Summary of Minutes of the

Nevada Drought Forum

Meeting of August 19, 2015, 9:00 AM

Nevada Department of Agriculture
405 South 21st Street
Sparks, NV

Video Conference:

Nevada Department of Agriculture
2300McLeod
Las Vegas, NV

Other Video Locations (Attachment #1)

Members Present:

Leo Drozdoff, P.E., Chair

John Entsminger, Vice Chair

Dr. Doug Boyle

Dr. Justin Huntington

Jason King, P.E.

Dr. Mark Walker

Jim Barbee

Bill Elliot, in place of Caleb S. Cage

Members Absent:

Caleb S. Cage

Forum Staff Present:

Micheline Fairbank, Deputy Attorney General

Andrea Sanchez-Turner, Administrative Support

BEGIN SUMMARY MINUTES

1) Call to order and Roll Call

Chair Drozdoff called the meeting to order at 8:34 a.m., reviewed the meeting process and contacted the remote locations to clarify if people were would like to make public comments. Andrea Sanchez-Turner conducted the roll call.

2) Public Comments: (Discussion)

Mr. Drozdoff asked for public comment noting submitted written testimony did not need to be read into the record, but could be submitted to the Forum for review.

Sparks Public Comment

Joe Bower spoke about Homeowner's Associations (HOAs) and regulations some have that do not allow the homeowner to remove their front lawns. He noted his HOA does allow homeowners to remove their lawns. He stated there are only two options for the parkway strip located in the front of homes due to a sentence in the Planned Unit Development (PUD). Mr. Bower spoke about the process to amendment this sentence to include additional options. He urged the Forum to survey HOAs within the City and to encourage HOAs to remove turf from the common areas and install zero-scape.

Councilwoman Naomi Duerr, City of Reno, read a letter from the City of Reno to the Forum (Attachment #2). The City of Reno asked to participate in the Governor's Nevada Drought Summit.

As a former state water planner in Nevada, Councilwoman Duerr spoke about the Nevada State Water Plan, which addresses a wide variety of water issues, including conservation. She noted some of the recommendations from the Water Plan, including credit for conservation which could provide an incentive for agriculture and ranching. Councilwoman Duerr suggested the Forum revisit the Nevada State Water Plan and consider the recommendations within it.

Jake Tibbitts, Eureka County, provided recommendations for the Forum's consideration and spoke about the difference between hydrologic and vegetative drought and the misuse and reliance on the US Drought Monitor (USDM) in justifying grazing restrictions. He also noted there are many areas not experiencing vegetative drought and this issue is not taken into consideration when discussion drought. The totality of Mr. Tibbitts' comments to the Forum are attached (Attachment #3).

Ely Public Comment

Rick Spilsbury spoke about solar array operations on Lake Mead. He spoke about converting the evaporating water from Lake Mead into energy by using solar arrays.

Member King asked Mr. Spilsbury if he was aware of any location where solar arrays are currently being used. Mr. Spilsbury noted he was not aware of any place at this moment, but he will check on it.

Lovelock Public Comment

Bennie Hodges, Pershing County Water Conservation District, noted the Humboldt River Drainage Basin is going through one of the worst droughts on record. Groundwater basin are over appropriated for almost all of the groundwater basins and the Humboldt River Basin. Surface water users are not getting the water they are entitled to. It is not only affecting the water users in the Lovelock Valley but all the users in the Humboldt River Basin. The totality of Mr. Hodges' comments to the Forum are attached (Attachment #4).

Carl Clinger spoke about the drought affecting areas and people differently. Pershing County has had a zero water irrigation allotment for at least two years and only ten percent the year before. Pershing County is probably the worst area in the entire State affected by drought.

Mr. Hodges noted they do not have any underground water for irrigation. One hundred percent of water irrigation and crop production comes from surface water. The economy of Lovelock and the Lovelock Valley has been affected by 60 percent or greater due to the lack of water.

Yerington Public Comment

Jim Shaw, Federal Water Master, noted that if Forum members had any question for those in attendance at that location, they were available.

Sparks Public Comment

Floyd Rathbun, F.I.M. Corporation, spoke about the effects of drought throughout the State. He provided background on the F.I.M. Corporation and their operations. He spoke about ways to improve efficiencies. He spoke about Nevada Water Laws being well-written and the concern that changes made to the water laws as a reaction to the drought will become a retroactive form of change to the water rights of ranches. The totality of Mr. Rathbun's comments to the Forum are attached (Attachment #5).

Sam Hanson, Ely City Council, spoke about the polar icecaps melting and noted that Nevada needs to go where the water is, not where the water isn't. Water is in the oceans. He spoke about desalination and how other countries have relied on it for their water usage. He also spoke about economic diversity and pipeline construction to Baja California to increase the amount of water available for Clark County.

A full account of public comments were captured in the audio recording, available on the Forum's website (*www.drought.nv.gov*).

3) Review and Consideration of Approval of Agenda (Action Item)

Member King moved to approve the agenda; second by Vice-Chair Entsminger; motion passed unanimously. ***ACTION**

4) Review and Consideration of Approval of Minutes (Action Item)

Vice-Chair Entsminger moved to approve the minutes from the July 17, Drought Forum meeting; seconded by Member Huntington; motion passed unanimously. ***ACTION**

5) Overview of Nevada Drought Summit and Need for Interim Sector Meetings (Discussion)

Chair Drozdoff noted the Nevada Drought Summit is set for September 21, 22, and 23 at the Nevada Legislature in Carson City. The information received from the Nevada Drought Forum Sector meetings will be used to formulate some discussion at the Nevada Drought Summit. There is a Forum meeting scheduled after the Drought Summit and a report will be done by November 2015.

A full account of the discussion is captured in the audio recording, available on the Nevada Drought Forum's website (*www.drought.nv.gov*).

6) Update on State Government Water Audit (Discussion and Possible Action)

Tom Federici, Nevada Buildings and Grounds, noted the state facilities water audit was required to be completed by June 15th in accordance with Section 3 of the Nevada Drought Forum Executive Order. The audit was completed and delivered to the Nevada Department of Administration on May 15, 2015. Mr. Federici reviewed the results of the water audit, changes Buildings and Grounds have made to conserve water, and how they oversee the Marlette Lake water system, which provides water to Carson City and Storey County.

Member King asked if Buildings and Grounds measures their water use in gallons per year, and if so, how much water they serve. Mr. Federici noted they currently do not measure their water usage but they can make gross estimates. Member King noted there cannot be management on what is not measured. Mr. Federici noted Buildings and Groundings is hoping to provide a number for comparison and an update to Forum in the future.

Member Walker asked about remodeling bathrooms with water efficient fixtures and if there is an assessment of practical benefits on this. Mr. Federici noted Buildings and Grounds is using the guidelines from the LEED Program.

A full account of the discussion is captured in the audio recording, available on the Nevada Drought Forum's website (*www.drought.nv.gov*).

7) Climate Forecast Update (Discussion and Possible Action)

Member Boyle spoke about the current drought status based upon the U.S. Drought Monitor. Approximately 16 percent of the state is currently classified at a D4, Exceptional Drought Conditions. Twenty-two percent of the state is classified at D3, Extreme Drought. There are reports of a lot of "greening up" of the rangeland throughout the State in the northern part of the state. In general, it has been a wetter summer than expected. However over the water year, October 1 to the present, most of the state is either at or just below normal. As you move into the mountains, the numbers are approximately 70

percent of normal. Low temperatures have been much higher than anticipated. Last year was the warmest year on record. The outlook that was released a month ago indicated a probability of wetter than normal conditions for the month of August, September, and October. Member Boyle spoke about El Nino and its relationship to the "Blob" (a warm pool of water that developed over the Pacific Northwest), how strong it is anticipated to be, and how long it will last.

Member King asked which two years had an El Nino as strong as this year. Member Boyle answered the years were 1997 to 1998 and 1982 to 1983.

Chair Drozdoff asked if Member Boyle felt the Forum meetings are beneficial to him. Member Boyle noted he hopes to get more information from the community on how drought is affecting them and have access to real time information on the conditions of rangeland. The information received from the meetings and the community will be submitted to the U.S. Drought Monitor and more importantly will be used to improve the products from U.S. Drought Monitor.

A full account of the discussion is captured in the audio recording, available on the Nevada Drought Forum's website (*www.drought.nv.gov*).

8) Presentations from Representatives on Drought-Related Impacts (Discussion and Possible Action)

Agriculture

Sparks

David Stix, Jr., State Board of Agriculture, provided background on himself. He spoke about the relationship between cattlemen and federal agencies that manage the ranges. The Bureau of Land Management (BLM) is having a problem managing public lands based upon the changes of the environment. Grazing permits are not being adjusted accordingly by the BLM. He spoke about the relationship of groundwater and surface water. In several incidences the Board of Agriculture and other agencies have sent requests to address this issue to the State Legislature. There has been no response. The situation as it stands today has put the state in a tough position. Seventy Five percent of water supply in the City of Fernley is relied on the Truckee Canal. He noted that changes in the law through the state legislature is a possible answer, however, changing the law could result in additional court battles. There needs to be trust in the current water laws. The Nevada State Engineer should look into the future of the Nevada's water supply.

Member Huntington asked about the timeline for the BLM to make a decision concerning grazing and if there is flexibility to put additional head of cattle out for grazing during drought. Mr. Stix noted it has become so heavy and weighted in bureaucracy, there is not the flexibility to make decisions during the

grazing season. Decisions are being based upon things that are ever-changing (e.g. the climate). They need to reevaluate their processes.

Member Walker asked if Mr. Stix felt the awareness of a relationship between groundwater and surface water was a challenge for local governments. Mr. Stix noted he was involved in the initiation of a study that showed this relationship. Cities must get control and find out where their water is coming from.

Dr. Bill Payne, College of Agriculture and Nevada Agricultural Experiment Station, spoke about how his organizations deal with drought, how they deal with topics that are related to drought, what they are doing now, and what they will be doing. He noted for capture and storage they have a number of hydrologists and soil scientists that are conducting, teaching, researching and doing outreach. In terms of efficient use, they have biochemists and molecular biologists working on drought and temperature stress tolerance for plants grown in aerated lands. They have worked on staff and have a range program that involves at least three faculty members. They work on invasive species, management of cheat grass, PJ encroachment and riparian zone functioning. He reviewed the positions he hopes to fill in the future and what their focus will be. He stated some of the major themes of drought and climate change have been brought, but other things are also affected by drought, including: insects, disease, wildlife, weeds such as invasive species, and animal nutrition and fertility.

Vice-chair Entsminger asked if Dr. Payne had experience working with higher saline water in agriculture. Dr. Payne spoke about his international experience concerning desalinization. At Texas A&M there was money allocated to a desalination program. He has seen it on smaller scales in India with solar power for a household. Vice-chair Entsminger noted he was asking about the use of higher concentration of saline within the water. Dr. Payne noted he has one hydrologist who is looking into this in terms of the Colorado River. It is more of a modeling approach. He has seen it in Tunisia where they manage it by using different reservoirs.

Member Walker spoke about the relationship of federal land management agencies and their mandates with research institutions within the state. He asked if research is being included in the decision-making process for the federal agencies. Dr. Payne noted this is an important issue and to a certain extent it is not being included. When he reviews federal documents to an alarming extent university research is ignored. It is something he is attempting to address with federal agencies.

Elko

Ron Torrel, Nevada Cattlemen's Association and Nevada Woolgrowers' Association, provided background on himself and his organizations. He spoke about the severity of the drought and the problems along the Humboldt corridor. He endorsed the comments made by Jake Tibbitts about the U.S. Drought Monitor. The last couple of years have been some of the best grass years they have experienced, yet they are considered to be in a severe drought. The results of the drought will test the uniqueness and complexity of Nevada's water law. The Forum should identify specific statutes that can be amended and

clarified and the Governor should consider these recommendations and draft a bill for the 2017 Legislative Session. The totality of Mr. Torrel's comments to the Forum are attached (Attachment #6).

Sparks

Darrell Pursel, Nevada Farm Bureau Federation, provided some background on his organization and himself. The total economic impact of Nevada's agriculture cluster is $5.3 billion. The industry is one of the largest and most valuable in Nevada. He spoke about the impact of drought, including ranchers having to sell some of their herds, and buying or leasing more pastureland and grazing allotments. The totality of Mr. Pursel's comments to the Forum are attached (Attachment #7).

Chair Drozdoff asked if there are things Mr. Pursel is aware of that could be done but that are not currently being done. Mr. Pursel noted Water Resources monitors wells once a year, sometimes twice a year, in a normal water years there is flood water running in the river until the end of July and there is unlimited resources for water. Wells do not have to be pumped in the summer and yet there are farmers that are pumping wells to irrigate certain crops and they should not be. This is not the way supplemental wells should not be used. This issue needs to be addressed.

Member King noted the State Engineer's Office usually has two teams of three people per week monitoring water usage. Member King asked what the drop dead date for a farmer to sign up for crop insurance is. Mr. Pursel noted he believed before October 1. The problem with crop insurance is the federal government is not clear on what they are doing. They make range programs and the costs are much higher than the return, making it too expensive. The federal government has so many loopholes that it is not beneficial.

Member King noted the agriculture sector is the number one consumers of water in the State of Nevada. He asked if there are things out there not being done either by the farmers, or the Forum, that need to be changed. He spoke about silicon chips for soil and watering. Mr. Pursel noted the silicon only lasts within the soil for a month or two. The cost was prohibitive and this is an issue with most technology. He suggested rewarding for conservation; however, the Forum should keep in mind for small operations this much tougher because of the cost associated with it.

Rick Lattin, Lattin Farms, provided some background on his family farm. Mr. Lattin stated the number one thing people can do to help local farmers is to buy from them. He noted the drought has affected loss of income, created an inability to plan for the future, and increased costs. Education and the future is important, encouraging young people interested in farming. Most of Nevada farmers know they live in a low water state, they have been responding, planning and implementing. On the Lattin Farm, they converted to drip irrigation. If you want to use less water, one of the options is to convert to crops that have more value per acre foot of water used. Farmers need to look to new technology and research and adapt to new methods of activity and products. There is a need for research, educational and agricultural organizations to educate farmers on what products and technology actually work. Lattin Farms also does intensive cover cropping. Obstacles include the drought itself, the costs of conversion and the political

drought. Over the years the political drought has become more important, we need to ask ourselves do we want to keep the farming industry and then the public must be convinced that use of water for agriculture is a valid use.

Member King asked why more farmers are not converting to high value crops that use less water. Mr. Lattin noted farmers have traditionally grown commodity crops. They are rarely involved in the marketing and other aspects of farming. If they convert to high value crops they need business permits, they will need to hire people, and put together a workers' comp system and insurance. There is a fear of taking a step into that business. The farmers would also have to become a salesman and a marketer too. Chair Drozdoff asked clarification on who required the farmers to do this. Mr. Lattin noted this is typical of specialty crops. It becomes a marketing business. It puts you in a business mode rather than a farming mode.

Member Boyle asked why Lattin Farms has not converted more of their crops to high value crops. Mr. Lattin noted he would have to hire more people and work harder. He gets 75 percent of his income from 10 percent of his property.

Vice-chair Entsminger asked when Lattin Farms converted to a drip irrigation system. Mr. Lattin noted it started in 1992 to alleviate the waste of water. The water they use for their drip system is the water that has already been purchased and run across an alfalfa field and picked up and reused in the drip system.

Member Huntington asked how this drought differs from the early 1990s drought. Mr. Lattin noted this drought is more consistent and persistent. It has hurt Lattin Farms' crop rotations. Member Huntington asked if Mr. Lattin felt there were increased water demands. Mr. Lattin noted the farm is located in Fallon and Fallon has the most litigated water in the country. The farm does use less water than 50 years ago.

Sam Routson, Winnemucca Farms, reviewed a presentation provided to the Forum, which is available on the Forum website (*www.drought.nv.gov*). Mr. Rouston provided a background on Winnemucca Farms. One of the impacts of the drought is that Winnemucca Farms had to diversify in a number of ways, including moving a number of product productions out of state. Winnemucca Farms has changed their cropping pattern, moving from an emphasis of potatoes to an emphasis of peas. Potatoes take 35 inches of water. A crop of peas take approximately 18 to19 inches of water and Winnemucca Farms is able to develop contracts that have the same return. Winnemucca Farms also takes advantage of the best technology available. This is expensive for farmers. He reviewed some of the things that Winnemucca Farms has done to conserve water.

Member Walker asked how long it took Winnemucca Farms to identify options. Mr. Routson noted Winnemucca Farms is constantly evaluating their options and because they are a part of a wide network of sister companies they are exposed to different types of technology. They investigate this technology and determine their applicability for Nevada.

Matt McKinney, Bently Ranch, noted the Bently Ranch has propagated and developed a lot of different sources of water. Surface water is their main water source. They have their own private reservoir. They do have a few wells. They try to conserve every resource they have and utilize it to the best of their ability. They are diversifying for example developing more grains for bourbons. Water rights is the most important part of Mr. McKinney's job. It is more important to the operation than the real estate they own. One of the things they are seeing as an agricultural operation in an urban setting is they are under a microscope. There are strong opinions about what they are doing. He noted that when a homeowner calls and says ranches are over pumping, the response should be that he is not. He would like to see others under the microscope more, for example residential houses on five or ten acres of land. He did note the Division of Water Resources has been a little slow to come with some decisions. They asked to move a well earlier in the year, they still have not received a decision and now it is too late. Their watershed is a federal watershed. They deal both with a Federal Water Master and the State of Nevada. He asked if and when El Nino occurs, if there has been discussion concerning direct injection back into the groundwater system. He wondered if it is possibly to turn the wells around and fill the aquifer back up, especially in the Walker River Basin.

Member Huntington spoke about recharging and how infrastructure is one of the challenges to this. Flood irrigation is one of the most economical and feasible ways to recharge. What is the practicality of doing something like this. Mr. McKinney noted his thought is to do direct injection.

Joe Sicking, State Conservation Commission, provided some background on himself and the State Conservation Commission. As a result of the drought traditional users have to conserve and use less. He noted most agricultural users have done everything they can to continue their operations and remain economically viable. He spoke about the things being done by farmers. He also spoke about the need to review Nevada's "Use it, or Lose it" law. The totality of Mr. Sickings' comments to the Forum are attached (Attachment #8).

Chair Drozdoff noted that the Forum will take a look at the "Use it, or Lose it" section of the water laws. Mr. Sicking stated the Forum needed to get the word out concerning this issue because people are considering leaving their water running to use what they have.

Member Walker asked if technologies for water, crop management and soils are within reach of individuals to take advantage of easily. Mr. Sicking noted that a lot of it is not. The smaller organizations cannot justify spending the money for technology.

Lunch 12:19 p.m. to 12:57 p.m.

Non-governmental Organizations

Sparks

Michael Cameron, The Nature Conservancy (TNC), spoke about the background of The Nature Conservancy. Nevada ranks 11th in the nation in terms of overall biodiversity and is ranked 5th in the nation in terms of the number of species extinctions. More than 70 percent of Nevada's plant and animal species depend on wet areas at some part of the year. The wet areas once represented three percent of the land area in Nevada. It is now down to one percent. Water for animal and plant species is important not only for their sake, but also for the state's cultural, economic and recreational vitality. Nevada's wildlife heritage is at risk for great loss. He provided specifics from the Nevada Wildlife Action Plan.

TNC has addressed drought through land protection and habitat restoration and works to make important natural areas more drought tolerant. They are protecting and conserving floodplains, wetlands, springs and critical watersheds throughout the state. They are implementing ecosystem restoration projects and have increased the resilience of natural systems to withstand the pressures of drought.

Mr. Cameron noted there needs to be more investment in science in terms of monitoring, managing and mitigating. There needs to be more of an understanding of what the standards are for determining the adverse effects for water dependent ecosystems. There needs to be a model on the impact of groundwater pumping on water dependent ecosystems to understand the groundwater, surface water relationship. There also needs to be monitoring to detect when an ecosystem is approaching the point of no return with better information about how water depend ecosystems are responding to the available water. There should be developments of new financing methods to maintain and restore the drought resilience of the forests, floodplains, meadows, wetlands, etc. When faced with the need to make investments to explore green and natural infrastructure solutions, before the use of concrete and harder infrastructure, there should be support.

Member King asked if TNC has a position on desalination. Mr. Cameron noted TNC tends to be technology neutral overall. They try to be holistic in terms of understanding tradeoffs in terms of the environmental impacts with alternative technologic approaches.

Chair Drozdoff noted that Bob Fulkerson, Progressive Leadership Alliance of Nevada, submitted his comments in writing before the Forum meeting and they are available on the Forum's website (*www.drought.nv.gov*).

Abby Johnson, Great Basin Water Network, provided a background on her organization. She spoke about the process and noted for it to be successful it is important for the public and stakeholders to understand what the final work products will be, how they will be developed and by whom, and how they will be implemented after the Summit. The natural environment is struggling to stay in balance due to the

face of declining precipitation and rising water use. Drought should not be used as an excuse to sacrifice one part of the state for another. We are one Nevada and must find solutions for all parts of the state, including rural areas. It should be clear there is no new water to be developed into the west. Major water exportations like the Las Vegas Water Grab are not viable solutions. They depend on exploitation of the target area by depleting its water supply. The totality of Ms. Johnson's comments to the Forum are attached (Attachment #9).

Chair Drozdoff noted the reason for the sector meetings is to identify issues that come up that need to be addressed and explored more at the Nevada Drought Summit, which will feed into the final report to the Governor.

Ms. Johnson stated her concern about what regular people will be able to do and how they will be involved in the Summit especially if people are willing take time off work and drive eight hours for a three day Summit. Chair Drozdoff noted they would work very hard to establish what each of the three days will include so that people can make informed decisions on attending.

Las Vegas

Jennifer Pitt, Environmental Defense Fund, provided a background on her organization. She noted she will speak about the Colorado River Basin. She stated well more than half of the population of Nevada drinks Colorado River Water. In the Colorado River Basin drought has taken a significant toll for the past 15 years. Nature is last in line for water rights, because in most cases our legal systems do not commit adequate water to preserve river flows. At stake, is not only nature as we know it in the Colorado River Basin where 70 percent of all wildlife depends on rivers for some part of their lifecycle, but also a 26 billion dollar river-based recreation economy, which is responsible for more than a quarter of a million jobs. The delta in the Colorado River Basin has been most impacted by the drought. The delta wetlands and riverside forests are a rare strip of green in the Sonoran Desert and a critical food source and shelter for more than 380 species of birds that migrate there, through there, or live there permanently, including both endangered species and hundreds and thousands of water fowl that stop there every year. While water that is stored in the Colorado's Reservoirs began to disappear in the year 2000 as yet there haven't been any water shortages imposed on Nevada or other lower-based water users, however, impacts to the environment were immediate. Since 2000, with little exception, no water has flowed down the Colorado River into its Delta. In the last 15 years there has been a perilous loss of wetlands, river-side forests, and backwaters in the delta and the decline in the birds that rely on them. In the upper Colorado River Basin there are numerous rivers that dry up below water diversions and drought has increased their number.

In the Colorado River Delta to address drought and more broadly the issue of declining water supply as water use has increased over the last century the Environmental Defense Fund has partnered with other conservation organizations to dedicate a water supply to support river health. They have gone about this in a variety of ways. Ms. Pitt provided an example. Restoration is going to take water and stewardship efforts over time. Independently, conservation NGOs in 2008 established a private non-profit water trust in Mexico that acquired from willing sellers shares of Mexico's Colorado River water for the purpose of irrigating restored habitat.

On the Colorado River as in much of the west, there is 19th Century law, with 20th Century infrastructure, and 21st Century water needs. Clearly infrastructure improvements are needed and many were documented in a report called Moving Forward that was prepared by reclamation in partnership with states, water users, and stakeholders in the Colorado River Basin, Among its findings are: there are significant opportunities to improve agriculture water use efficiency, productivity and increased water transfers: that technologies and practices leading to water conservation have already saved substantial Colorado River Water; and existing utility plans will conserve and reuse more than a million acre feet annually by 2030. In fact, the report notes that in a number of metro areas using Colorado River water, growth has decoupled from water use. Over recent decades, utilities are serving larger populations while reducing the total volume of water use. Water efficiency is not rocket science and there are plenty of known and demonstrated technologies and practices that can conserve water uses. The challenges we face are not the technologies. They are legal and economic. Ms. Pitt suggested that Nevada with the federal government, sister states and major water users in the Colorado River Basin continue and accelerate its modernization. Another major challenge to water use efficiency is figuring out who will pay. It stands to reason that the locations where the biggest opportunities remain to improve the efficiency of water use are places where the water is not yet scarce. In these locations, there is not an incentive for water rate owners to invest in efficiency. In the upper Colorado River Basin system conservation projects are likely to improve river health as we modernize laws and agreements to increase water use efficiencies we should be looking for ways to align water management with river management.

Member King asked if the Environmental Defense Fund had a position on desalinization. Ms. Pitt noted they do not have a position and she believes it is an unlikely the solution to the Colorado River Basin's gap between supply and demand, however, in places it can be helpful.

Chair Drozdoff noted because of ambiguity in water laws there is litigation and as result there becomes legal precedent, however, the legal precedent could become problematic and may create even less flexibility to deal with many of the things Ms. Pitt spoke about. Ms. Pitt noted she does not have a lot of experience with litigation. The things she deals with spans the U.S.-Mexico border and this does not happen. They had to work on ways to bring people to the table to work on a collaborative solution. There has not been a lot of litigation in the Basin in the 15 years she has been working on these issues. Litigation can be destabilizing and progress can come slowly. The risk with taking too much time is you lose things along the way. Some of the first losses will be in the environmental arena where there is no legal protections.

Tribal Interests

Ely

Delaine Spilsbury, Ely Shoshone Tribe, spoke about the history of her tribe. There was no winter last year. The tree kill has been substantial. Recently, the regional crop of pine nuts, which has been the tribe's staple in the past failed for three years in a row, which would have been devastating to the tribe's ancestors. Without a significant runoff, the SNWA groundwater development project seems less and less feasible. They have noticed some disappearance of migrant bird species, indicating possible localized

extinctions. The overpopulation of wild horses has led to even more impacts. The drought has substantially affected the tribe. Had the tribe continued to be exclusively hunters and gatherers they themselves would be extinct. Population growth has its consequences and in the desert the consequences of unrestrained growth is that eventually there is not enough to go around. There is not enough water to go around now. The Drought Forum should recommend limits to population growth in Nevada. The totality of Ms. Spilsbury's comments to the Forum are attached (Attachment #10).

Sparks

Wes Williams, Jr., Walker River Paiute Tribe, noted there are three primary issues the tribe faces related to drought. These are ranchers dealing with grazing, farmers dealing with irrigation, and people that use the water to fish in Walker Lake. The tribe's grazing has diminished significantly. This has been reduced by 25 percent. Ranchers face the same issues off reservation land. The tribe's irrigation is at the bottom of the Walker River system. Walker River surface water is governed by federal decree and the tribe has the senior water right on the river. If there is no water, there is no water flowing downriver. The irrigation season has been reduced. Mr. Williams believes part of this is because of upstream pumping. This is one issue that there could possibly be action on. In meetings in the past, the state was not sure how to reconcile the federal decree rights with groundwater rights and all the other existing water rights. There needs to be better administration, better monitoring and better enforcement. If there is a problem, there needs to be significant punishment.

The reservation was placed at the mouth of river, because the tribe relied upon the trout in the lake and the river to sustain themselves. This is a part of their history and their legacy. There has been no trout for the last five years. There has been decades of overuse and not having significant amounts of water to get to Walker Lake. Currently, there is a congressional program to purchase water rights upstream from willing sellers. Water rights holders can make their own decision on if they want to sell their water rights. The hope is that they can restore Walker Lake.

Vinton Hawley, Pyramid Lake Paiute Tribe, noted his tribe is the bottom user of the Truckee River water system. The tribe's main concerns are the overall ecosystems. The tribe has concerns over the lake level and the continuous recession of lake levels because once the lake gets to a certain level it will be considered a dead lake. They have a large ecosystem and so they try and take advantage of any conservatory efforts they can and look at sustainability for the future. It is difficult because there are certain users in the water system who take advantage of situations and receive minor punishments. Ultimately, all water users suffer the consequences of these actions. The tribe meets on an annual basis with US Fish and Wildlife Service to determine whether or not the tribe can have a successful spawning season. They look at ways to conserve and look at population and growth. Everything that is brought to the table concerning drought should be considered.

Member King asked if Mr. Hawley knew how much the lake has declined over the last four years. Mr. Hawley stated he did not know the exact number, but it has been significant. It is close to six feet, possibly more.

Member Walker asked if there had been increases in solidity at both lakes. The answer was yes. Mr. Williams noted this affects the fish.

Donna Marie Noel, Pyramid Lake Paiute Tribe, stated a major issue with drought is not only water quantity, but water quality. As there is less water in the system with population growth upstream they are not only seeing the effects of the river with low flows, but also poor water quality, which also leads to loading in the lake as the evaporation goes down. Looking forward over the next five years with growth in the Reno/Sparks area, water quality is a serious concern for the tribe. The issue is where is the waste going to go and if the drought continues additional water in the river may not be great if it is not clean water.

Bill Elliott, attending on behalf of Caleb S. Cage, asked if during the drought period had they seen groundwater issues and how resilient is it if this drought continues. Mr. Hawley noted the potential for flood has been witnessed quite often. Although this is a desert there is always a possibly for flash floods. There is always a possibility of extreme runoff that is going to bring lake levels up. Mr. Elliott asked about the municipal bonds with the wells and if they are resilient. Mr. Hawley noted they are.

Public and Private Water

Sparks

Kevin Brown, Virgin Valley Water District, provided a background on the area Virgin Valley Water District is located. Virgin Valley Water District has water rights and groundwater rights in the Muddy Creek Aquifer. They also have water rights on the Virgin River and water rights in the springs on the Virgin Mountains. They share the aquifer with southeast Utah and northwest Arizona. They have 8,200 metered accounts, 8,000 residential accounts and 200 commercial accounts. Their water rights on the Virgin River are released to the golf courses for irrigation at this time until sometime in the future when they will need to call on them for culinary water needs. Mr. Brown provided a description of their system. He spoke about recent mitigation measures they have taken including implementing a rate increase over the last six months. As a result of the rate increase, many customers have started to conserve and the District has seen significant reductions in the amount of water usage. Last year they, did away with an unmetered secondary irrigation system that was wasting water. Things they are doing that are longer term are: a rain gauge monitoring system and monitoring the Virgin River's flow. They have not seen a tremendous amount of reductions in the flow. They also have a groundwater monitoring program for their wells for aquifer recovery. They have not seen many reductions in the numbers in their aquifer. They are embarking on a ten-year study of their springs on the Virgin Mountains to determine flow rates. The water system has a good unaccounted for water loss monitoring program. They do not have a real issue with the drought. They have a good handle on what their water resources are right now.

Chair Drozdoff noted it is important to know the Forum is trying not to get in the way or to duplicate things that are already being done at the local levels and thinks the Virgin Valley Water District should be commended for being proactive in a number of areas.

Member King noted many of the recommendations from the State Water Plan are being implemented at the local level.

Vice-chair Entsminger asked what percentage of the Virgin Valley Water District's water is unaccounted for. Mr. Brown noted on an annual average they have approximately nine percent unaccounted for. Vice-chair Entsminger asked if the rate increase was implemented primarily as a conservation tool. Mr. Brown noted it was not, the primary reason was financial. They had infrastructure needs.

Mr. Brown also noted the City of Mesquite, on the wastewater treatment side, has a 100 percent reuse of water for golf courses, parks, etc. The wastewater is not sent to the Virgin River it is sent to and being reused within the City.

Darren L. Schulz, Carson City Public Works Department, provided a brief background on Carson City and his department. Seventy-five percent of their water is groundwater and twenty-five percent is surface water. At the beginning of 2015, in an effort towards conservation they asked for a ten percent voluntary reduction in water use across the board. It is still early in the season to determine the success, but it has started and now people are aware of the idea of conservation. They estimate they will be in the range of seven to nine percent reduction. Golf courses are watered with affluent water. Their affluent numbers are also down. They are in the middle of a five year rate increase that started two and a half years ago. The rate increase was not put into effect for conservation. It was to handle their aging infrastructure and depreciation that had not been addressed recently. They have noticed a reduction in water as a result of the rate increase. Their issues as far as water quality goes is arsenic and uranium. They monitor this closely. They have not seen anything over the past few years that concerns them.

Member Walker asked if there were any examples of rate increases specifically designed to educate and achieve levels and targets of reduction and conservation. If so, have they been successful. Also, what happens when there is no need to conserve anymore in terms of the income stream for the utilities. Mr. Brown noted he is not familiar with rate increases designed specifically for reduction and conservation. Mr. Schulz noted their rate consultant stated there are cases in which this occurs, but he was not sure about the details. Vice-chair Entsminger stated it is common practice at the major municipal level, not necessarily to do a rate increase solely for the purpose of conservation, but in setting rates to include conservation within the overall rate design.

Member King pointed out in working with Carson City the State Engineer's Office allows Carson City to actually pump more of their groundwater rights in times of drought with the caveat that the ten year running average does not exceed the amount of water they have in permitted rights. The State Engineer's Office has also done that in the Truckee Meadows. Member Huntington asked if this is the reason Carson City converted to using more groundwater than surface water. Mr. Schulz noted the reason is surface water is not available.

Scott Fleckenstein, Lyon County Utilities, provided an overview of the utility. They have approximately 6,000 connections, 8 groundwater wells. They have one large producing well. It is an infiltration well run off surface water rights. They can run the well from the first part of April until August or September. The last two years they have decided not to use that well. This was an operational decision they made as an organization. Lyon County did not feel it would be cost-effective to get the well started up and only be able to run it for a short period of time. Lyon County has 26 monitoring wells throughout the valley. They monitor the static water level on these wells on a bi-weekly basis. They do their production wells on a monthly basis (the static draw down levels). Lyon County shares data with USGS and the Division of Water Resources. This year they hired two seasonal employees called Water Watchers. The Water Watchers help customers with conservation and ensure they are watering on the correct days and provide public education. Lyon County has asked their customers to cut back by ten percent. From January to July of this year compared to last year they have cut back 15 percent.

Vice-chair Entsminger asked what they were in gallons per day. Mr. Fleckenstein noted they are at approximately 4 million gallons per day this time of year.

Las Vegas

Wendy Barnett, Utilities, Inc., provided background on her organization. The key is the community and how they work collaboratively with the community for water conservation efforts particularly in a period of drought. They are having to re-drill wells, rehab wells, redistribute pumping in some of their systems and sometimes in the same basin there is no significant changes in the water levels. As a private utility, the organization is required to spend their capital and put the investment to beneficial use to the community before they can ask to recover the monies. The biggest impact from the drought is loss of revenue. Water conservation results in the less use of water and as a result revenue suffers. Water conservation also runs the risk of not putting your water rights to beneficial use. They have a robust water conservation plan, which includes well monitoring, education, and use of reclaimed water. They have created drought plans aligning and in support of the state drought plan. They were approved by the Public Utilities Commission to have financial penalties for waste of water during times of drought. System management is a big part of conservation. As a private utility if their unaccounted water is too excessive the Public Utilities Commission can say that they are not going to allow them to recover some of those costs. It is not simple to fix the problems of unaccounted water. In their system management plan they put together solid standards and specifications that at least meet the minimum requirements of code. They use technology, GIS data, metering, etc. to help control the water-loss and have information on how water is used. They provide rebates for high efficiency toilets and washing machines. They have a rebate for the removal of salt cedars, which is a noxious weed. Conservation rates (tiered rates) is the most effective conservation tool they use. They are creating an education park focused on water conservation. There needs to be a mechanism allowing private utilities to stay viable and have the money available to maintain the level of service and improve things like unaccounted for water. That mechanism is called decoupling.

Sparks

Bruce Scott, Board for Financing Water Projects, provided background on his organization. The State Revolving Fund has been the primary source of revenue for loans and in some cases forgiveness loans for water systems. Water utilities within Nevada are always planning for drought. They have seen projects that are deepening wells and trying to improve sources. The drought has given water systems an opportunity to look at consolidation or interconnections. The resources for interconnections is available through the State Revolving Fund so there is an impact to rates, however, it is somewhat limited and spread out over time. The Board of Financing Water Projects requirements include metering. They include water conservation and other elements to help make the limited resource go further. One of the problems they see in small water systems is resources, not just financial, but technical resources. Nevada Rural Water has been a great tool for many small companies. A lot of the larger systems are good about providing technological assistance on request to some of the smaller systems. Non-potable water is also a resource. In many ways this can help offset some of the needs for water. Eighty-six percent of the projects on the 2015 drinking water state revolving fund priority list are for communities with a population of less than 20,000. Fifty-one percent of the projects are for communities that serve less than 1,000 people. Mr. Scott felt the leadership from the highest level of the state needs to be focused on a water resource initiative that is closer to what they have seen recently on the education initiative. There needs to be some tools, some clarifications, and coordination. The ideal place for this to start is with the Forum, and with the Governor's Office taking a strong lead in providing a plan. The drought is not just a shortage of water. The drought affects soils, it affects fire, and it affects grazing. There needs to be education for the judiciary. Many judges do not understand resources. They do not understand water, water administration, water history, or water distribution. Mr. Scott would like to see this considered as part of the recommendations made to the Governor.

Chair Drozdoff stated his concern that a lot of issues are going to court. There is concern in dealing with people who inherently do not understand the issues. Mr. Scott feels that a large portion of many of the cases that seem to go to court in part are related to a lack of policy guidelines, legislative direction, legislative intent and the statutes themselves. It is essential to get clarification of the state's policies and the state's guidelines and the legislative intent with regard to water and resources in general. A strong initiative from the Governor's Office is important.

Member King asked if Mr. Scott had given any thought to what educating the judicial branch would look like. Mr. Scott noted he was not sure how to do it, or who should do. Perhaps putting together a group of knowledgeable individuals that could be available, or ask the judges themselves what they feel they need education on. The Engineer's Office is in the middle of lawsuits and they are the resource for water knowledge. This creates an immediate conflict of interest.

<u>Water Authorities</u>

Sparks

Mike Baughman, Humboldt River Basin Water Authority (HRBWA), provided background about his organization. For the past 20 years, HRBWA member counties have continued to meet quarterly to address surface and groundwater quantity and quality issues of common concern. He spoke about the

characteristics of the Humboldt River Basin. He noted the drought is in its fourth year. About three years ago the Governor's Office declared the drought and the Division of Emergency Management was tasked with helping to put together a drought management plan. After some work by the taskforce, a recommendation was made to the Governor to produce a drought management plan. Nothing really came of it. He reviewed drought impacts, including reduced flows and economic and fiscal impacts. He spoke about drought recovery and drought management. They have seen conflicts arise between agriculture users. This is the first time this is starting to crop up. Mr. Baughman noted it will take two to three years of above-average flows to get back to where they need to be in the Humboldt River Basin. They would like to see the state take a leadership role in designing, implementing and institutionalizing a comprehensive and cost-effective cloud seeding program. The HRBWA believes there needs to be more done to curtail groundwater pumping in select areas to facilitate the recovery of the over-pumped basins. The state should take a leadership role in helping to design and construct additional storage capacity. The totality of Mr. Baughman's comments to the Forum are attached (Attachment #11).

Chair Drozdoff asked if Mr. Baughman's organization support more storage. Mr. Baughman noted they do support it. Mr. Drozdoff asked if there was support to do conservation and put water away for future use even in the wet years. Mr. Baughman noted there are years in the Humboldt River Basin when there is so much water going through the system they are releasing everything they can to keep from washing out irrigation structures. He noted this has been a discussion and they are open to the idea. Mr. Baughman stated three things the HRBWA would like to see in the Forum Plan: what specific actions are needed, who is responsible for taking the lead within implementing the actions, and estimates of cost and funding sources.

Steve Bradhurst, Central Nevada Regional Water Authority, provided background about his agency. The drought is a huge issue, however, down the road the big issue is water supply. The traditional sources of groundwater and surface water are limited. Drought, Climate Change and population increase, affect the water supply. Clean water will not always be there as expected. Mr. Bradhurst spoke about AB 301 (2013) and AB 198 (2015) which called for a study to be done to look at alternative sources of water for communities. He noted the Committee on Public Lands and the Central Nevada Regional Water Authority met with Utah, Arizona, and California to see what they were doing in terms of addressing their water supply. The totality of Mr. Bradhurst's comments to the Forum are attached (Attachment #12).

Mr. Bradhurst's recommendation is the summit includes a section to discuss state water supplies.

John Erwin, Truckee Meadows Water Authority, reviewed a presentation, available on the Nevada Drought Forum's website (*www.drought.nv.gov*). He noted a need to culturally adjust to the concept that it is always dry in Nevada. The uniqueness of the Truckee River system is it is different and it does have its challenges at the same time as it has its opportunities. He provided background on the water system. Last year has been the driest year on record. The river system is deals with endangered species, two different states, and two sovereign nations. The Authority has spent a lot of time educating and a lot of personnel have been out in the field responding to calls with sprinkler systems, irrigation leaks, etc. As result, there is a significant change in water use by their customers. They have changes in operations

which has created an opportunity for recharge in the county systems. Customer response has been phenomenal. They have been working on affluent treatment and affluent reuse.

Member Walker noted there will be 50,000 new jobs in the Truckee Meadows area and how that affects the Authority's planning. Mr. Erwin provided a history on the planning they did concerning both groundwater and surface water and the building of more storage. He noted economics will drive the future. The Authority can accommodate growth because they planned for it.

Member Walker asked about groundwater reservoir considering this is a big pumping year and if it is more expensive to pump the water and treat it and if there are declines in the resource. Mr. Erwin noted operating costs have increased because of the increased pumping. This year the Authority will see draw-downs from 15 to 40 feet with almost complete, or at least half, recovery. It is a resilient system.

John Entsminger, Southern Nevada Water Authority, provided background on his organization. In the Nevada, Clark County uses about 11 percent of the water supply. They have a robust, young system. They pump 900 million gallons of water a day with less than 5 percent unaccounted for. The year 2002, was the driest year in reported history of the Colorado River, and 2012 and 2013 were driest back to back years in reported history. The state has been in drought for a decade and a half. The Authority has seen Lake Mead decline 130 feet from the year 2000. It is at 39 percent full today. This affects water quality not just quantity. Temperature is the biggest concern the Authority has. They have had to install aeration systems in all of their regional reservoirs. There are three major things: conservation, water banking, and new infrastructure. On conservation they have reduced their per capita water usage by 43 percent in the last 15 years. Las Vegas tells the story that population growth and economic growth does not correlate one to one with water usage. They have seen the decrease in water usage as their population has grown by 25 percent. They decreased the percentage of water use by cutting down on outdoor use. Vice-chair Entsminger spoke about water banking. The Authority has instituted a number of programs, including banking with other states and Mexico. They have 1.5 million acre feet of water banked within Nevada and around the region. At their current rate of use, this is equivalent to 7 years of full water supply for the Authority. Mr. Entsminger also spoke about infrastructure. The Authority has 90 percent of their supply in one place. There needs to be assurances that you can access that water. They have instituted construction of a third intake into Lake Mead. It should be operational in approximately eight weeks. They also need pumps, therefore they are building a new pumping station.

A full account of the presentations and discussions of all the sectors are captured in the audio recording, available on the Forum's website (www.drought.nv.gov).

9) Presentation on Drought-Related Topic (Discussion and Possible Action)

Dr. Michael Young reviewed a presentation on water markets, available on the Nevada Drought Forum's website (*www.drought.nv.gov*). Nevada has the potential to become a leader in water management by learning from the Australian experience with water markets. It is important to improve water rights and to improve the systems that manage water rights. He provided history and background on how Australia

changed their water rights process. They created water accounts similar to back accounts. He spoke about unbundling water rights and seasonal allocations. It is simple and transparent. They went from a beneficial use concept, which they found was deepening the drought, and allowed people to save water for future use. They use management plans rather than courts to resolve water issues. He suggests this option should be offered in the Diamond Valley and in the Humboldt River Basin as a trial for approximately five years. Dr. Young mentioned there will be a report available in approximately four weeks.

Member King noted that the concept is intriguing and there is a basin in the Diamond Valley that is over-appropriated. If this concept can work there, it would be considered a viable concept. Dr. Young did go out and get funding for this project. There is a lot of promise in it. It is another tool that Nevada should consider. The measurement, monitoring and reporting of *all* water use is important to make this work. The State Engineer's Office has always been an advocate for this.

Member Huntington asked about any drawbacks from the system. Dr. Young noted one of the biggest drawbacks is that the discussion on water trading can create community fear that may cause a loss of wealth. The research shows the reverse has in fact been the case. The second drawback is concerns in the early stages that people wanted to include in putting water back into the environment and a lack of trust in the shares registers and banking systems. It is important to know that when someone wants a bigger part of a share there needs to be someone willing to take a smaller share, and also there needs to be trust in the accounting system.

A full account of the discussion is captured in the audio recording, available on the Nevada Drought Forum's website (*www.drought.nv.gov*).

10) Review of Discussion, Future Meetings and Agenda Items (Discussion and Possible Action)

Chair Drozdoff stated he did not have anything to add to this agenda item. Other Forum Members also did not have anything to add.

11) Public Comment: (Discussion)

Sparks

William Campbell, Intertribal Council, provided a brief background on the Intertribal Council and noted the disappointment in having no Native American representation on the Forum.

Councilwoman Duerr stated a lot of good ideas were brought forward during the meeting and spoke about the hydrologic cycle and the hydro illogical cycle, which is when there is focus on whatever is in front of us. She would like to recommend and support the suggestions made by Bruce Scott earlier in the meeting. She suggested the Drought Summit provide a specific role for people that may not be identified with a

particular group but still have a lot to say, including Native American representation. She suggested reviewing the "use it, or lose it" water law and possibly use a credit water system. She spoke about resources and data collection.

Chair Drozdoff thanked Department of Agriculture Director Jim Barbee and his staff for assisting with the meeting and getting the remote locations involved.

A full account of the discussion is captured in the audio recording, available on the Nevada Drought Forum's website (*www.drought.nv.gov*).

12) Adjournment:

Meeting adjourned by acclamation at 4: 48 p.m.

University of Nevada Cooperative Extension – Lander County
835 N. 2nd Street
Battle Mountain, NV

University of Nevada Cooperative Extension – Lincoln County
360 Lincoln Street
Caliente, NV

Great Basin College
1500 College Parkway
High Tech Center Bldg Room 123
Elko, NV

Great Basin College – Ely Campus
2115 Bobcat Drive
Room 114
Ely, NV

University of Nevada Cooperative Extension – Eureka County
701 S. Main Street
Eureka, NV

University of Nevada Cooperative Extension – Churchill County
111 Sheckler Road
Fallon, NV

University of Nevada Cooperative Extension – Douglas County
1329 Waterloo Lane
Classroom
Gardnerville, NV

University of Nevada Cooperative Extension – Mineral County
205 South A Street
Hawthorne, NV

University of Nevada Cooperative Extension – Clark County
1897 N. Moapa Valley Blvd
Building A
Logandale, NV

University of Nevada Cooperative Extension – Pershing County
810 Sixth Street
Lovelock, NV

University of Nevada Cooperative Extension – Nye County
1651 E. Calvada Blvd
Pahrump, NV

University of Nevada Cooperative Extension – Humboldt County
1085 Fairgrounds Road
Classroom
Winnemucca, NV

University of Nevada Cooperative Extension – Lyon County
504 South Main Street
Yerington, NV

Andrew K. Clinger
City Manager

August 18, 2015

Director Leo Drozdoff
Nevada Department of Conservation & Natural Resources
1 S. Stewart St., Ste. 1003
Carson City, NV 89701

RE: City of Reno Formal Participation in the Nevada Drought Forum

Director Drozdoff,

Please find this letter as a formal request from the Reno City Council that Nevada cities, such as the City of Reno, have a formal place at the table as part of the Nevada Drought Forum. This request comes from a unanimous vote of the Reno City Council taken at the August 12, 2015 City Council meeting.

As you are likely aware, cities have a significant role in water conservation and drought management. At the local level, we create policy initiatives and enforcement focused on saving water, both at publicly-owned facilities and on private property through our regulatory role. This list includes development approvals, building and plumbing codes, landscape and tree ordinances, declaring local drought conditions, and the like. We also have an important role in educating the public and publicizing drought and water conservation efforts.

In order to both share information with and learn best practices from fellow municipalities, and other agencies and interests, we would like to see formal participation from these entities at future Nevada Drought Forum meetings.

The City of Reno is taking a leadership role in our region regarding water conservation both in response to the existing drought conditions and to effectively create sustainability as we are faced with unprecedented growth in the next five years. By creating a formal place at the table for Nevada's cities, there would be better representation and engagement from our municipalities on this important issue requiring collaboration. We look forward to hearing from you regarding this request.

Respectfully,

Andrew Clinger
City Manager

Eureka County Concerned About Misuse of Drought to Reduce Livestock Grazing

Prepared by Jake Tibbitts, Eureka County Natural Resources Manager

Eureka County continues to be concerned about unjustified and arbitrary closures of livestock grazing in certain areas under the excuse of drought. BLM has developed Drought Management EAs in each district and a statewide Nevada Drought Handbook. More and more allotments are receiving livestock grazing closures because of drought. However, there are different types of drought and we contend that many of our rangelands are not experiencing vegetative drought effects due to timely rainfall events.

There is a general misuse of and reliance on the US Drought Monitor (USDM) in justifying grazing restrictions. Borrowing from definitions from the Society for Range Management, the various BLM Drought Management EAs define drought as:

- A prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall.
- A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water.

An area can be in drought because of lack of snow and streamflow but well-timed precipitation events often result in normal to above normal vegetation conditions. Simply put, the rangeland forage in many areas across the state is normal to above normal due to spring and summer rains and the second definition of drought (vegetation conditions) is not occurring. We have seen specific examples of ranchers being forced into so-called "voluntary" grazing reductions or Full Force and Effect decisions based on the area being in drought while the rangeland conditions on the ground do not support that conclusion.

In regards to forage availability and rangeland condition, timing of precipitation is much more important that total precipitation. Studies from University of Idaho concluded that precipitation in only two months, May and June, explained 72% of forage species annual variability and including April explained nearly all of the variation (Rimbey et al., 1992). This means that overall, the area may be in drought based simply on annual precipitation, but good storms at the right time of the year can provide ample and even excess forage. This year, we have had rainfall at the right times, in most of the right places, to grow normal to above normal vegetation even while springs and streams are dry.

The USDM has the disclaimer that the "Drought Monitor focuses on broad-scale conditions. Local conditions may vary." The technical reference for the USDM highlights that water supply indicators such as snowpack, streamflow, groundwater levels, and reservoir levels have heavy weightings in determining severity of drought (see http://droughtmonitor.unl.edu/AboutUs/ClassificationScheme.aspx). We are not disputing that we are in a drought that matches the first definition of drought above. But the drought we are suffering from is an overall lack of moisture, primarily snow, to recharge our springs, streams, and groundwater supplies. Again, it is imperative to consider that forage and rangeland health is primarily driven by late spring and early summer rain events, not snow.

A metric that has not been actively used when taking broad scale assessments of forage availability and rangeland condition is the Vegetation Drought Response Index (VegDRI) (http://vegdri.unl.edu/Home.aspx. In fact, the Drought EAs state that the USDM will be used alone only to identify areas of water shortage. Yet, the EAs also state that the USDM **and** the Vegetation Drought Response Index (VegDRI) would be consulted **in tandem** to be the first step in "determine drought afflicted areas and vegetation condition as it pertains to drought stress" (p. 4). We contend that BLM is often purposefully choosing to overlook the VegDRI as the first step in determining where to focus site-specific monitoring because the vegetation conditions exhibited according to VegDRI do not highlight severe or extreme drought as does the USDM. As previously mentioned, the USDM is primarily for making broad scale assessments on water supply and determining federal drought assistance. Any vegetation information going into the USDM is also "outweighed" by the other water specific indicators. According to the VegDRI references, "VegDRI maps are produced every two weeks and provide regional to sub-county scale information about drought's effects on vegetation....The VegDRI calculations

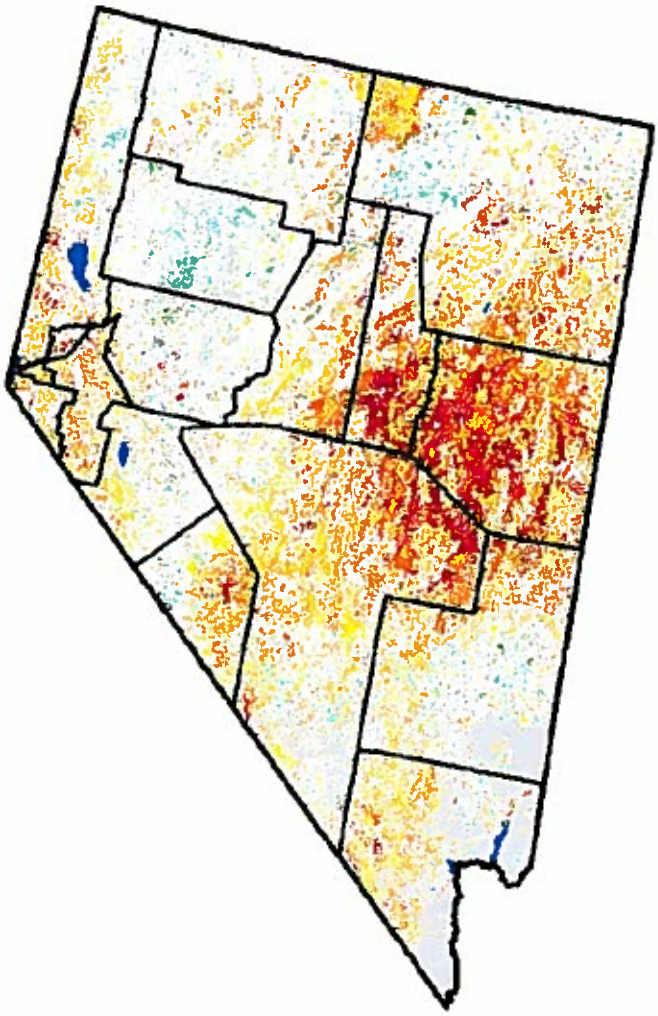
integrate satellite-based observations of vegetation conditions, climate data, and other biophysical information such as land cover/land use type, soil characteristics, and ecological setting. The VegDRI maps that are produced deliver continuous geographic coverage over large areas, and have inherently finer spatial detail (1-km2 resolution) than other commonly available drought indicators such as the U.S. Drought Monitor."

The figures below show most recent VegDRI and USDM maps. For much of Nevada, the large bulk of areas are "Near Normal" to "Pre-Drought" with some areas some areas being "Unusually Moist" and others starting to exhibit "Moderate Drought" with very few exhibiting "Severe Drought." Interestingly, the VegDRI almost depicts an inversion of the USDM of the same general date – the areas showing the worst drought conditions through USDM are actually also exhibiting the least vegetation drought. VegDRI depicts a very different drought picture when compared to the USDM (again, primarily based on water supplies because hydrologic drought can and does occur independent of vegetative drought. Also, the comparison of VegDRI maps from a year ago shows that vegetation conditions are in much better shape and in some cases many have recovered by multiple drought classes. And last year's VegDRI in September 2014 also showed marked vegetation improvement from 2013. Yet, in our experience, most of the drought grazing restrictions imposed by the BLM have coming these past two years even with these rangeland vegetation improvements and recovery for two years in a row. These same differences between VegDRI and USDM have existed in all of the respective index maps we compared throughout the 2014 growing season up to today.

Vegetation Drought Response Index

August 10, 2015

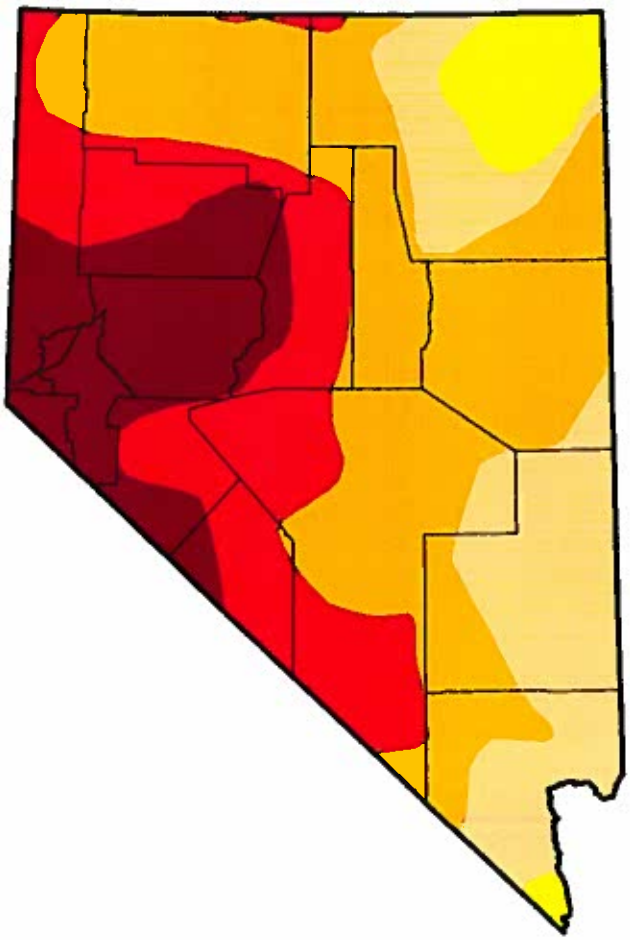
Complete: Nevada



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water

U.S. Drought Monitor
Nevada



August 11, 2015
(Released Thursday, Aug. 13, 2015)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	94.78	76.08	37.52	15.93
Last Week 8/4/2015	0.00	100.00	94.78	76.08	39.86	11.08
3 Months Ago 5/12/2015	0.00	100.00	99.93	87.00	49.21	18.38
Start of Calendar Year 12/30/2014	0.00	100.00	96.98	68.25	48.38	11.89
Start of Water Year 9/30/2014	0.00	100.00	97.04	69.89	48.38	11.89
One Year Ago 8/12/2014	0.00	100.00	100.00	86.92	55.21	11.89

Intensity:

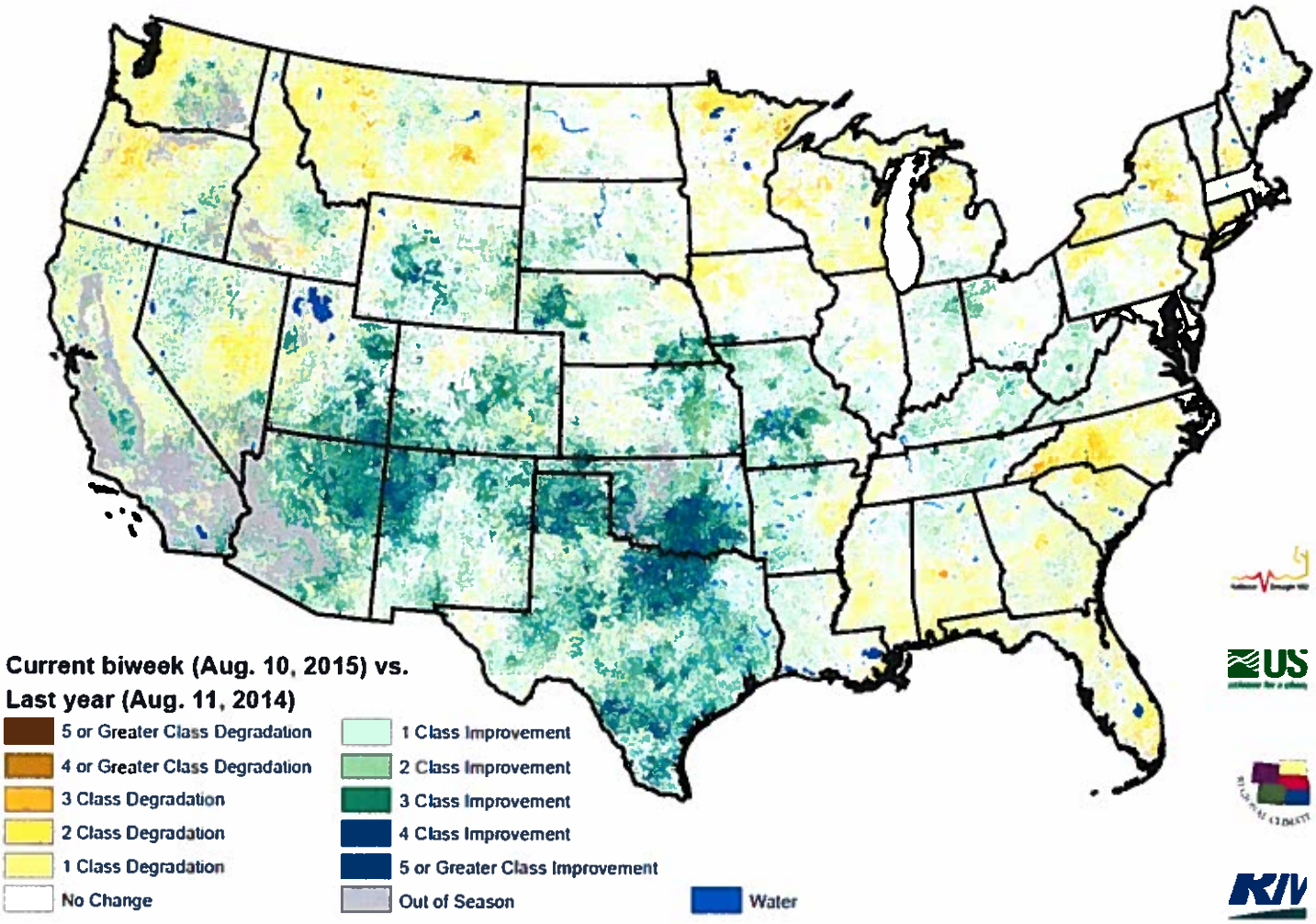
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

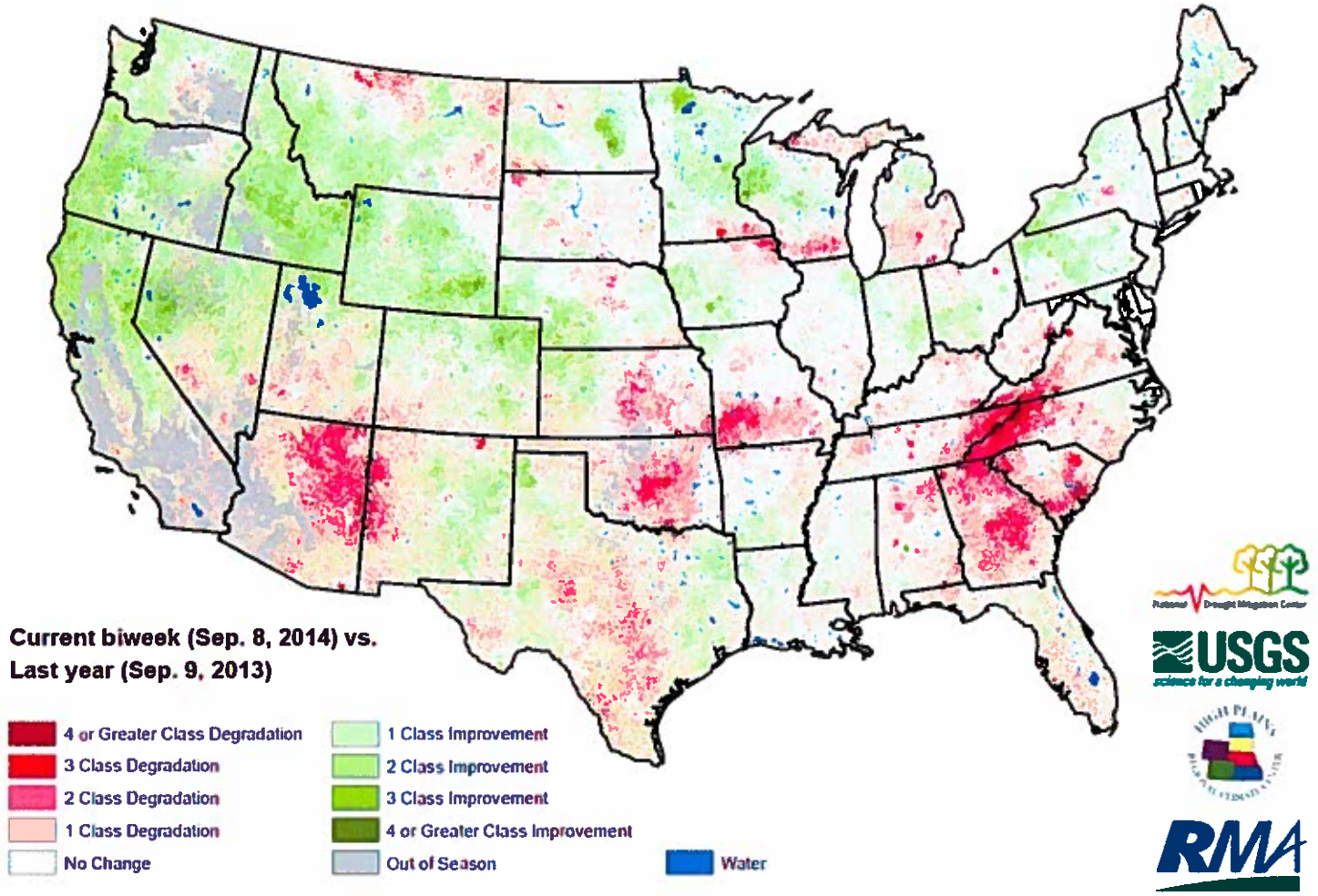
Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

Vegetation Drought Response Index (VegDRI) Change



Vegetation Drought Response Index (VegDRI) Change



These examples above place ranchers in the often untenable position of not being able to provide for the needs of their livestock at the right time of the year. Also, in some examples, these restrictions could be seen as a taking since the grazing season-of-use is not in line with the permitted use of the water right appurtenant to riparian areas.

We have found that under the above circumstances, any real resource burden is often shifted to private lands. Much of the prime and invaluable wildlife and riparian habitat in the State is under private control. Anytime grazing restrictions are placed upon the federally administered land, it only increases the possibility of land degradation on private lands—these restrictions do not solve the resource issues on a regional or global scale.

Request for the Drought Forum's Consideration

We ask for assistance in exhorting federal land management agencies, primarily BLM, to quit misusing drought as an umbrella excuse to reduce grazing when drought is truly not impacting rangeland conditions and to avoid unjustified, arbitrary and subjective grazing restrictions on federally administered lands. We ask the Drought Forum to assist with the following to address grazing and vegetative drought on federally administered land:

1. Help ensure agencies separate hydrologic and vegetative drought and do no rely on USDM for drought determinations regarding vegetation. Instead, properly use VegDRI and incorporate other indices such as the Evaporative Demand Drought Index (EDDI) being researched by DRI and Dr. Huntington.
2. Federal agencies in coordination with grazing permittees must ensure that management decisions are based upon the best rangeland science, that flexibility is built into grazing permits to allow for adaptive management as issues and concerns arise, and that that quality and quantity of data collected can support all decisions made;
3. Before imposing grazing restrictions or seeking changes in livestock stocking rates or seasons of permitted use, federal agencies in coordination with grazing permittees must identify and implement all economically and technically feasible livestock distribution, forage production enhancement, weed control programs, prescribed grazing systems, off-site water development by the water rights holder, shrub and pinyon/juniper control, livestock salting/supplementing plans, and establishment of riparian pastures and herding;
4. Federal agencies in coordination with grazing permittees must assure that all grazing management actions and strategies fully consider impact on property rights of inholders and adjacent private land owners and consider the potential impacts of such actions on grazing animal health and productivity.

If you have any questions or would like to discuss this matter in more detail, we can be reached at 775-237-6010 or at natresmgr@eurekanv.org. Thank you for your time and consideration.

PERSHING COUNTY
WATER CONSERVATION DISTRICT
OF NEVADA

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August 24, 2015

Leo Drozdoff, Chairman
Nevada Drought Forum
c/o Nevada Department of Conservation and Natural Resources
901 S. Stewart St., Ste. 1003
Carson City, NV 89701
Contact Email: Gail Powell (gpowell@dps.state.nv.us); Jo Ann Kittrell (jkittrell@dcnr.nv.gov).

Dear Chairman Drozdoff:

The Pershing County Water Conservation District ("PCWCD" or "District") is an irrigation district located in Lovelock Nevada, formed under Chapter 539 of the Nevada Revised Statutes. PCWCD is a quasi-municipal agency that is led by a Board of Directors with myself as District Manager. While the District provided public comment at the August 19, 2015 Governor's Drought Forum, the District submits the following detailed written comments.

Overview

PCWCD owns, controls, and operates a water conveyance system that provides water to approximately 100 constituents with approximately 37,506 acres of irrigated agricultural lands within the District boundaries. PCWCD operates diversion structures and dams along the Humboldt River, as well as diversion structures within the District's delivery system. The District controls a significant number of the senior decreed surface water rights to the waters of the Humboldt River, with storage rights in Rye Patch Reservoir, as well as the Upper and Lower Pitt-Taylor Reservoirs.

In recent years, the Humboldt River's flow to its terminus ceases long before any water reaches the District's farmers. While the District holds very senior decreed water rights, little water is making it to the District. The District is currently enduring its second consecutive year with 0% water allocation to its constituents.

Hydrologic Connectivity

The Humboldt River Basin groundwater aquifers are greatly over-appropriated. Studies show that groundwater pumping, likely increased with drought, and in the vicinity of the river, is

pulling water away from the river. This hydrologic connectivity is a large factor contributing to the District's lack of water.

The Humboldt River Basin is comprised of 34 separate and distinct hydrographic groundwater basins. According to the Nevada Division of Water Resources, there are 1,852 wells within the Humboldt River Basin, and 1,291 groundwater permits with their point of diversion within 5 miles of the Humboldt River and its tributaries, of which 273 capture 10% or more of their water from the Humboldt River. The total combined perennial yield of all collective groundwater basins in the Humboldt River Basin is 476,400 AFA. However, the total combined permitted groundwater allocation is 753,394 AFA. Of the 34 hydrographic basins within the Humboldt River Basin, 23 are over-appropriated.

Evidence supports the conclusion that groundwater users have lowered the water table in the basins surrounding the Humboldt River to a depth that is causing a dewatering of the Humboldt River, as surface waters are flowing away from the river to service groundwater withdrawals. It is clear that these groundwater withdrawals are junior in priority to the Humboldt River Decree. Groundwater withdrawals are causing a severe and detrimental impact to the surface water Decree users whose priority entitlement is unavailable due to lack of regulation of the groundwater sources.

Water Use for Mining and Milling

The majority of groundwater appropriation in the Humboldt River Basin is used for irrigation and mining purposes. Water use for mining and milling is most significantly used to dewater open pit mines, which is the current practice of extracting minerals in the Humboldt River Basin. This practice often seeks to extract ore from below the water table, which requires the mining area to be "dewatered." Generally, the mine drills a number of wells around the mining pit, then pumps water to create a cone of depression under the pit, thereby drying up the mining area. When the pit is not being dewatered, the pit fills up to the level of the water table, creating a pit lake.

In Nevada, the State Engineer grants permits for mining and milling on a "temporary" basis. However, rather than issuing one-year temporary permits as allowed for under statute, historically, the State Engineer issues permits for mining and milling akin to permanent water rights, while side-stepping an analysis as to whether water is available for appropriation. The Humboldt River Chronology states that "mine dewatering and mine pit lake formation, and their potential near-term and long-term effects on groundwater levels and surface-water flows" has been identified as a principal water-related issue plaguing the Humboldt River Basin.

In an article entitled *Nevada's Pit Lakes: Wasted Water*, published in the December 2012 issue of the *Desert Report*, Nevada's pit lake problem was discussed in detail. Nevada has more precious metal pit lakes than any other state in the country. The majority of pit lakes in the State of Nevada are in the Humboldt River Basin, and when filled, hold over 1 million acre-feet of water. Evaporation from these pit lakes is also staggering. It has been estimated that such evaporation will "remove the equivalent of five percent of the flow of the Humboldt River at Winnemucca each year."

Action Taken by PCWCD

After feeling the effect of groundwater pumping that decreases flows within the Humboldt River, coupled with the ongoing drought in the West, the District sought the assistance of the State Engineer to develop a collective plan to ensure PCWCD's senior water rights are delivered, while at the same time attempting to allow junior users to continue to allocate water to the greatest extent possible. On August 21, 2014, PCWCD prepared a report for the State Engineer to assist in the development of such a plan.

The report provided the State Engineer with a list of requested "Action Items" and asks the State Engineer to take action to: 1) develop a system of conjunctive management; 2) regulate mine dewatering under statutory code; 3) account for "temporary" permits in the hydrographic basins' annual budget; 4) regulate mining pit lakes under statutory code for water storage; 5) curtail junior groundwater rights in basins surrounding the Humboldt River, until perennial yield equilibrium is met; 6) require mandatory metering on groundwater wells in the Humboldt River Basin; 7) create an enforcement officer to regulate groundwater use; and 8) bring groundwater basins back to sustainability. On September 9, 2014, the PCWCD Board Members and Manager met with the State Engineer to discuss the report and request action. The report also discussed water management strategies utilized by other western states. While the District understands that not all actions taken by other states are applicable to the difficulties effecting Nevada, the point was to start the conversation to develop a system of water management that will work for Nevada. PCWCD received no written response to their report or otherwise.

On January 14, 2015 and January 15, 2015, the State Engineer held a series of workshops on the Humboldt River stating their intent to prepare a capture model in the basin, to be completed within 4 to 5 years. The State Engineer also demonstrated a simple "Glover" analysis capture model illustrating that groundwater pumping curtailment would supply additional water to the Humboldt River, but determined that the "Glover analysis shows that curtailment of pumping over one irrigation season will not cause an appreciable gain in Humboldt River flows."

On March 24, 2015, with a second irrigation season with 0% allocation looming, the PCWCD Board Members again met with the State Engineer, this time presenting data through a District retained hydrogeologist. The District provided to the State Engineer a Request for Implementation of Water Management Strategies. PCWCD expressly asked for a written response to their letter and presentation. No response was received.

On August 12, 2015, PCWCD filed a Writ of Mandamus against the State Engineer seeking action be taken to bring the groundwater basins surrounding the Humboldt River back to sustainability. While the District hoped to avoid litigation, inaction is affecting the livelihoods of all those in agriculture, as well as their economic impact in the Lovelock area. The hope is that the Writ will help combat the increasing interference groundwater pumping has on the Humboldt River.

State Action Needed

First and foremost, the doctrine of Prior Appropriation, the law governing all water resource management in the State of Nevada, must be complied with. Before any new

legislation, or any new management practices are established to better manage drought, the law must be followed, and senior rights must be served before junior rights.

Beyond that, sustainability of groundwater must be a key priority in confronting the effects of drought, and water management as a whole. Decades of over-appropriation of the groundwater resources in this State has created a detrimental effect on the surface water sources in the state, including an unknown effect on the future of groundwater availability. The State Engineer is now faced with the task of trying to right the years of abuse. PCWCD believes the tools for sustainable management are available, however, providing the State Engineer, the Nevada Division of Water Resources, and the Department of Conservation and Natural Resource, with further power to develop sustainability based programs, may be necessary for real action to take place.

As previously provided to the Nevada Division of Water Resources, PCWCD proposes managing water use in the Humboldt River Hydrographic Region in the following manner, and proposes the following action be taken:

1.) Bring each groundwater basin along the Humboldt River that is pumping in excess of its perennial yield into balance via a sustainable annual yield concept. This may include and require curtailment based on priority.

2.) Initiate Rulemaking now to allow for the future management of the groundwater and surface water basins along the Humboldt River to be managed as one system, to correct the current imbalance in the surface water system.

3.) Identify and establish "indicator wells" in each basin along the Humboldt River to evaluate the water table aquifer within 7 miles of the Humboldt River corridor, as well as along the major tributaries to the Humboldt River. These indicator wells can then be used for additional monitoring to track hydraulic gradients to surface water discharge in each basin within the Humboldt River Hydrographic Region. PCWCD proposes indicator wells for, at minimum, the Winnemucca, Paradise Valley and Grass Valley hydrographic basins.

4.) Curtail groundwater permits, if prior to the irrigation season (i.e. March 1) the "indicator wells" show that the hydraulic gradient between the indicator well and the Humboldt River is less than 90% of the pre-pumping hydraulic gradient, and thus would pull water from the surface source once the pumps turned on. Historic well and/or surface water elevation data are to be utilized for determining the initial hydraulic gradients.

The District welcomes the opportunity to aid in the State's drought response, and share its insights and experiences, as well as information it has collected, in its effort to keep water

flowing to the District's constituents. If you have any questions regarding that discussed above, please contact the District.[1]

Very truly yours,

PERSHING COUNTY WATER CONSERVATION DISTRICT

Bennie B. Hodges
District Manager
Pershing County Water Conservation District

[1] Letter prepared at direction of Bennie B. Hodges, by Schroeder Law Offices, P.C., 440 Marsh Avenue, Reno, NV, 89509.

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August 19, 2015

Marianne Leinassar asked me to attend today's conference for FIM Corporation. Marianne, her father Fred Fulstone, and son Kris own and operate their family's sheep ranch with irrigated croplands producing hay in Smith Valley, pasture in Bridgeport Valley, and extensive rangeland grazing allotments on BLM and Forest Service controlled areas.

1. Western Nevada ranches suffer drought in two possible ways. First is the obvious lack of snow pack that normally produces the water needed for irrigation of crops and for livestock water from springs or creeks on rangelands. Second is lack of rainfall in April and May that is needed for production of range forages.

2. Churchill County farms received less than 20% of average water which provided a single irrigation for most producers. Unusual amounts of rainfall kept many alfalfa and pasture fields productive into July. April and May rainfall resulted in average or above average range forage production.

3. Pershing County farms received no irrigation water from the Humboldt River. Some areas received rainfall that produced rangeland plants as forage but other areas only received May and June rainfall which favored certain weeds such as Russian thistle and Halogeton.

4. Lyon County received a fraction of normal water for irrigation from both forks of the Walker River.
    - Smith Valley farms had a small amount of water from storage and decree from the Walker River.
    - State Engineer threatened to also cut off irrigation from "supplemental" wells.
    - Rangelands received spring rainfall that produced abundant forages so there is no detrimental affect of drought on rangeland forages.
    - However springs and streams dried up and water has to be hauled to livestock at great expense.

5. Mismanagement of upstream watersheds has greatly reduced the amount of water yield that used to flow into our reservoirs and recharge our valley aquifers. Forest Service and BLM have failed to restrict the spread of Pinyon-Juniper trees and have allowed willows and other species to plug up the streams so badly that even without the drought we did not receive the normal water flow. This drought has made the effect of badly managed rangelands all the worse.

6. Water for irrigation in Lyon County comes from irrigation reservoirs built in Bridgeport and Topaz. Those reservoirs and others have been assigned a minimum pool for the frivolous purpose of providing fish and wildlife for recreation. When water is abundant that is not an issue but with drought the water rights for agriculture need to take first place.

7. For years requests that BLM and Forest Service spend some money to drill wells, develop springs, and other water developments have either been ignored or have been answered with statements about how NEPA will take a long time to complete so nothing can be done for a long time. If new developments and needed repairs had been done when requested the water resources for both livestock and wildlife may have been adequate for this drought.

8. Nevada has the best water law in the West. Our law protects citizens as owners of permitted (statutory) water rights and protects the owners of pre-statutory vested water rights as well. This drought is inconvenient but it is not worth compromising Nevada Water Law for some short-term gain. Please work through this situation starting from the fact that water rights and other private existing rights on federally controlled lands and on patented lands must be protected and must be intact when the drought ends.

Talking Points: Legal Uncertainties and Drought Response

1. How has drought affected the livestock industry

From a range grass production stand point not much. Rangelands are in good condition and grass production for the past two years have actually been very good thanks to well timed spring and summer rains.

Pastures relying on snow pack and runoff are deficient and way below normal.

Stock water is an issue on many allotments.

Irrigation water for hay production is deficient due to the reduced snow pack.

A lot of legal uncertainties are present if this drought situation continues. Conflicts between users will intensify.

- Surface water sources with senior water rights may be impacted by junior groundwater pumping. As surface water flows decline, surface water users may switch to groundwater and the increased pumping levels could impact other groundwater users. More straws in the ground.

- While conflicts between water users will first be addressed by the State Engineer's office, eventually the issues will reach the court system. Many of the issues related to water use conflicts will concern areas of law that have not been interpreted or enforced before. The effects of drought will test the completeness and complexity of Nevada's water law.

- Steps should be taken now to improve the clarity of certain key aspects of Nevada's water law so that all water users can be treated fairly when they are faced with responding to water supply limitations caused by drought.

- The areas of law that should be clarified are:

    - Recognizing in statute that impacts to other water rights is an acceptable part of sharing a water resource, but that when an impact rises to a level that cannot be mitigated, a conflict exists and the prior appropriation system prevails.
    - Monitoring, management, and mitigation plans ("3M Plans") that rely on adaptive management principles are appropriate tools for the State Engineer to use and consider, both in deciding whether to grant a water rights application and in managing competing water uses and protecting the environment.
    - The State Engineer has the inherent authority to require 3M Plans, but the legislature can confirm this and add detailed requirements like the appropriate

contents of a 3M Plan and the timeframe for setting mitigation triggers, including whether performance bonds should be required.

- When mitigation is necessary, water right users should expect to receive the same amount of water, in the same place, and at the same time as provided for in their water right, but do not have an entitlement to water from a specific source.
- In a drought, conservation should be rewarded and not punished by the "use it or lose it" system. Conserved water can be used by junior water users and the junior water rights retired in order to benefit the system.

- Legislative ambiguities lead to economic uncertainties.

- The Nevada Drought Forum should be used to identify specific statutes that can be amended and clarified, and the Governor should consider these recommendations in the bill draft request process for the 2017 legislative session.

Nevada Farm Bureau Federation
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Nevada Drought Forum Sector Meeting
Wednesday, August 19, 2015

Mr. Chairman and members of the Nevada Drought Forum, my name is Darrell Pursel. I'm here this morning representing Nevada Farm Bureau Federation. Nevada Farm Bureau Federation is the largest general agriculture organization in Nevada, representing over 18,000 member families. I am the president of the Lyon County Farm Bureau and a 5th generation Nevada farmer. I farm 320 acres and have a small cow-calf operation in Yerington.

The total economic impact of Nevada's agriculture cluster is $5.3 billion. Our industry is one of the largest and most valuable in Nevada, and it is one that is greatly affected by the drought. Lack of water for farmers and ranchers has resulted in cutbacks across our industry. To some Nevada farmers, the current drought is devastating, and to others, it is just another challenge. Each farmer has different problems due to their individual circumstances and location even though they may be next door to one another. Farmers have fallowed valuable farmland because there is not sufficient water to grow the crops they would normally grow. In counties like mine, farmers have been allocated 3 percent of their normal surface water rights and must rely on supplemental pumping rights to grow crops. Without a wet winter, farmers will not receive any surface water rights and may be forced to cut back their supplemental and primary pumping rights by as much as 75% or more by priority. Further, the lack of well water pumping for irrigation may fallow 75% or more of farms in the two valleys. That means only 25% of agriculture wells will be allowed to be pumped in the coming year in Mason and Smith Valley's . The total economic impact of food and agriculture is $338 million in Lyon County. Drastic cutbacks to our water use due to drought will be detrimental not only to our farmers but also the local communities on which agriculture has a positive economic effect.

Some livestock producers have had to sell off some of their herds, buy or lease more pastureland or grazing allotments and feed more hay. Many have been forced to take their livestock out of state for pasture. In range operations, many producers have had to drill livestock wells, purchase water trucks and haul water for livestock to drink. Ranchers in counties like Lander have been forced off of their permitted land early because drought environmental assessment triggers have been met. They have been

forced to sell their animals because they are not permitted to graze all of the livestock they own. The drought directly affects Nevada agriculturists' livelihoods, and in some cases, it has forced farmers and ranchers out of business dispalcing generations old farming and ranching operations.

This is not the first drought affecting our industry. Agriculture in Nevada has always tried to become more efficient at using our water resources because we face drought often. There are many examples of what the agriculture industry has done to conserve water for irrigation. Starting in 1920 Topaz and in 1923 Bridgeport reservoirs were built by farmers on the East & West Walker River to help limit the effects caused by drought by being able to store water in the good years for use in drought years. In the 1960s and 70s, many of the farmers put in irrigation wells to help survive droughts when water was short. In the late 70s to today, they have put in concrete ditches, underground pipelines, sprinkler irrigation and laser leveling fields. In the recent years, drip tape, variable drives and GPS control and leveling systems have been employed all to help use water more efficiently. Each and every one of these pieces of technology increases efficiency and reduces water consumption especially in drought conditions and can be the difference between producing a crop and not. As better and more efficient technology becomes available, farmers will be the first to adopt their use.

Our ranchers also continue to use efficient methods to preserve the rangeland in years of drought. They practice holistic management of the land to graze large numbers of cattle while preserving and improving the vegetation for animals and wildlife in the future. They rely on sound grazing practices, ensuring that public lands are properly grazed to prevent wildfires, which are more common in years of drought.

Several big obstacles exist to overcoming additional levels of water efficiency. Often times, uninformed government officials and individuals make decisions regarding the agriculture industry and drought. While agriculturists in Nevada are dedicated to conserving water, they often face misplaced restrictions that will not conserve water or protect the rangeland that needs to be conserved and protected. In the last year, the BLM closed grazing allotments because of antiquated drought environmental assessments even though the area in question had lots of vegetation due to spring rains. The Nevada Division of Water Resources attempted to implement a well water pumping curtailment without doing sufficient research to identify which parts of the valley needed to be curtailed.

The other obstacle that our industry faces is one that cannot be eliminated. Agriculture needs water to operate. Forcing our agriculturists to cut their water use back more than they currently do will result in a reduction in the availability of local

fruits, vegetables, meat and animal by-products. It has been said that by the year 2050, the Earth's population will have doubled. Where do you think your food will come from? Agriculture will have to produce twice as much food and fiber than we do now and more than likely with less water and less land than we currently use. Today, each farmer produces enough food and fiber for 155 people. In 2050, each farmer will have to produce for 310 people or more.

In closing, I would like to end with a short personal story. Due to the drought this year and loss of production, I began raising pheasants and mallard ducks. I fed the wheat in a grain bin that I couldn't use for other purposes to my new birds and plan to start a pheasant hunting preserve to increase income in the future. I am sure you are wondering who in their right mind would raise ducks in a drought. I'll tell you who, agriculturists. In hard times like these, we will adapt to persevere because we have adapted since the beginning of civilization to feed a growing population. We are farmers and ranchers, and we will continue to feed the world even when we face challenging times like these.

Thank you.

Good morning Chairman Drozdoff and the rest of the Committee. We appreciate you taking the time today to hear testimony from a variety of agricultural and conservation interests. My name is Joe Sicking, and I'm the Chairman of the State Conservation Commission. As many of you know, the Commission works with and assists the 28 Conservation Districts throughout the state; all of them provide locally elected leadership on renewable natural resources in Nevada. They all serve as volunteer Supervisors, but they do their best to help their communities address some of the most important issues of our day.

Of course water, and the related use of it, is always one of the most important natural resources there is, particularly in Nevada. The current level of drought, stretching now well over ~~the past~~ four years, has led many of its traditional users to conserve, use less, and for some not even have any to use ~~currently~~.

In order to remain productive in a drought-stricken state such as Nevada is currently, most agricultural producers have done everything they can to continue their operations and yet remain economically viable. With the help of NRCS, some producers have been able to convert from flood irrigation to center pivot. This option, although a large investment for the producer, does provide significant water savings as well.

Some operators are leaving some of their fields fallow – others have done so not by their choice but due to the fact they simply don't have water to use. It's not uncommon these days for producers to leave their grain crops in a year or two longer during their normal rotation between alfalfa and grain, since this allows for a lower use of irrigation water. Others are trying different crops that are water efficient or use less water as well. Grains such as Teff, as well as others, use significantly less water; provide a cash grain crop, as well as useable forage if the producer chooses to use it as such. Some simply ~~farm~~ till it into the soil which provides for less water usage the next few years on that field due to higher levels of organic matter.

The Conservation Districts themselves have been actively working on developing projects that could help Nevada's waterways so be more efficient and effective, store water on the land longer, and help in putting those waterways into proper functioning condition. The District I serve on, Paradise-Sonoma in Humboldt County has partnered with the Owyhee Conservation District in Elko County and applied for a Conservation Innovation Grant through NRCS. If we are successful in obtaining this grant – we won't know for sure until next month sometime – it will allow us to put many miles of the Little Humboldt River, portions of both the North Fork and South Fork, into proper functioning condition. This project will help keep what little water we

receive in those drainages in time of drought, on the land longer and allow it to be used more efficiently. It also has a side benefit of improving habitat for the Greater Sage-grouse which as we all know is a big issue these days.

The State Conservation Commission, in partnership directly with the Nevada Association of Conservation Districts, as well as many others including BLM, USFS, and NDF, just to name a ~~couple~~ few, has also applied for another grant known as the Regional Conservation Partnership Program through NRCS. This five year grant, again if we're successful, will provide about $19 million dollars worth of planning and work to be done throughout the state. The first couple of years will be spent developing Conservation Resource Management Plans, known throughout the country as an extremely collaborative process, for each of the 28 Districts. The following few years will be spent putting the projects developed through the planning process on the ground. We anticipate that with water issues being front and center, that many of the top ranking projects will be water conservation related.

All of these management tools are effective in reducing water consumption for irrigation. However, there is a legal issue that arises in Nevada water law. Producers have come to refer to this issue as "use it or lose it" regarding water rights. The current statutes provide that if a producer doesn't use their adjudicated water rights for a period of time,

the state can regain the right to re-appropriate those rights. Therefore, if a producer uses good, efficient management techniques such as some of those mentioned above, and reduces his water use by, as an example 20%, he could legally lose that amount of his water right. For a field that has been permitted for 20 acre feet of water, this could be the loss of four acre feet of water on an annual basis. This reduces the value of the overall operation, and if he does that on a number of fields the negative effect of that value adds up quickly. This needs to be changed as soon as possible. It is a very significant issue throughout the Nevada agricultural community as they stand to lose significant amounts of their rights and value to their operation if they do the right thing.

I would like to close by thanking the members of the Committee for their service and attention to this critical issue on everyone's mind. I would also like to thank Governor Sandoval for his work in bringing this forward as an important issue for his administration. I would offer the assistance of the Conservation Commission, as well as the individual Districts, in addressing this issue. Thank you Chairman Drozdoff and I would be happy to take any questions you or the Committee may have.

GREAT BASIN WATER NETWORK

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August 19, 2015

Mr. Chairman, Members of the Drought Forum Board:

My name is Abby Johnson, President of Great Basin Water Network. We are a regional, nonpartisan, non-profit organization dedicated to preserving rural water at its source. Counties, Tribes, ranchers and farmers, irrigation districts, small businesses, conservationists, and community members are part of our network. Thank you for inviting us to participate in this meeting. For this process to succeed, we believe it is important for the public and stakeholders to understand what the final work products from the Forum will be, how they will be developed, and how they will be implemented after the Summit in an inclusive and effective way.

1. How has the drought in Nevada affected the environment?

Drought has put all of Nevada on notice: as the driest state in the nation we cannot afford to be complacent. The natural environment is struggling to stay in balance in the face of declining precipitation and rising water use. Our message is simple: Drought should not be used as an excuse to sacrifice one part of the state for another. We are one Nevada and must find solutions so that all parts of the state, including rural areas, can survive and thrive.

It should be clear that there is no “new” water to develop in the West. Many water rights are little more than slips of paper in basins that were overallocated even before the drought took hold. Major water exportations like the Las Vegas Water Grab are not viable solutions. They depend on exploitation of the target area by depleting its water supply. This has never been acceptable, and the drought makes this even clearer. Pump-and-pipe groundwater projects will exacerbate impacts of water shortages from where water is taken, while subjecting urban ratepayers to exorbitant rate increases.

One question we should be asking is: is this a drought or a more long-term climate change where drier is the new normal? The smart thing to do either way is adapt with short-term, mid-term and long-term changes in our water use and management. Will a wet winter deter policy makers from carrying out the systemic changes to sustain Nevada through future adversity? We hope not.

Local agricultural producers are already experiencing the challenges of farming and ranching with a declining water table. Lovelock's farmers are experiencing a fourth year without irrigation water. Sustaining the agricultural base, economy and way of life in Nevada is a necessary part of Nevada's twenty-first century economy, culture, and survival.

2. What has your organization done to address drought?

We oppose the SNWA Groundwater Development Project, better known as the Water Grab, which would bring unacceptable harm to the environment and would poach senior water rights. We have many objections to that project. First among them is that the water is not available long term for massive exportation, rendering it destructive, unaffordable and unacceptable as an option to address drought or expand supply. So far the state's high courts have agreed with that assessment.

We have urged SNWA to pursue alternatives to future water supply needs including desalination and more aggressive conservation, but our efforts and suggestions have not been welcomed.

We supported the Nevada State Engineer's legislative proposals to address overpumped basins as proposed in SB 65 and 81 of the last legislative session. We continue to support changes in Nevada water law that recognize the need for conservation and the importance of water to sustain a healthy environment for wildlife, fish, plants, residents, and tourists.

3. What major obstacles do you believe exist to overcoming additional levels of water efficiency?

Southern Nevada Water Authority has made admirable progress in water conservation. But in the largest city of the driest state, per person water use should be the lowest in the west, and it isn't. In fact, it's about double that of many other Western cities. SNWA points out that its use is much lower once return flow is factored in, but imagine if they used 100 gallons per person per day instead of 205. With return flow they'd be the clear leader in the region and be able to support double the population on today's water use.

Ratepayers in Southern Nevada typically face across-the-board flat rate water increases, removing the conservation incentives that come with tiered rate increases. Conservation pricing works, and it funds investments in enforcement and incentive programs. Large water users shouldn't be given a "bulk rate." The mixed missions of a water authority to both sell and conserve is not lost on us, and we believe it contributes to mixed messages and actions on conservation.

The only option for increasing freshwater supplies is desalination. Outside of this, we can increase the efficiency of using our existing water resources to restore balance to stressed systems. The reuse of wastewater has challenges, but should be part of statewide conservation policies. Gray water and rainwater collection and utilization should be legal and invested in throughout the state. It was brought up in the last meeting, but the treatment and movement of water uses energy, and that energy has a water cost. Gray water systems save consumers money and save communities energy and water. More aggressive indoor conservation retrofits would mean less demand, resulting in more people being able live sustainably on the water supplies that exist today. Every locality should be setting bold yet reasonable conservation goals. Southern Nevada's is due for a revision.

The "use it or lose it" caveat embedded in Nevada water law does not provide flexibility for agricultural producers who want to conserve by pumping less in a drought crisis. Change water law to incentivize water savers and exempt them from "use it or lose it" requirements.

The evaporation rates of Lake Mead and Lake Powell are astounding. Pursuing technology to store more water underground is essential. And how about phasing out the ornamental lakes that serve no purpose for the vast majority of residents or tourists, but lose many acre feet of water to evaporation?

Nevada law allows the die-off of plants to capture the water they would use. But this extermination has consequences too, including erosion, subsidence, and fugitive dust. This policy should be re-examined to ensure we do not become overzealous in taking the water our environment needs.

Finally and foremost, it is past time for all parts of Nevada to have water-smart growth management ordinances. It is unacceptable, unsustainable and yes, unhealthy, to set no limits on growth in the desert. The public perception is that water conserved will simply be used by developers to support new growth instead of protect the environment and preserve quality of life. As in other areas, let's adapt successful approaches by other arid communities to make it work in Nevada. We should be able to, but can't, answer a simple question: how many people can today's proven water supplies and conservation techniques support?

Nobody has a spotless record on water use, but now we have enough information in front of us to make a clear choice between gambling the future of our environment and economy on growth and water theft, or showing the responsible restraint needed to guarantee that future generations can enjoy a Nevada whose character is largely preserved. We hope this Forum will help our state make the right choice.

Delaine Spilsbury
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08/21/15

TO: NV Drought Forum

RE: Submit an Idea

Nevada needs to protect our underground clean water supply:

Industry is permitted to withdraw tremendous amounts of pure water. When the projects are completed, the resulting polluted water is dumped and can contaminate pure water.

Industry also uses great quantities of fresh water to drill underground, where it becomes contaminated. The contaminated water can mix with well water and poison our aquifers. This is simply ridiculous!

Industry also dumps poisonous used water into holding ponds resulting in poison ponds that do not go away. Industry should be compelled to purify water before it is dumped.

Also, during the Drought Forum meeting held Aug. 19 a knowledgeable person stated that there is no time limit or deadline for "Temporary" water permits for mining. This situation needs to be assessed and revised.

Please protect our water. "This is a desert, Dammit!" Thank You,

Delaine Spilsbury

Nevada Drought Forum
Talking Points
Mike Baughman, Ph.D.; CEcD
Executive Director
Humboldt River Basin Water Authority
August 19, 2015

I. Overview of Humboldt River Basin Water Authority (HRBWA).

a. Established in early 1990's by Elko, Eureka, Lander, Humboldt and Pershing counties in response to a proposal to export in excess of 300,000 acre feet of groundwater from the upper Humboldt River Basin to the lower Carson River Basin. Related water right applications were denied by the Nevada State Engineer as being speculative in nature.
b. For the past 20 years, HRBWA member counties have continued to meet quarterly to address surface and groundwater water quantity and quality issues of common concern.

II. Humboldt River Basin Characteristics

a. Annual average flow of the Humboldt River is approximately 296,000 ac. ft.
b. There are approximately 690,000 ac. ft. of decreed surface water rights within the Humboldt River Basin.
c. Highly efficient reuse of agricultural irrigation water runoff is key to meeting demand which greatly exceeds annual average flows.
d. Annual variations in surface water flow produce economic and environmental uncertainty.
e. Approximately 469,900 acre feet of perennial groundwater yield in Humboldt River Basin.
f. Approximately 757,758 acre feet of committed groundwater rights in Basin.
g. All groundwater basins within the Humboldt River Basin have been designated as requiring special management by the Nevada State Engineer.
h. Very little unappropriated groundwater remains available, 23 of 34 groundwater basins are over-appropriated.
i. Long-term over-pumping of groundwater basins is impacting base flow of the Humboldt River.
j. Climate change is resulting in less precipitation falling as snow and greater frequency of rain on snowpack.
k. Storage in upper and middle Humboldt River Basin is not available for consumptive uses such as irrigation.
l. Storage in lower Humboldt River Basin requires adequate upper and middle-Humboldt River flow to move water to Rye Patch Reservoir.
m. During years of average and better flows, lack of upstream storage results in significant losses of water to evaporation in the Humboldt Sink.
n. Little to no storage capacity results in little to no drought reserve within the Humboldt River Basin.
o. Unpermitted consumptive use of water through evaporative losses from ever-expanding number of pit lakes is a growing problem.

III. On-Going Drought Impacts

a. Loss of soil moisture – impacts to vegetation for wildlife and domestic livestock.
b. Loss of vegetative moisture – increased risk of wildfire and changing plant compositions.
c. Loss of bank storage – reduced base flow and loss of riparian habitat.
d. Reduced progress to recovery of Lahontan Cutthroat Trout.
e. Impacts to sage grouse habitat – wildfire, invasive species, reductions in spring flow.
f. Water level declines – reduced surface water recharge of aquifers.
g. Reductions in Animal Unit Months (AUMs) of private and public land grazing (voluntary and in-voluntary reductions).
h. Significant reductions in surface water irrigated acreage (zero water delivered in Pershing County Water Conservation District during past two years).
i. Continued groundwater pumping exacerbating drought impacts to Humboldt River base flows.
j. Reduced flows and higher air and water temperatures resulting in increasing exceedance of Nevada water quality standards and ever-increasing numbers of stream segments within Humboldt River Basin being listed as "impaired" by the Nevada Division of Environmental Protection.
k. Intrabasin conflict between Senior and Junior surface irrigation water rights holders; between surface and groundwater irrigation right holders and between upper, middle and lower Humboldt River water rights holders.
l. Economic (employment and income) and fiscal (state and local tax revenue) impacts resulting from reduction in agricultural production, Lovelock area particularly hard hit.
m. Economic and fiscal impacts resulting from reduced recreation at South Fork and Rye Patch reservoirs in particular.

IV. Drought Recovery/Management

a. Two to three years of above-average snowpack required.
b. Design, implement and institutionalize a comprehensive and cost-effective cloud-seeding program (with generators located in upper, middle and lower Humboldt River Basin) for FY 16 and beyond.
c. Curtailment of groundwater pumping to facilitate recovery of over-pumped groundwater basins.
d. Design and construct additional storage capacity – new reservoirs and/or aquifer storage and recovery, particularly in upper and middle Humboldt reaches.
e. Compensation of lower basin senior surface water right holders by upper basin junior surface water rights using water not otherwise deliverable to lower basin.
f. Design and implement economic and fiscal incentives to assist agricultural producers to maintain agricultural production capacity (an aggressive agricultural industry retention initiative is needed, perhaps spearheaded by the Governor's Office of Economic Development).
g. Condemnation of water rights should not be an option.
h. Prohibit the filing of new supplemental groundwater applications which are proximate to decreed surface water sources.

i. Prohibit the filing of change applications to move existing supplemental rights proximate to decreed surface water sources.

For Additional Information:

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TO: Leo Drozdoff, Chairman, Nevada Drought Forum

FROM: Steve Bradhurst, Executive Director, Central Nevada Regional Water Authority

DATE: August 17, 2015

RE: Central Nevada Regional Water Authority statement to the Nevada Drought Forum

On behalf of the Central Nevada Regional Water Authority I would like to thank you for inviting the Authority to participate in the August 19, 2015 Nevada Drought Forum Sector Meeting. The purpose of this statement is to 1) provide the Nevada Drought Forum information on the Authority, 2) bring attention to Nevada's water supply problem, and 3) respond to the three questions the Forum posed to the Authority.

What is the Central Nevada Regional Water Authority?
The Central Nevada Regional Water Authority is a unit of local government established by agreement of its member counties in the fall of 2005. The agreement is pursuant to the provisions of Nevada's Interlocal Cooperation Act (Chapter 277 of NRS).

The Authority has eight member counties (Churchill, Elko, Esmeralda, Eureka, Lander, Nye, Pershing and White Pine Counties), and together they cover approximately sixty three percent of Nevada's land area. The Authority has a twenty three member board of directors, including ten county commissioners and six former county commissioners.

The Authority's conferred functions include the following: 1) be a forum to discuss and formulate positions on critical water and water-related issues pertaining to the eight member counties, 2) provide technical and policy advice necessary for sound water resource decisions, 3) assess and respond to proposals/plans that would export water resources from member counties, and 4) facilitate the development and implementation of a groundwater monitoring program in member county water basins. The Authority is not in the water utility business (wholesale and/or retail). Given the Authority's large geographic footprint, and the fact that most Nevada water issues impact urban and rural Nevada, the Authority is by necessity interested in all Nevada water issues (federal, state and local).

Are we "whistling past the graveyard?"
"Whistling past the graveyard" is when you do something to keep your mind off your worst fear. Nevada's worst natural resource fear has to be the real possibility of a water supply crisis in the near term (within the next 30 years). The Nevada Drought Forum is "doing something" in the water arena, but it is not addressing Nevada's worst natural resource fear. The Authority feels a Nevada water supply crisis will be caused by five interrelated realities: 1) limited traditional in-state water supply sources (surface water and groundwater), 2) drought, 3) climate change, 4) population growth, and 5) indifference or inattention.

Since 2008, the Central Nevada Regional Water Authority has asked the Nevada Legislature to consider Nevada's limited and possibly diminishing water supply a critical issue for Nevada's economic well-being, valued quality of life and natural environment. In the 2013 Nevada Legislative Session the Authority asked the Legislature, via Assembly Bill 301, to have the Legislative Committee on Public Lands conduct a study during the next interim (2014) on alternative sources of water for Nevada communities. The Authority's testimony on AB 301 included a statement that a number of Nevada communities do not have an identified, sustainable water supply within their control to accommodate projected population growth over the next 30 years. AB 301 was not approved by the 2013 Session. Fortunately, AB 301 became AB 198 in the 2015 Session, and AB 198 was approved by the Legislature and signed by Governor Sandoval. Therefore, it is hoped during the next year the Legislative Committee on Public Lands will conduct a study that will focus on the real possibility of a Nevada's water supply crisis in the not-to-distant future, including what to do about it.

The AB 198 study, the Nevada Drought Forum and the Nevada Drought Summit should be the foundation to have a meaningful statewide Nevada water future discussion, as well as a follow-on development of a Nevada water future strategy. The Central Nevada Regional Water Authority recommended a Nevada water future discussion and strategy in the spring of 2014. Please see the attached Central Nevada Regional Water Authority April 2014 position paper entitled "Is It Time for a Nevada Water Future Discussion and Strategy?" It is critical that the water future discussion and strategy involve all interested parties (e.g., State of Nevada, Nevada Legislature, Nevada's local governments, Nevada's business community, the environmental community and the general public).

The Authority's response to the three questions posed by the Nevada Drought Forum.
The first question is *"How has the drought affected the Central Nevada Regional Water Authority*?" The short answer is the drought made the Authority more acutely aware that Nevada is facing a water supply crisis, maybe sooner than thought. Climate change, population growth and limited traditional in-state water supply sources would eventually make water supply a critical issue in Nevada, but the prolonged drought in the Colorado River Basin and the Great Basin should convince state and local government decision-makers it is time to address the water supply problem now. Another impact of the drought that concerns the Authority is the thinking on the part of some local government officials and entrepreneurs that the solution to the water supply problem in Nevada's urban areas is groundwater from rural Nevada. At a minimum, it is expensive, controversial and risky for a Nevada urban area to stake its future on unrevealed and speculated groundwater from rural Nevada.

The second question posed by the Nevada Drought Forum to the Authority is *"What has the Central Nevada Regional Water Authority done to respond to the drought?"* Most certainly the Authority's efforts to have state decision-makers focus on Nevada's impending water supply crisis, via AB 301, AB 198, and the Authority's April 2014 position paper is a response. Also, in 2009 the Authority signed a memorandum of understanding with two counties in Utah and three counties in California to hold an annual Great Basin Water Forum to discuss Great Basin

water issues. The Authority hosted the first five Great Basin Water Forums (2009, 2010, 2011, 2012 and 2013), and the focus of the Forums was on water supply problems in the Great Basin. In 2014 the Authority held a joint meeting with the Nevada State Land Use Advisory Council to hear how the states of Arizona, California and Utah are addressing their impending water supply problem. These states have acknowledge a projected gap or shortfall between water supply and demand in the not-to-distant-future, and they are doing something about their worst natural resource fear.

The third question posed by the Nevada Drought Forum to the Authority is *"What major obstacles exist to overcoming additional levels of water efficiency in your region?"* In light of the preceding statements the question to the Authority should be "What major obstacles exist to addressing Nevada's water supply problem?" The short answer is indifference or inattention. The famous English author G.K. Chesterton wrote "Of all the sins, indifference is the worst." Nevadans, as well as most Americans, have a dysfunctional relationship with water; that is, clean drinking water is taken for granted. It is possible there will come a time when it will be hard to ignore Nevada's water supply problem. And, at such a stressful time sound decision-making will be difficult. The Nevada Drought Forum, the Nevada Drought Summit and the AB 198 study should provide some momentum in addressing Nevada's water supply problem; assuming these efforts are more than just a feel good, bureaucratic exercise. State and local government decision-makers need to acknowledge there is a real possibility of a water supply problem in the future, and they need to be actively involved in addressing the problem. Another obstacle to addressing Nevada's water supply problem is the less than honest statement made by some that a community has plenty of water because it has water rights to surface water and/or groundwater that will accommodate growth. Water rights do not equal wet water. Communities should make every effort to develop land use plans based on identified and sustainable water resources within their control, not on the use of all paper water rights and/or wished-for new water supplies.

Closing recommendation.
In closing, the Central Nevada Regional Water Authority recommends the Nevada Drought Forum include a discussion of Nevada's water supply problem at the September Nevada Drought Summit. It is time for state and local government decision-makers to discuss the problem and not just whistle it away.

Attachment

c: Central Nevada Regional Water Authority Board of Directors

Is It Time for a Nevada Water Future Discussion and Strategy?

By
Central Nevada Regional Water Authority
April 2014

BACKGROUND

On May 2, 2003 the U.S. Department of Interior released a report entitled "Water 2015: Preventing Crises and Conflict in the West." The report states "Today, in some areas of the West, existing water supplies are, or will be, inadequate to meet the demands of the people, cities, farms, and the environment even under normal water supply conditions." The report says five interrelated realities of water management are creating crises in the West: 1) explosive population growth, 2) water shortages exist, 3) water shortages result in conflict, 4) aging water facilities limit options, and 5) crisis management is not effective." Today, it appears two additional interrelated realities exist, and they are extended drought and climate change.

Over the last few years many articles have been written about the existing and/or impending water supply crisis in the West. The titles of a few of these articles are: 1) "Warning: Water policy faces an age of limits," 2) "Growth top threat to water supply," 3) "Dramatic water changes coming to the Southwest," 4) "Study: Climate Change May Dry Up Important U.S. Reservoirs Like Lake Powell and Lake Mead," 5) "Where Will All the Water Come From?," 6) "Worst Drought in 1,000 Years Could Begin in Eight Years," and 7) "A new report confirms what we should already know: The Colorado River is in deep trouble."

The new report that confirms the Colorado River is in deep trouble is the December 2012 U.S. Bureau of Reclamation report entitled "Colorado River Basin Water Supply and Demand Study." The Study's primary finding is significant shortfalls between projected Colorado River water demands and supplies will likely exist in the coming years. The median shortfall is projected to be 3.2 million acre-feet per year by 2060, and the worst case shortfall is projected to be close to 8 million acre-feet per year by 2060. To put this in perspective, consider the fact that the average Colorado River flow of late has been approximately 15 million acre-feet per year, and the Law of the River allocates 17 million acre-feet of Colorado River water per year to seven Colorado River Basin states and other

parties (including Mexico). Therefore, on paper there is already a shortfall between Colorado River water allocation and supply.

At the December 2013 Colorado River Water Users Association conference in Las Vegas the Secretary of Interior, Sally Jewell, said decreasing Colorado River water supplies is the "new normal on the river that we all had to deal with."

If Secretary Jewell's statement and the Bureau of Reclamation's report are accurate, or even close to accurate, then Las Vegas Valley is facing a water supply dilemma. Las Vegas Valley receives 90 percent of its water supply from the Colorado River, and it appears there may be significant curtailments in Colorado River water to the Valley in the years to come. In addition, Nevada's traditional in-state sources of water – surface water and groundwater – are at best limited, and at worst diminishing. Also, it is clearly expensive, controversial and risky for Nevada's urban areas to stake their future on unrevealed and uncertain groundwater from rural Nevada.

The Central Nevada Regional Water Authority feels all of Nevada is facing a water supply crisis. In fact, since 2008 the Authority has asked the Nevada Legislature to consider Nevada's limited and possible diminishing water supply a critical issue for Nevada's economic well-being, valued quality of life and natural environment. In the 2013 Nevada Legislative Session the Authority asked the Legislature, via Assembly Bill 301, to have the Legislative Committee on Public Lands conduct a study during the next interim (2014) on water supply for Nevada communities. The Authority testified that Nevada is the most arid state in the union, and the Colorado River Basin and the Great Basin have experienced severe drought over the last decade. For example, 2000 to 2013 was the driest 14-year period in the 100-year historical record for the Colorado River Basin. Also, some scientists believe the Sierra Nevada snowpack that is the basis for western Nevada's water supply could decease as much as 40 percent by 2050. The Authority's AB301 testimony included a statement that there is no question that a number of Nevada communities do not have an identified, sustainable water supply within their control to accommodate projected population growth over the next 30 years. The Authority asked that the AB301 study focus on alternative sources of water for Nevada communities since Nevada's surface water resources are scarce and fully appropriated, and its groundwater resources are scarce, uncertain and fully appropriated in many areas. Alternative sources of water include water

conservation, water recycling, desalination, conjunctive use and rain water capture. AB301 passed the Assembly by unanimous vote of approval, but it was not voted on by the Senate.

As would be expected, the States of Arizona, California, Colorado and Utah are also confronted with projected water supply shortfalls in the near future. These states are actively addressing the problem by way of programs focused on ensuring a secure water future. In Arizona, the Arizona Department of Water Resources, in partnership with Arizona's water community, produced a comprehensive water supply and demand analyses that identified a potential water supply and demand imbalance if no action is taken to secure future water supplies. In an effort to deal with the projected imbalance, Arizona Governor Jan Brewer asked the Arizona Department of Water Resources to conduct a comprehensive analysis of how to address the projected imbalance. The Department did that, and in January 2014, the Department released a report entitled "Arizona's Next Century: A Strategic Vision for Water Supply Sustainability."

The State of California's program to address a projected water supply shortfall is called "California Water Action Plan," and a draft was released in late 2013. The State of Colorado's program to address a projected water supply shortfall is called "Colorado's Water Plan," and the first draft of the plan was also released in late 2013. The State of Utah's program to address a projected water supply shortfall is called "Utah's Water Future – Developing a 50-Year Water Strategy for Utah." Utah Governor Gary Herbert initiated the program in the spring of 2013. He said "We are at a crossroads for our future here," and he cited the challenges of ensuring adequate water supplies in the face of demand brought by population growth, the outdoor economy and environmental concerns. In July and August of 2013 the Utah water future program had eight listening sessions, held across the state, to begin mapping out a water strategy for the future. In addition to public comments at the listening sessions, the State of Utah received more than 800 online comments during the summer. On October 30, 2013 Governor Herbert convened a water summit to review what the public said about Utah's water future and announce the next steps in the process to develop the 50-year water strategy. At the water summit Governor Herbert announced the creation of a 38-member Utah Water Strategy Advisory Team to help develop the 50-year water strategy.

At the December 13, 2013 Central Nevada Regional Water Authority meeting the Authority received a presentation from Steve Erickson, a member of the Utah Water Strategy Advisory Team. He said the Team will solicit and evaluate potential water management strategies, frame water management options for public feedback, and develop a set of recommended strategies to be considered by the State of Utah as part of the 50-year water strategy. Mr. Erickson said the critical component of the Utah water future program has been the effort by Governor Herbert to involve the public in the program, and the tremendous response by the public to participate in the program.

RECOMMENDATION

The question that begs an answer is what can be done to avoid a Nevada water supply crisis stemming from population growth, limited in-state water resources, drought and climate change? Ensuring a secure water future for the State of Nevada has to be a top priority for the State, the Nevada Legislature and Nevada's local governments. The Authority feels the State of Nevada, the Nevada Legislature, Nevada's local governments, Nevada's business community, the environmental community and the public should come together in a partnership to develop a meaningful statewide water supply strategy.

At the December 13, 2013 Central Nevada Regional Water Authority meeting the Authority asked its executive director to look into the development of a Nevada water future program similar to the Utah water future program. In early 2014 the Authority's executive director discussed the concept of a Nevada water future program with the directors of eight Nevada water entities and asked them if they would be amenable to attending a meeting to discuss the merits of a Nevada water future program. The response was yes. The Authority feels a possible next step is to have a meeting to 1) receive presentations from the States of Arizona, California and Utah on their water future programs, 2) receive presentations from water resource research organizations (e.g., Bureau of Reclamation, USGS, Natural Resources Conservation Service, etc.) on water supply challenges facing Nevada, and 3) discuss whether or not to have a Nevada water future program, and if there is support for the program, develop a program outline. For example, a Nevada water future program could include the following steps: 1) initial discussion of Nevada's water future and a Nevada water future program at a water future meeting, 2) listening sessions throughout the state to discuss

Nevada's water future and potential water management strategies, and 3) the development of a Nevada water future strategy by a water strategy advisory team for consideration by the State of Nevada, the Nevada Legislature and Nevada's local governments.

CLOSING COMMENT

The answer to the title of this paper is yes; that is, it is time for a Nevada water future discussion and strategy. One should keep in mind the old Chinese proverb: "If we are not careful we will end up where we are going." Also, it has been said one should not waste a crisis since it presents an opportunity to do good.