Water Technology Program

Info: LeAnna Risso, 702/434-6600 ext. 6418.

WWET Training in Clark County

Info: Jeff Butler 702/258-3296; see www.wwet.org for a current training calendar.

State of Nevada Water Certification Exams

All exams will be proctored on the date listed. Applications are due to the state (Steve Brockway) 45 days before exam dates. A proctor will contact examinees to schedule testing. Contact Debra Kaye at 775/834-8114 for information about 2006 exam dates.

Wastewater Certification Board Testing

Wastewater certification exams are given in quarterly.

Info: 775/465-2045 or www.nvwea.org.

💧 This symbol designates Nevada Division of Environmental Protection pre-approved training for contact hours. Other training may be eligible for contact hours but is not yet pre-approved. Before attending any training, contact NDEP at 775/687-9527 for approval. Ten hours of approved training equals 1 CEU. A different ratio applies for safety training.

Safety Zone: Continued

All trenching projects require a competent person to inspect the excavation before work begins and to monitor conditions frequently during the day. A competent person is any individual who is capable of identifying existing and potential hazards or working conditions that are unsanitary or dangerous to employees, and who has the authority to take corrective measures. The competent person must have knowledge of soil types and soil testing methods, protective systems, and OSHA regulations pertaining to trenching and confined space safety. Only by considering all these factors can a competent person determine the most appropriate procedures and devices to be used to protect the safety of the excavation entrants.

Nevada Drinking Water and Wastewater Training Coalition

American Water Works Association California/Nevada Section

www.ca-nv-awwa.org

Nicole Schreuder, Education Mgr.,
909/291-2101

Indian Health Service

Dominic Wolf, 775/784-5327

Bureau of Water Pollution Control

<http://ndep.nv.gov/bwpc/bwpc01.htm>

Adele Basham, DWSRF, 775/687-9488

Michelle Stamates, AB 198 Water

Grant Program, 775/687-9331

Nevan Kane, Wellhead Protection,

775/687-9426

Nevada Rural Water Association

www.nvrwa.org

775/841-4222

Bob Foerster, Executive Director

John Allred

Curtis Duff

Teresa Taylor

Jonn Scovil

Andy Andersen

David Willard

Public Utilities Commission of Nevada

www.puc.state.nv.us

Steve McGoff, P.E., Water Engineer

775/684-6140

Mark Clarkson, P.E., Senior

Engineering Analyst, 775/684-6132

Bureau of Safe Drinking Water

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

775/687-9520

Jim Balderson, SWAP, 687-9517

Steve Brockway, CEU approval, 687-9527

Dana Pennington, 687-9516

Bert Bellows, arsenic, 687-9525

Nevada Water Environment Association

www.nvwea.org

775/465-2045

Starlin Jones, 775/861-4104

Eric Leveque, 702/792-3711

Rural Community Assistance Corporation

www.rcac.org

775/323-8882

Stevan Palmer

U.S. Environmental Protection

Agency, Region 9

www.epa.gov/region09

Marvin Young, 415/972-3561

USDA Rural Development

www.usda.gov/rus/water/index.htm

Cheryl Couch, 775/887-1222, ext. 22

Kay Vernatter, 775/887-1222 ext. 28

University of Nevada, Reno

Dept. of Civil Engineering

Dean Adams, 775/784-1474

Tigren, Inc.

Crystal Montecinos, 775/240-1396

UNR Natural Resources and Environmental Science and Cooperative Extension

www.unce.unr.edu/swp

Mark Walker, 775/784-1938

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

www.wwet.org

Jeff Butler, 702/258-3296

Farr West Engineering

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