

Desert Wars – Extended Interviews



Dean Baker ***Rancher*** **Baker, Nevada**

This interview has not been edited for content.

Desert Wars /Interview – Dean Baker - Rancher

Dean Baker: I went to school in Utah at the University of Utah and during that time I made up my mind that what I really wanted to do was to come back home to the ranch here and spend my life so I've put in both my adult and childhood life on ranches and doing it and that's what I know and I dearly love it. I feel very lucky to have done it and I learned to take care of both the land and the livestock and that's what I do. I get a great deal of pleasure out of that and the wildlife that's all around and the hundreds of deer that are here and the thousands of ducks and geese and I just feel very lucky to be here in this beautiful area.

Interviewer: We were talking about the MX missile debate. What parallels are there between the MX missile and these water issues?

Dean Baker: There are several parallels with the MX missile--one is what it will do to the environment and that's probably the major parallel. A lot of the information that Southern Nevada Water is using was developed for the MX missile. The MX missile would have churned up huge acres of land, and would have had a real affect on the area. The other is there is the element of bluff and I think part of Southern Nevada Water coming here is there is an element of bluff and I think they have unfortunately got themselves to the point where they have to carry the bluff through too far. They're trying to bluff the Colorado River Commission, Southern California and others and they're going to go ruin an environment and they say that they're not going to ruin it but everybody knows that that is a very probable outcome to get water and it's a small amount of water so that if they can bluff the others and make them realize how much damage they're liable to do and what the negative affects are, then they can get them to give water other places. There are those two parallels and then a third parallel is I don't think either of them knew what they were doing or that that was a major care when they started out. It was not until they got into it that they began to realize how many impacts there could be.

Interviewer: Tell me about your greatest fears here and what impact would their plans have on your ranch and this community of Baker?

Dean Baker: The biggest fear that I have is that they just take the water. That's pretty hard to know—what springs, how many springs, how much they'll lower the water table. But a large number of our acres that are irrigated or sub-irrigated with spring water that are close to the surface, if it was lowered

—whether it is one foot or five feet or ten feet—it lowers the productivity. If it goes 15-20 feet, which is entirely possible, then it really will reduce the carrying capacity of the meadows.

Interviewer: Hal Rothman kind of singled you out in an article and I think his thesis was mainly that the water for the city of Las Vegas would benefit millions of people in terms of the economy and jobs and here it would only benefit a relatively small number of people. What is your response to that?

Dean Baker: Well there's a lot more than just people—there's millions of wildlife here. On this ranch alone the Department of Wildlife counted over 500 deer here. It's common to see ten, twenty, forty head of antelope in a field. There are thousands of geese here in the good part of the year. They live here year-round. There are thousands of ducks that live here. There are many other kinds of birds that we enjoy watching. Some of the antelope we know by name. It's not just the people that are here, but it's also the fact that it will affect thousands of people who drink milk from the hay that's produced here. We produce over 2 million pounds of beef—that's a lot of hamburger or steaks for Las Vegas. Indirectly it effects a lot of people and then there is a need for a lot of people that come through here and look at this area, the mountain and the valleys, and see what there is and enjoy the wildlife and the views.

Interviewer: Do you feel you have been singled out? And if so, why?

Dean Baker: Well I assume he (Hal Rothman) singles me out because I have spoken so strongly against this how I think this is wrong. I don't think it's good for the people of Las Vegas because I don't think there is enough water here to justify the 2-3 billion dollars that somebody will have to pay those bonds off if they do it. I don't think it's good for the environment because it will take the water and ruin the valley and I've said this quite clearly, I think it's wrong. I think it's illogically wrong. I think its workability won't work, but I think it's morally wrong. I think it's wrong to do this! If there is water here they can take without hurting it, then that is a different thing. I just strongly believe there isn't. My experience is, when we drill wells that pull the water down in a cone of depression around where we drill, we dry springs up and true, they are on our own land, but we know what it does to the water table with the little we do and it's a drop in the bucket compared to what they're trying to do. I have such a huge fear of what they're doing and I've spoken out against it and I think that's the reason that he says it doesn't count because it will give water to thousands in Las Vegas and he is just up there alone and crying about his cow and bail of hay.

Interviewer: The SNWA—one of their points of view is that there are regulations in effect that would protect the environment and the land. What is your response to that?

Dean Baker: Well regulations that are in effect that are good regulations—there's a good history of the State Water Engineer making the best possible decisions. But this is a whole other magnitude. There has been no history of any withdrawal of this magnitude nor one that must, to pay off the pipeline, have the duration that it does. So it's a totally different situation. There is no comparison, and again, the State Engineer has been very good. His history has been good, but this is one man that makes the final decision who works at the pleasure at the Governor of the State of Nevada and I don't think that it's any secret that Southern Nevada—the builders and gaming industry and the casino industry and Southern Nevada Water control the politics in the state of Nevada and if they need to, they can put pressure to change almost any political decision. It has been well-shown that.

Interviewer: Can you trust and do you trust the SNWA?

Dean Baker: I think the SNWA is made up of very good and smart people, but they come from a totally different environment and as I told one of them once when they said, "We have a good history of living up to our word" and I don't question that, but I looked back at them and said, "That's true, but when that pipeline goes empty or there becomes an Owens Valley, your replacement will have very

little choice but to, one way or another, fill the pipeline whether it's going north into Elko County or Steptoe Valley or simply pull the water table down. So... it has been a pleasure to work with Southern Nevada Water people, but they're from a very different world.

Interviewer: Talk a little bit about Owens Valley. Is that a valid parallel to the situation here?

Dean Baker: Owens Valley is a very good parallel to this. Southern Nevada Water Authority hates that to be brought up, but you've got to realize that Owens Valley is on the east side of the range that collects most of the moisture that comes off of the Pacific. It is one of the best water sources there is in the West and by the time it gets here to Snake Valley it has gone across a half a dozen or dozen other ranges that rain more water out and drop it down. The history of Owens Valley was that they didn't start in initially to dry the ranches up. They were only going to take a little water and they weren't going to harm it, but as it became clear that there was such a conflict, they just simply had no choice but to dry it up and suck it dry. They say the laws won't let them do that now, but I question that.

Interviewer: We were talking a little bit about your values. Can you compare and contrast the values here compared to those of Las Vegas?

Dean Baker: I hate to make judgments about people. The values here—if money were the only value we would clearly be working to sell the ranch because the value enhanced by the water value has grown hugely over the time we were here. We could certainly all retire and live the rest of our lives simply by selling the ranch, but my family, particularly the boys, love farming. They enjoy the livestock. They like raising their family here and the children so it's the values of here and not money. I can't help but think that Southern Nevada and Las Vegas is largely driven by money.

Interviewer: Should these large cities of the West like Las Vegas continue to grow, what should they do? Where should these resources come from?

Dean Baker: Logically to me there is only one source where there is enough water and that is desalinization of the ocean and trading it back from the coast. I really don't think there is any other choice. To do it otherwise will degrade the area, take the water away from it and hurt the future and take the future away from White Pine County and if they continue to rely on inner-basin transfers of water they will have no choice but to dry up the state of Nevada. So I think the sooner they look at the alternative of the ocean, the better it is.

Interviewer: Do you consider this a water grab?

Dean Baker: I don't know if that's a good... I think it's a lack of knowledge and understanding about satisfying their needs. They think they can take the water or at least they verbally say they can take the water without grabbing it. I just don't believe that's possible. So in the end it will be a water grab but that isn't the intention they're starting out with and that's the parallel again with the Owens Valley. They didn't start out to dry Owens Valley up, but it was the end consequence.

Interviewer: Tell me in your opinion what you think their plans are for this?

Dean Baker: That's very hard to tell. A lot of it relies on what the State Engineer tells them to do. Part of it is what agreement they have to make with the state of Utah and keeping the groundwater and the water table. I don't know. There are a lot of cards to be played out when they get to it. I just think in the end that if they do enough studies and understand the area enough I think the pipeline will be forgotten. It's so illogical and wrong to me that I think it will fall on its own weight, as much as the MX did.

Interviewer: Let's talk about the politics a little bit. Who has the power in this issue?

Dean Baker: That's really easy! The casinos in southern Nevada or across the state, but primary in

southern Nevada just had a gaming net 11.6 billion. They are very forthright in saying now that less than half of their net income comes from gaming. So they had a net income of between 25 and 30 billion dollars in 2005. There has been a lot of outcry about the net of Exxon at 36 billion, but Exxon goes clear around the world supplying energy, drilling for energy, shipping it across the oceans. There is a huge number of risks, and if you go back through the last ten years I suspect their net is on an average less than the gaming industry and hotel industry in Nevada. So they're creating this huge pile of billions of dollars that they invest and bring more tourists in to make more billions, but it creates another firestorm in that it takes a building industry not only to build the billions of dollars in casinos, but the homes for the construction workers and homes for the people who man the gaming industry and then also the infrastructure of the school teachers and others. This brings the gaming industry and the casinos and the construction developers, but also the strong Southern Nevada Union. So you put the three of them together as a political force and it's unbelievable what it does to the politics in the state of Nevada. Logically you can't politically do anything if it goes against those three put together and it's like a wildfire that's creating it's own draft—it has to go on or it just sucks everything up and there is no way to stop it at this point. I believe they totally control the politics in the state of Nevada at least on the national level and the state legislature level. There are a few that don't, but they have been put into an insignificant corner.

Interviewer: So what kind of chance do you have?

Dean Baker: The people of Nevada for one. I think education nationally—I just think it's unacceptable what will happen if this project goes through. I think it's so illogical and wrong that, like I said, it will fall on it's own weight before they get it built if they gather enough information and time goes on.

Interviewer: What would you like to see for the future?

Dean Baker: As far as my future?

Interviewer: Well the future of the water issue here. How would you like to see this resolved?

Dean Baker: I would like to see them decide what water levels have to be maintained. First they need to get a baseline of what springs there are, what wet meadows there are, how many areas where the roots are going into the water, what the water table really is. Then they need to do drilling and testing with pressure testing between the layers, and do the best scientific approach they can. The BARCASS study of the USGS #1 and #2 should be completed. Get all the information you can from them and put all of the information on the table and get the very best minds, whether they are for or against it, to look at it and analyze it. If they believe that there is water then start a test-pumping project and see what cones of depression there are and do it long enough that there is real information. If they can prove, beyond a shadow of a doubt, that there is water then I don't think we have an argument against them taking it. But I think that should be proven to the best ability of all the water models, the water budgets... everything should be completed before they start to build the pipeline. The pipeline should be the last thing they do.

Interviewer: Talk about the appropriateness of any large metropolitan city taking water from rural communities. Is that an appropriate thing for them to be doing?

Dean Baker: I don't think it's really appropriate to dry one area up, dry agriculture up because there are so many other holders—the wildlife, the recreation and other things that are affected by it. It depends on the impacts. If they are severe enough and affect so many holders—plants, animals, people, hunting and fishing, others—then it has to be done in such a matter that it doesn't hurt so many others that aren't monetarily affected. The question of whether they ought to be able to buy the water and take it—that's another issue. My family has clearly said that that isn't a factor, that we want to

live out here, but there are varying opinions about private property rights and what is right to jeopardize those or not and I have fears that may happen and I don't think that's right.

Dean Baker: This is a stream that's coming from an area in these meadows. It's about three miles across here and about a mile wide and the groundwater is right here. This time of year it comes up and flows. Most of the year it flows all of the time south of us. North of us it quits in the dry summer, but it's an area that is very important. We have about 2,000 acres of this kind of meadow where the groundwater is critical to the summering of our cows and calves. My theory is that if the water table is lowered at all, the carrying capacity is going to be greatly diminished and we simply won't have a home for the cows and the calves in the summer. We know from our pumping that this can happen and we wouldn't want to see this happen here. There is this meadow and the Burbank meadow that was the first place that was settled in this valley about fifteen to twenty miles south of here. But it's a large area with a water table that's close and supports a lot of cattle and wildlife of all kinds. Earlier there was a herd of deer that went right below us here. This here is in the middle of an area where the water raises. It's a wet meadow area on this... this is our main ranch. This area is about three miles across and about a mile or so wide and has a big carrying capacity. Water comes up from under the surface all year long. A big part of it we can't drag because it's so wet that the tractors get stuck anytime of year but some of it dries up later in the summer. But this is similar to a large number of our acres of meadowland. That's where we summer our cows and calves, and it's very productive and if the water table were to drop even a foot, it would make a significant difference in the carrying capacity. If it drops fifteen or twenty feet, which I think is very likely if they pump the amount of water, then it would greatly lesson the amount of carrying capacity in the number of cattle that would carry and feed in the summer. There are a lot of areas like this throughout the valley—these are particularly important to us and this stream, I'm sure, would go away if we dropped the water table a foot.

(Later, while flying over Baker's ranch in his plane, he shows the interviewer the natural environment of the area)

Interviewer: How would the water issue affect the landscape that we're flying over?

Dean Baker: (aerial view) Well it depends on how much water they take and what it does to the water table—it could have a really significant effect on the landscape. Below us is a big area of greasewood that put their roots into the water and if the roots get out of the water, they die so there are thousands of acres of that kind of vegetation that would change if the water table were lowered significantly. Wet Meadows could change and it all depends on how much water they take and how the water flows and recharges and how long-term it is.

Interviewer: Is it proper for Las Vegas to take the water from rural communities, and if not why?

Dean Baker: There are a great many lives that depend on this, whether it's livestock—we produce millions of pounds of beef out of this valley. There are tons and tons of hay that go to produce milk that is drank in Las Angeles or San Francisco or Las Vegas, and those things all come under jeopardy if this area isn't able to continue to produce the livestock and the hay that goes into these projects. So it depends on how much and how long.



Jay Banta
Superintendent
Fish Springs National Wildlife Refuge

This interview has not been edited for content.

Interviewer: Tell me what we're actually looking at when we see this spring.

Jay Banta: This is South Spring and it's one of two larger springs on the refuge. It's a prehistoric spring fed out of the carbon aquifer and flows generally in the neighborhood of about seven to nine cubic feet per second. It's fossil water... that's what the hydrologists tell me it is.

Interviewer: Tell me the significance of the spring and talk about it in terms of the carbonic aquifer.

Jay Banta: Well the South Spring is one of the major springs that provide flow that we use to feed our wetlands. It is fed out of the carbon aquifer, which is the prehistoric deeper aquifer, which underlies parts of Western Utah and eastern Nevada.

Interviewer: Tell me a little bit about how old this water is. How far back does this water date?

Jay Banta: Well we have some limited data that has been done in past history that indicates that some of the samples have dated as old as 14,000 years ago in that 14,000 years ago it fell as precipitation. It has taken it that long to travel as ground water to the refuge.

Interviewer: What do we know about carbonic aquifers in terms of what recharge is?

Jay Banta: I think there is a lot unknown about that. Most of it is thought to be probably from snowmelt out of many of the mountain ranges, but the rate at which it travels and the rate at which we see flows arrive is largely a matter of speculation. The carbonic aquifer, which is the aquifer that feeds all of our springs here of course is the much deeper prehistoric aquifer fed primarily I'm told out of snowmelt from most of the higher mountain ranges that seeps in over time and it's apparently a very long process.

Interviewer: Tell me what is unique about Fish Springs?

Jay Banta: We believe it's possibly the largest spring-fed marsh of it's type surely in the Western United States and maybe in the United States as a whole and it's certainly a critical piece of habitat in the middle of a really arid zone. Fish Springs is one of the largest sully spring-fed marshes in the Western United States, and perhaps in the entire lower forty-eight. It's certainly a critical piece of habitat in the middle of a very arid region that doesn't have a whole lot in the way of wetlands.

Interviewer: Where does the water come from at Fish Springs?

Jay Banta: The water that feeds the marshes of Fish Springs comes from a carbon aquifer--the very deep prehistoric aquifer and it allows us to maintain one of the largest wetland complexes in the Western United States.

Interviewer: Tell me what you think of this ground water pumping plan that SNWA is planning? What are your greatest fears here for Fish Springs?

Jay Banta: Well of course at Fish Springs our mission is to provide habitat for a wide variety of migratory birds, particularly wetland migratory birds. Water is what allows us to maintain the wetlands and we're concerned that anything that might diminish the flows that come out of the refuge springs will diminish our ability to maintain and create high-quality habitat for those birds. I'm certainly no hydrological expert, but I do think that there is potential that it could impact the refuge. It's probably a matter of timeframe, but it takes a lot of expertise. It's a very complicated issue I think.

Interviewer: How much surplus water do you think is available for groundwater pumping?

Jay Banta: I can't address that issue in the carbon aquifer because I'm not sure that anybody knows how much water is in there. It does appear, at least based on what I hear from my neighbors in the Snake Valley, that perhaps the basin aquifer is perhaps over-allocated now and there isn't any additional water. Those folks have been farming there for a lot of years and they understand that shallow water system pretty well.

Interviewer: What are your greatest fears if there were to be too much groundwater pumping in this area?

Jay Banta: Well I think it diminishes the flows for the refuge. Certainly if there is a remedial action, it could take a long time for that remedial action to actually put us back to where the flows were in the beginning so I think that the science is so poorly understood that it's going to be difficult for anyone to predict many of the potential impacts.

Interviewer: Can you discuss any process that would protect Fish Springs?

Jay Banta: I would like to ensure hopefully that the science that is used by the BLM in making their decision is the best available science and that we have the opportunity for scientists from the USGS and the agencies that are involved in this to provide good science—science that will make a responsible decision and support whatever decision is made.

Interviewer: Some say there are already regulations that would protect Fish Springs. What do you think?

Jay Banta: I think that the patterns and actions of the aquifers—both the carbon and the shallow-basin fill aquifer—are so poorly understood that I think it's hard for anyone to predict what the impacts are going to be and they can't guarantee that areas such as Fish Springs or other critical wetlands in the West desert are protected.

Interviewer: What do you think about cities of the West taking water from areas like this to feed a big metropolis like Las Vegas?

Jay Banta: Well, personally I think that it's an issue that we're going to see more and more of. I think that large urban areas in the arid West are going to continue to look for water wherever they can get it so perhaps this is just the first of many such efforts we're going to see for many cities in the West as domestic water becomes a critical issue.

Interviewer: Why should people in Snake Valley and this area trust the Southern Nevada Water Authority to protect areas like Fish Springs?

Jay Banta: Well I can hope that is the case. I think the protection for places like Fish Springs, at least in this process, comes through the environmental impact statement process and hopefully all of the information that the BLM decision-makers have is considered and they have good science and if they do then the chips will fall where they fall and hopefully a responsible decision will be made based on

science.

I think that this threat may or may not go away. I think it will raise it's head again, but we know that the marsh is about 12,000 years old and we hope that it's here to provide habitat for at least that much longer.



Burton Cohen
Retired Hotel/Casino Manager

This interview has not been edited for content.

Interviewer: You've lived in Las Vegas for the last thirty to forty years, what's great about Las Vegas? What do you love about it?

Burton Cohen: What's there not to love about Las Vegas? We've got great weather twelve months out of the year. We've got a good college. We've got performing arts and a philharmonic orchestra. We have ballet. We've got the largest Boy Scout District in America. We've got great religious backgrounds and great tax basis. And we've got all of the things that have attracted the entire population of Southern California.

Interviewer: Tell me about Las Vegas back when...

Burton Cohen: Obviously it was over forty years ago, so it was quite small. You knew everybody in town. It was a self-help community. I think we had one movie house and that was downtown on Fremont Street, but the hotels were growing—they were small and in those days it was the casinos that drove the bottom line. Today it's room, food, beverage and entertainment. Fifty-seven percent of the revenue today comes from those items, not from the casino. So, in growth we've lost a lot of the personal contact that existed. In the early days if you had a hotel that was 400-600 rooms, it was considered a monster. Today the hotels are 3,000, 4,000 and 5,000 rooms because economically it makes a lot of sense. You've got this broad base of expense supporting a small number of rooms so if you're in a position to turn that so that base of cost of operation supports a large number of rooms, your rooms division can make anywhere from 60-70% profit factor.

Interviewer: Is growth inevitable in Las Vegas and for most of these cities in the West?

Burton Cohen: I think the best testimony of that is what you see. It seems like what started forty to fifty years ago is still going on. People who live in the East are waking up to the fact that they don't like to sludge through the snow in the four seasons and the West opened up for them an opportunity to own their own home and maybe buy one set of clothes instead of four. So the population growth has swung to the West and to a degree to the South.

Interviewer: What's the biggest change you've seen over the course of the years?

Burton Cohen: Well if anybody would have told me that we would have the residential base that we have, I would have told them they were certifiable. The only "local" casinos that were there was downtown. Today you have local casinos in every residential area. By that I don't mean that there are hundreds of them, but they're strategically located in the developing areas to capture that population that is there and they've been built with such attractions that they are now capturing a lot of the tourists who would prefer to stay out there, like the Green Valley Ranch, instead of coming downtown to the strip--that I never believed would happen.

John Howe: How has the population changed? Who lives in Vegas these days?

Burton Cohen: I think I said that half of Southern California lives here because they got tired of paying their tax base there and a lot of the screwball laws that they have, so a lot of those people were able to sell their homes and come out with a fairly good profit, come to Las Vegas, buy a home and have a bigger home and still have money in their pocket. We also are getting new retirees, not of the peanut butter and jelly type retirees, but more of the people with substance and funds are coming to Las Vegas because again, the weather. You can eat out in Las Vegas for less than what it would cost you to eat at home and you have bingo and you have movies and all of the attractions. My mother, may she rest in peace, who lived to 89 lived with me and my wife at the Desert Inn and on Saturday nights she would get all dressed up. She looked like she was going to a ball and they had one twenty-one table that they saved and put a plaque there, "reserved for Black Shack Lil" and she would play two-dollar blackjack and I asked her one day, "Mom, what is there that attracts you?" She said, "First of all it give me an opportunity to get dressed, second of all I'm communicating with people, I'm using my brain, and I'm not vegetating." And to a degree, that's an example of some of the things that are going on in Las Vegas today.

Interviewer: Do you get nostalgic for the Vegas of thirty or forty years ago?

Burton Cohen: Well everybody would like to have the time when eggs were twenty-five cents a dozen, but unfortunately a lot of us didn't have a quarter in those days. Of course the good 'ol days, we look back on those, but you can't stand in the way of progress. What we had then was one thing, and what we have today is a completely different thing. I think that the growth of Las Vegas and the West will continue, unfortunately you can't stop growth. You don't need a passport or a visa to move from New York to Nevada or from California to Nevada. That's part of our country. People today are more flexible. You know, thirty to forty years ago the majority of the people were born, went to school, got a job, lived and died in their same neighborhood. That doesn't exist today to a great degree. We had one guy who we called "Suit-case Murphy." "Suit-case Murphy" was the beneficiary of a very big trust. In other words his family had set up a trust for him and "Suit-case" was a degenerate gambler but he also was a squirrel. "Suit-case" would come to the crap table with a Spanish gourd that normally held wine, and in it he would have malox and if the dice were passing, "Suit-case" would squeeze that Spanish wine gourd and malox would come out all over him. He also ate oatmeal through a straw, so at the Desert Inn we made "Suit-case" a beautiful brass straw and put it in a velvet box. You would think that we gave him the hope diamond. "Suit-case" got mad at Jay Sarno, who was building Circus Circus at the time with me, so what did he do? He went out and he bought the land under Circus Circus so that Sarno would have to pay him rent, and he hoped Sarno would miss a rent payment so he could evict him. "Suit-case" is no longer with us, but he was one of our great characters.

Interviewer: Can you talk a little bit about the politics of Vegas in terms of who runs the town and power—who has it and wants it?

Burton Cohen: Well in my opinion, the power-structure of Las Vega is run by the Mormons. We have a big Mormon base. They control most of the elected offices, and if they don't control the office that is

elected, they control the office below the elected office. A lot of the federal judges are from the Mormon faith and next to them come the Catholics. One time when I first came here the Mormons and the Catholics controlled the entire political structure, not only of Las Vegas but of the state. And it's a good thing because the Mormon base created a great family base. They take care of their own. They're charitable and giving and they are a part of the community, and they gave a lot of stability to what possibly could have been a problem in Las Vegas as it was growing. And it's still a major, major force. I remember one man who gave up a month a year to come and collect little pieces of soap that are left in the showers and so on so that the Mormons could reconvert it and give it to the Indians. They're very industrious.

Interviewer: What did the strip look like then, and compare it to now.

Burton Cohen: Well when I first came here the strip had the Sahara, then the Thunderbird, which was a very old ranch-type house hotel. Then came the Riviera, which was just completed. Stardust was here. Across the street was The Desert Inn. It was very small, not like it was before Mr. Wynn bought it. The Frontier was not here. Caesars had just completed construction and the Flamingo was still the remnants of Bugsy Seagal--it was small. You had the Hacienda all the way out opposite the airport. That was it.

Interviewer: Tell me about your dealings with Howard Hughes. Is there any story?

Burton Cohen: In my career I was at the Desert Inn three different times. The first time I went there was after we had built the Frontier Hotel and Mr. Hughes was living on the top floor of the Desert Inn and we turned on that great big Frontier Hotel sign that is still there, and it reflected into his suite, so we got an offer from Mr. Hughes that he wanted to buy the Frontier Hotel. Well we had worked very hard to get it opened and it wasn't for sale. Unfortunately every human being that came into the Frontier happened to beat us. In those days when you opened up a new hotel, you got a courtesy lay-down from all of the owners—the old casino people—and it was closed to the public. We had some crap games of the likes of which you never saw, but we didn't produce any losers, we produced a lot of winners. So Mr. Hughes finally wound up with the Frontier. When that happened, he (they) took and transferred me from the Frontier to the Desert Inn, and the man from the Desert Inn to the Frontier, so Mr. Hughes was upstairs at the time. Did I ever speak to him? No. Did I ever see him? No. Did I ever speak to the people around him? Yes. Did I ever speak to his waiter that went up there? Yes. But anybody that tells you that they saw Howard Hughes, don't you believe it.

Interviewer: Talking about growth. In your opinion is that growth well planned and what might happen in the future?

Burton Cohen: It's not well planned. It was impossible to well plan. You show me a metropolitan area that has been well planned anywhere in the United States where you had an explosion to the point that we now have here. We now have 1,700,000 people in Greater Las Vegas, so we couldn't plan for it. But they're doing everything humanly possible to catch up to it. Cedar City... when the Mormon Tabernacle in Cedar City was dedicated many years ago, they opened it up for re-dedication. I went up there to see it because there was an opportunity to see something for somebody who is not a Mormon does not get a chance to see. And I said to myself, "What a gorgeous little town this is. Some day maybe I'd like to live up here!" It was beautiful. Cedar City is exploding today, absolutely exploding. Did they plan for their growth? I doubt it. Are they going to be able to maintain it? It will be nip and tuck.

Interviewer: Over the course of time that you've lived in Vegas, what has water meant to this city and where do you think this water should come from in the future?

Burton Cohen: Where the water will come from? I don't talk to God. I'd like to. At night when I say

my prayers I try to talk to him, but I don't know if he listens or not, so I don't know where the water is going to come from. All I know is the people are going to come and we're going to have to establish conservation, science is going to have to lend a hand on the better use of the facilities that we have. I know that the hotels today, the ones that are being constructed and the ones that are already constructed are being constructed with the idea of economic water use of gathering the water from the showers and so on so that it can be used again. If God would stop this drought that we're having in the West—look at Phoenix, they haven't had rain in over a hundred days. It's growing, and it's going to continue to grow. Where will the water come from? I don't know. Maybe someday, not in my lifetime or yours there may be giant desalination plants in California with pipelines pumping water to the West, not just to us. But who knows.

(More on Howard Hughes)

When I was at the Desert Inn and Mr. Hughes was upstairs, he was a creature of habit in what he would eat. He loved ice cream and the suite on the top floor was lined up so that he could actually walk from one end of the building to the other and the television sets were set so that as he walked he could watch the continuity of the program and at the same time he would have a pint of ice cream that he would eat as he walked through. And as I said, if he was eating chocolate, every day it would be chocolate or banana ripple. And one my food and beverage director came and he said, "Mr. Cohen, we're running out of banana ripple." And I said, well you better call Baskin and Robbins and get us some more banana ripple. The old man loves banana ripple. So we calls Baskin Robbins and they tell him they're not making banana ripple anymore but that they would make 200 gallons of it as a special run. I said, "Get it!" We get the 200 gallons of banana ripple in and within a week Mr. Hughes changed his mind and was not eating pistachio. To the day that the Desert Inn was torn down they had banana ripple in the cold warehouse if you needed it.

John Howe: Thank you very much.



Jamie Cruz
Director of Energy and Environmental Services
MGM Mirage

This interview has not been edited for content.

Jamie Cruz: This is our reverse osmosis plant. This is one of several water filtration plants that we have here on our properties. This particular one is a state-of-the-art recycling plant, and it says, "Reclaim and recycle the water that we use at our 3,000 guest rooms at Treasure Island." It is one of the state-of-the-art recycling plants and this particular plant here at Treasure Island allows us to reclaim and recycle the water that is used in the sinks and the showers of the 3,000 guest rooms next door at

Treasure Island Hotel.

Interviewer: What are some of the big misconceptions about water use in Las Vegas?

Jamie Cruz: The biggest misconceptions about water use from the hotel and casino industries are first, that we are one of the largest users in Nevada, and secondly that most of our water is used outdoors, and thirdly that we are water wasters. The first issue, actually the numbers show that here in Southern Nevada the hotel gaming water use only represents about 7% of the total usage of water here in the Las Vegas Valley. The second misconception here about us using our water mostly outdoors is also incorrect. The regular profile of the residential use here in this valley is that most of the homes use 70-80% of their water outdoors, and we are the complete opposite. We use 70-80% of our water indoors and all of that water is recaptured through out reclamation systems here in the county and recycled in the plants. The third misconception that we are water wasters is also not true as we strive for high efficiency in our water use, for example here in the Treasure Island Cove we use recycled water from our reverse osmosis plant to fill these water features.

Interviewer: Talk about that a little in depth. Where does this water come from and how do you recycle it?

Jamie Cruz: The water for this Treasure Island Cove comes from the 3,000 guest rooms here at Treasure Island. The water that is used once in the showers and sinks is put through a sophisticated process of filtration called reverse osmosis in a state-of-the-art plant located here at Treasure Island and up to 100,000 gallons of water a day can be processed and reclaimed to fill this water feature.

Interviewer: Tell me about this plant—the purpose of it and how it works.

Jamie Cruz: The reverse osmosis plant is a way that we can reclaim and recycle water that would otherwise be sent through the other normal methods of reclamation here in the county. So our commitment to sustainability is we want to be good partners here in the valley and we believe we're going the extra mile by taking that water and recycling ourselves and using it here for the beautification of the property.

Interviewer: Tell us specifically about the Bellagio's problems and how that water is used.

Jamie Cruz: The Bellagio fountains are mostly using well water that exists beneath the Bellagio landscape. That well water was used previously to maintain a golf course that previously existed there. The beauty of that is the current water use, because of the lake, represents only two-thirds of the water that was used before when the golf course existed, so in reality, the Bellagio uses less water than the golf course that use to be there before. Some of our properties have their own private wells, for example the Bellagio when it was built in 1997. The company purchased the private well that use to exist there for the golf course and currently that well is used again to supply the needs of the lake in front of the Bellagio.

Interviewer: Does any of the water use here affect the residential use of the residents of Las Vegas?

Jamie Cruz: The way the water use is distributed in the valley from numbers from the Southern Nevada Water Authority... the hotel gaming industry only uses 7% of the water here in the valley and the rest of the that consumption, (93%) is represented from the other commercial areas and the residential use. The biggest misconception is that we are water wasters here on the strip when in reality we use most of our water indoors. The water that is used indoors is recycled by the city reclamation plants. That water that is used outdoors is very minimal compared to the residential areas. The numbers show that here in Las Vegas valley the resident profile is actually 70 to 80% outdoor use, and that means that irrigating their yard or washing their cars, whatever is happening outdoors and the other 20 to 30% that is used inside the houses is recovered through the reclamation district.

Interviewer: Talk about the perception that casinos use too much water because they see water features and things like that.

Jamie Cruz: The common misconception by people walking these streets and seeing large bodies of water is that the hotels and casinos are water wasters, but nothing could be further from the truth. There is a high emphasis from our company to raise as much as possible, the efficiency of our resources and water efficiency is just one of those issues that we are striving strongly to achieve.

Interviewer: Could you tell me a little bit about the volcano here and it's water use.

Jamie Cruz: The Mirage volcano was the main attraction in the late '80's here on the Las Vegas strip. The Mirage was the first mega-resort built here in what started the rebirth of Las Vegas as we know it today. The Mirage volcano is renowned worldwide and again is an environmentally friendly feature because it is again, filled by water that we recycle here on our reverse osmosis plant. Here at MGM Mirage we understand that living in the desert, water is one of our most precious resources and we believe it is our civic responsibility to be responsible managers of that resource, so our sustainability plan here in our company calls for high water efficiency among other things, and here at Treasure Island at Mirage, we use recycled water from our plant to fill these features and that fulfills again our sustainable program and it's simply the right thing to do.



Amanda Cyphers
Chairman, Southern Nevada Water
Authority
Board of Directors

This interview has not been edited for content.

Interviewer: What do you think about the future of this issue? How will this issue be resolved in your opinion in the future, I'm talking specifically about communication and resolution.

Amanda Cyphers: I truly believe that the resolution to this issue is basis of communication. We are Nevadans and we stand strong together. We are battle-born and it has been said before, I think Mark Twain that said, "Water is for fighting." But we're not trying to fight against each other, but it is fighting together to make sure that we are providing those assurances for our future. The basis of our future is about that communication line that we have, and as long as we continue to communicate we're going to solve all of these problems. I think in the future these state issues of water that we have here in Nevada, will be resolved due to communication, open-mindedness and working together. It's all about the spirit of cooperation, and there's nothing we can't solve. Knowledge is our power to make sure that we're going to get from here to where we need to be in our future and where we would like to

be. We all have a place at that table.

Interviewer: What do you think the rancher's role is in this issue in terms of communication and working with SNWA?

Amanda Cyphers: The one thing that I would have to say that I would ask is for all parties to keep an open mind and make sure that all of the concerns that people have are known by all parties and that we have a good line of communication. It's a two-way street. But overall for us to communicate and keep that open mind that we look for solutions together.

Interviewer: Is there a plan for the future in terms of growth?

Amanda Cyphers: The growth in this valley... we do have unprecedented growth, but I believe if you talk to each one of the entities, you will find that we have a comprehensive plan on growth and how to better balance growth. I can tell you here in the city of Henderson, since 1999 on how we are being better water stewards. We are about to hit our twelve million square foot of turf reduction since 1990, removal since 1990 which is just over equal to 2,000 acre feet of water. And this is just Henderson alone. And we continually strive to look for new and innovative ways on how we can be better water stewards. The type of development that we bring; the restrictions we have regarding outdoor use to indoor water use and how we're planning development or buildings that are going up instead of out, we're taking that all into consideration as we're moving forward so we make sure that how we are growing is wise, and we're being responsible with the opportunity we have been given. I understand the concern of the ranchers when they see exactly what has happened with the Owens Valley. We learn a lot more by our history and by actions more than words. So I understand what they're saying, and I understand their concerns. All I can say is that I know we are going to put our best foot forward to make sure that an Owens Valley issue is not going to happen. It's very important to not just look at our needs, but to make sure that we're providing for all, and that is the last thing that we want to see happen, and we're going to strive and work to make sure that doesn't happen.

Interviewer: Can the ranchers trust the SNWA?

Amanda Cyphers: You know there is always a stigma with government of trust and can you trust government, and obviously the water authority is one of those arms of the government and it can be viewed from people that there is this big arm of government that is wanting to step in to take in what they feel that they need. I can tell you that is not the case. I do understand their concerns and I think it's very natural for us whether it's something that is ingrained in us over time on how we view governments or how we view certain entities on what they want and how we are responded to, so I understand their concerns and it's up to the water authority to continue that line of communication and to prove ourselves every single day that we can work with everyone to make this happen. For government to sit there and say, "Trust me, we know what we're doing" I would be very cynical too and as a citizen I am of the government, but I know that in the chair that I sit, I have to prove myself every day. If I can't prove myself then I don't deserve that trust from you.

Interviewer: What do you think of the term "water grab?" Is that an accurate term?

Amanda Cyphers: With some of the ranchers calling this issue more of a water grab, I get disheartened when we're viewed that way because I see us as more of an opportunity of how we can work together, and I keep going back to that point. We're not here to take anything away from anyone and our number one goal is to take care of our environment. That is something that is near and dear to me, and I'll share with you... there was a President, I think it was our first President Bush who had said, "It is our goal as humans to number one, take care of our environment, number two, our future, and number three, ourselves." And that has stuck with me for a very long time. It's something that I apply as we move forward. This isn't a water grab. This is an opportunity on how we can work with each other to make

sure that we all have the opportunities that we all want in the future.

Interviewer: You were talking about your position on the board and what you like about that and what motivated you. That's a very coveted position.

Amanda Cyphers: You know I got involved with the Southern Nevada Water Authority because water issues intrigue me. The whole process of how we get water from point A to point B is just something that I've enjoyed learning about. These processes we build... the magnitude of what we build is so amazing to me, I'm just really intrigued by it, but one of the things that I've liked through my tenure of sitting on the Water Authority, and maybe others might not say that the drought is the most perfect time to be the Chairman of the Water Authority or even be involved with the Water Authority Board, but I've seen it as a wonderful time that we've refined ourselves and educated ourselves. We've learned to be better stewards of water. We've learned to just use that resource and understand how important that resource is. I think one of the downfalls that we have had regarding how we look at water is... I can tell you not of one time, from being born here, to this day that I have ever turned on my faucet and water was not there. So one of our issues or downfalls, I believe as a Water Authority is our success has also become our failure because a lot of people might not see water as such a precious resource because it's always there and it's something that people can take for granted, but I can tell you it's something we've learned about how precious it is and we cannot live without it and we must do what's right, and we will continue to do that for our future. So it has been an exciting time in my tenure because we've learned how to be better and we've taken this challenge and we've faced it head-on and we've come up with solutions. The Water Authority in my early years was a coveted board to sit on, but as the drought issues were coming to play, not so many people wanted to sit at that table, and not so many people wanted to take that position as chair. It was something that I've continued to be for the last years, and I see it as an exciting time because we've been able to look at those challenges and to come up with solutions and to do what's better for our community in the future, and it gets no better than that. I truly feel that from the bottom of my heart and I hope you can see that I'm really passionate about what we've learned. It's all about education and it has been a great thing for our community.

Interviewer: What's the biggest misconception about Las Vegas and its booming growth?

Amanda Cyphers: I would probably say that the biggest misconception about Vegas valley regarding the government as we continue to grow is that we maybe don't care about other's concerns. I know that it's true that we do care about other's concerns. Maybe there's the booming conception that we don't care about our environment as a whole, but I can tell you we do and it's on the forefront of our minds and maybe one of the booming concerns is that we're not going to do what is right for the state as a whole and I can tell you that's not true. I can tell you we do care about the state as a whole. We want to have the opportunity to work with people. We're not here to railroad a plan to take anything away from each other. We're asking to work with people so that we all have an opportunity.

Interviewer: Would you as a rancher make that sacrifice so that millions benefit in terms of the economy and jobs? Taking resources from the rural area to a big metropolis?

Amanda Cyphers: Do a few have to sacrifice for the many? I believe that we can work together so there aren't sacrifices on either side, but that we can come to solutions, not sacrifices, that we are all happy with and can all live with. If we follow with outside parameters that don't work, then we can step back to make sure that what we are doing is the right thing.

Interviewer: I know the ranchers are concerned regarding tapping the ground water and the potential pipelines to Las Vegas. What do you think can be done to alleviate fears?

Amanda Cyphers: Well I'm hoping that as we work together we understand those concerns better. We're concerned about that too as the Southern Nevada Water Authority, and I know our goal is to not

take anything away. We want to protect that use that they have, but we also want to look at the viability of how we can work together to preserve both of our futures together.

Interviewer: What does water mean to the West?

Amanda Cyphers: Water means everything to the West, but not specifically to the West, but to anyone in the world. We realized throughout the years, and especially because the drought has come upon us, on how to use that resource more wisely. I'll tell you, being someone who was born and raised here, I grew up never knowing where my water came from or how Lake Mead or the Colorado River or allotments and allocations... how that all played. I never would have fathomed as I grew up that I would actually have a play within setting policies and trying to solve problems or that we would be in the situation we are in now with the drought. I think what has happened throughout time, and the good things because of the drought, is the education our valley has received as a whole and how precious that resource is and what we need to do not to waste that resource and what we need to do to assure that our future is taken care of.

Interviewer: Talk a little bit about the economy. What happens to the economy when you artificially start and stop water?

Amanda Cyphers: What happens to the economy when you try to force what it does?

Interviewer: Yes.

Amanda Cyphers: Well if you're in the Vegas valley as a whole one of the things we've looked at, because we have been targeted as one of the fastest growing places in all of the nation, is how can we better grow and should we look at the mechanics of growth and knowing at times that we have limited resources whether it be air, water or land, is are we doing what is right for our valley as a whole? Someone like me who was born and raised here, I can tell you when this valley was quite small to where now it's quite a large metropolitan area and sometimes people just don't like change so much and maybe sometimes that brought up some of those issues. So it was, I believe about two years ago, when a board was commissioned by a county commission to look specifically at growth, and if it's something we should look at addressing as in stopping, halting or growing a different way or how we go about it, and at the end of the day I think we've all realized that growth is opportunity and opportunity is a gift. You have to allow that opportunity to happen. If you stall that opportunity, people will go other places to grow. Commercial people and the contractors, builders will go other places, and when they leave they take their spouses which are community nurses and teachers and people that we depend on here and we've seen it in other communities in the nation. It's something that you cherish. It's something that you hold. We realize that we have to grow wisely and utilize our resources appropriately. Here at the city of Henderson each one of our elected--we're appointed to certain board that we have throughout the valley—different region boards and some city boards and since I was elected, eleven years now, and for the last nine years I've had the opportunity of serving on the Southern Nevada Water Authority Board of Directors and I believe for the last four or five years, I've had the opportunity of being Chairman.



Don Duff
Aquatic Ecologist
**President, Great Basin Chapter of
Trout Unlimited**

This interview has not been edited for content.

Interviewer: What are your biggest fears about the ground water pumping of this deep carbonic aquifer.

Don Duff: My greatest fears of this pumping of the deep ground water aquifers is that it could affect the surface water of the Fish Springs National Wildlife Refuge as well as Springs and Snake Valley and possibly also headwater perennial streams in the deep creeks to the south Snake Range. As I understand it for the ground water pumping, Southern Nevada Water Authority wants to put in hundreds of miles of pipelines and come into Southern Snake Valley and Spring Valley and put hundreds of deeps water wells in and this, I feel, would affect the hydrology of the local springs in the valley as well as springs along the bench lands and mountains and this is based on my experience out here as a Federal Aquatic Ecologist for the last forty years working out here so I think it is my professional opinion and I believe there will be some impacts. There are federal laws and regulations that pertain to protection of wetlands and threatening endangered species and while they say that they will provide some mitigation for these particular things, I don't really trust them. I think despite all of the regulations there is going to be impact on these springs and native aquatic fauna from the Spotted Frog, the Bonneville Cutthroat and so I think that while the federal regulations and laws and state laws are in place, there are ways to get around that and go along with the project but there still will be some impacts that will be unmitigatable. They say there might be some surplus water but I don't believe there is surplus water. We've been in a drought for the last eight years here and the valley residents in South and North Snake Valley have been using the water resources for the last thirty or forty years and there have been some impacts already on depletion of wells and springs in the area so there is no surplus water that we feel exists here. There is water to maintain the livelihood and existence of these residents, but certainly not enough water to sustain the population of Las Vegas or the proposed future of Las Vegas.

Interviewer: Should a metropolitan city like Las Vegas or really any cities of the West who are growing so rapidly... what should they do for resources? What would you like to see them do?

Don Duff: There are a lot of cities in the west that are growing urban populations like Las Vegas and they need to manage their water and manage their land for the amount of population and if it needs to be population or growth-limited, they need to take that into consideration and plan their water resources accordingly. To come out of Las Vegas and come hundreds of miles to the north and impact other people's water and the resources associated with it, I don't think is right and there are case studies in the West, take Tucson, Arizona with the ground water pumping and down there with the urban expansion, the Santa Cruz River has gone dry and some of the perennial streams have gone dry and they just need

to limit their growth and have the water available or not grow.

Interviewer: Where should those resources come from?

Don Duff: The cities in the West are growing at an unparalleled rate and I think they ought to take into consideration the resources in their area, the water resources in their area and not come hundreds of miles to other areas to take water from other people and maybe place a risk against the livelihood of the other folks in the other areas so they need to limit their growth. The fact that Las Vegas has sixty golf courses and a 300-acre lake, it takes a lot of water to do that and they need to limit their growth and population base and have the water for those people but not come north or south or get water from other areas.

Interviewer: Is this a water grab?

Don Duff: I believe this proposal by the Southern Nevada Water Authority is a water- grab--to come up there I don't think they're efficiently or effectively managing the water resources. As far as their hydrology in Las Vegas, the planning that is going on for this, I think they're using outmoded data for their projections of the water that they believe they can get and they should have. The data I believe they are using is quite a number of years old and I think they need to have better science. The U.S. Geological Survey will be doing some ground water studies and I think we need to wait and see what the projections are from those studies before we even allow this project to go any further.

Interviewer: Lets go back and talk about how you think this is part of that.

Don Duff: The proposal for a so-called water grab I believe is true. I think it's a water grab similar to Owens Valley, Mono Lake and the situation in Los Angeles and I think it's very similar to what Las Vegas is proposing to get water out of the basin to come into their area and by doing so they would limit the livelihood of other people and other resources where they are going to take water, so yes I believe it's a water grab. There are a lot of folks who say the water would be better used socially for large populations and people in Las Vegas but on the other hand I would say that the water is valuable for the people who live in this area and whether there is a fraction of the amount of population here as in Las Vegas, these people have a right to live, they have a right to their resources and water and Las Vegas should take that into consideration and use only the water that is in their area for their projected growth. For the future I think that water is still going to be a big item and concern in the West and I think Las Vegas is going to have to come up with other proposals to get water, whether it's from the Colorado river system or desalinization plants in the ocean, which are being proposed by the way in Los Angeles, Southern California and over in London, England. So I think there is a lot of technology that needs to be looked at before they just come in and try taking water from other residents.

Don Duff: Behind me we're looking at the Deep Creek Mountain Range, which peaks over 12,000 feet. In 1972 we discovered two populations of thought to be extinct relic Bonneville Cutthroat trout and since then we've repopulated the range with seven streams on the east side and seven on the west side on the Goshute Reservation on Deep Creek Valley and these streams and waters have the potential to be in peril by the Southern Nevada Water project from the ground water pumping and the carbonic aquifer here in Snake Valley behind me. It has the potential to lower the head-water springs and lower the streams, impact the recharge rate of the aquifer and so it has the potential to imperil these fish and possibly put them back on the endangered species list. They had been petitioned for listing but they were taken off because of the work we had been doing so the water project could imperil them and place them at risk for a future listing under the Endangered Species Act.



Ed Firmage
Environmentalist, Photographer

This interview has not been edited for content.

Interviewer: Ed what do you think is wrong with Las Vegas taking what they perceive as surplus water from Snake Valley?

Ed Firmage: The problem with Las Vegas' so-called water grab is that it represents the continuation of the way we've used water in the West, which is a very wasteful approach to the use of water. And it represents a continuation of the attitude that everything has to be basically subordinated as our needs as humans. What happens to the environment, what happens to natural communities that depend on that water is basically not even under discussion in a lot of circles.

Interviewer: What would the affect be on the environment out there? What do you think would happen?

Ed Firmage: I think the likelihood is that there would be damage and we don't know exactly how much because in part we don't really know what's going on underneath the surface, but some estimates have suggested that the water table might be drawn down as much as 100 feet and that would put it beyond the reach of even the deepest of desert plants like the salt cedar or the tamarisk. So the likely consequence is going to be what we've seen elsewhere in areas like Owens Valley where you basically turn a fertile area into a desert. The other consequences include damage to wildlife areas such as Fish Springs, which is bordering the Snake Valley, and is a beautiful wetland area and a vital area for bird life. And there are similar springs on the other side of the border in Nevada. This, of course isn't just an issue for Snake Valley, this is an issue for the whole area and the consequences for these wildlife areas and for these springs in particular could be disastrous.

Interviewer: Does this set a precedent that would not be good for wild places in the West?

Ed Firmage: We have so little wild space left and the area in question is still largely wild, although there is ranching in the bottom areas, it's still a very primitive area and I think that those areas that remain that are so few and far between need to be protected for their own sake as well as for ours. We need those places to retreat to and enjoy and the animals and plants that live there have no place else to go.

Interviewer: Talk a little bit about the appropriateness of cities in the West like Las Vegas going beyond their area to take resources back to an area beyond their basin, for example.

Ed Firmage: You know back in the early days in the settlement of the West, John Wesley Powell, who in so many ways is unbelievably prescient, suggested that the ways that resources and water in particular should be used in the West was on a basin-by-basin basis and the people in the basin should control the water for the basin. And we have violated that principle left and

right in the West by massively moving water all around and engineering it to our benefit but usually to the detriment of everything else and that's certainly the case here where we're talking about transporting water across the state of Nevada to feed the needs of the city which already is really bigger than it should be by any reasonable definition of a desert city. But the problem with the Las Vegas water grab goes beyond that. If you look at the general context of resource issues and use in the West, it represents a continuation of the old way of doing things--the profligate use of resources that are in fact very limited and already over-extended in the case of water in the West. It represents a lack of imagination on our part as far as trying to meet the needs for what limited continued growth can occur reasonably through other mechanisms, such as conservation. We in the West have not even begun to consider, let alone seriously implement conservation. We here in Utah, for example, live as if we were in Ohio or Massachusetts or Pennsylvania. You drive around Salt Lake City and you see Kentucky blue grass everywhere. Half of the water that we consume here in Utah, domestic non-agricultural water, goes to watering grass. So we haven't even begun to address issues of conservation and I think it would be a prudent principle of growth in the West that all future growth be based on conservation. The possibility in conservation is enormous. You could probably at least double the size of Washington County strictly on the basis of conservation alone without doing other water projects ourselves and the same is true across the West. By conserving the resources that we have, we could meet the needs for what growth can still occur without these dangerous projects.

Interviewer: Should cities like Las Vegas have ever been built in the first place with such an arid environment so far away from water?

Ed Firmage: I don't think Las Vegas should ever have been built, apart from the sort of way station that it once was. It's an absurdity to imagine a city of that size or a city the size of Phoenix in the driest part of the United States. On the face of it, it's an absurdity.

Interviewer: Why should we care about this issue?

Ed Firmage: The issue at hand is not simply about a handful of ranchers wanting to preserve their way of life against a much larger arguably needy population in Las Vegas. What we're really dealing with here is the question of what sort of West we will have in the future. Is it a West of continuing, unlimited cancerous growth or is it a West that will recognize limits and be willing to impose on itself those limits before nature does in a more catastrophic way? We're not just talking about people we're also talking about habitat for wildlife. We're talking about plants. We're talking about a very fragile ecosystem that has a right to be independent of us and the notion that we can simply go in and steal things that are critical for the survival of that ecosystem because a big urban city wants to, I think, is an unsupportable way of life.

Interviewer: One of the opinions from the Nevada side is that millions may benefit from this water as opposed to a very few in terms of the ranchers and their agricultural interests. What's wrong with that?

Ed Firmage: The Las Vegas argument which pits the interests of many against the few is I think specious in that we're talking not principally about a handful of ranchers, we're talking about the effect of this water grab on an entire region. Independent of the hundreds and thousands of people that will be affected by this, the effect on wildlife, on native springs, on ground water, on local vegetation are potentially catastrophic. There are any number of unforeseen consequences to doing that. With the possibility that the increased desertification of this area could create horrendous dust storms, it could cast up toxic dust, even radioactive dust into the air affecting many more people than would be directly affected by just the loss of the water. But the most important argument against this scheme, is simply one of responsibility. Is it environmentally responsible and is it even fiscally responsible to spend billions of dollars piping water for a city, which is already past any reasonable size for its location, and at what point do we say enough is enough? This case is interesting in that it united two groups that are

often on opposite ends of environmental debate: ranchers and environmentalists. The common concern of both is that a big metropolitan area is going to steal water that will not only hurt a few ranchers but hurt an entire region. And that is the concern that brings environmentalists to the table as well as the ranchers. Speaking for myself I have to admit that I have real concerns about ranching in the West. It's called welfare ranching and rightly because it wouldn't exist without massive government subsidy, in this case in the form of water, and subsidy in the form of land leases and other things that we give ranchers to make ranching in this very marginal area possible. But on this issue I side with ranchers because I think the greater danger is the ongoing practice of engineering water in ways that are way beyond natural.

John Howe: What do you see for the future of the growth of these cities as they continue to get more population and boom. Where will these resources come from? I'm talking about things like desalination and other things for the future.

Ed Firmage: I think we're reaching a point where we have to decide fundamentally... let's start with just the human question. What kind of environment do we want to live in? One of the things that draws people to the West is its clear sky. Yet when you go to Las Vegas today you see this perpetual haze like the haze that hangs over Los Angeles. You're beginning to see it now in St. George. You see it every day in the Grand Canyon as pollution from Las Vegas and Los Angeles and other areas drifts into the Grand Canyon. The question is really what kind of life do we want to live here? Is it a replication of urban New York? Is it recreating little Los Angeles all over the West? I don't think so. And that means we have to impose limits on ourselves and one great and natural ordinary way to do that would be to let real natural resources—the resources that are locally available—determine the size of settlements that will exist there. No more settlement should exist in the Las Vegas area than local resources can support. And no more settlements should occur in St. George that their local resources can support and so on down the line.

Interviewer: Can you speak to the trust and fears of the ranchers that they really can't trust the water authority in Vegas? One of the points they make is there are already adequate regulations in place that would protect the ranchers.

Ed Firmage: I'm very skeptical of Las Vegas' claim that the ranchers have nothing to fear. With the money and effort that is going to build this project, it seems highly improbable that once it is built, any significant veto power would rest in the hands of a handful of ranchers, and no veto power that I can see is going to be vested in the birds of Fish Springs. So, you know, who really effectively is going to speak here? It's going to be the people with influence and political poll and money, and that's Las Vegas. So if we go down this road I think the natural tendency will be to be more, not less destructive.

Interviewer: What would your advice to the ranchers be?

Ed Firmage: Fight like hell! This is an issue worth fighting. I think it could be a precedent-setting issue where people at state and local levels—environmentalists, ranchers--put some sort of break on growth or insist that future growth come through conservation. But even though the odds are stacked against the little guys in this case, I look to the MX battle as an interesting precedent where state and local governments and most money interests were completely for building the missile system here in the Great Basin and yet it ended up being defeated because of local opposition. And I hope the same thing will occur here again.

Interviewer: You were talking a little bit earlier about St. George as sort of a microcosm of what's happening in these bigger cities. What do you think is going to happen in the future to St. George?

Ed Firmage: I'm very concerned about St. George. It's an area that I have known since I was a kid. My ancestors in this state go back to the very beginning. My great, great, great, grand father is

Brigham Young. So I bring to this a love for this area and what I see happening right now throughout Washington County is again more of this continuation of the status quo--growth for growth sake, seemingly without end. Heedless of the wise caution that Ed Abby was famous for saying that "the growth for growth sake is the ideology of the cancer cell" and that is so true. What I see happening in St. George is basically cancerous growth. Every time I drive into town, for example, and I see that big scar on the mountain above town where they basically dug out a piece of the mountain to accommodate homes and condominiums, I just get this wrenching in my gut. And as I see more and more desert land turned into high-density housing, I just want to cry. This is growth without any sense of consequence or responsibility. Since becoming a photographer seven years ago, I've come to a totally new appreciation of this land. I grew up here, my family has been here for many generations, and yet like a lot of people who live here, I never really connected to the land. I was an urban person—my thinking, my ideas, my orientation were urban. I could just have easily been in London or Paris and probably would have preferred to be in London or Paris. Approaching the land as a photographer and looking at it in that sense as a lover, as an admirer and protector, I have the deepest concerns about where we're heading as a state and as a region because I see so little of that attitude of responsibility and protecting and caring and loving as opposed to simply viewing the land as a resource to be exploited for the sake of profit. And in the case of Las Vegas, there is nothing else but profit. We're talking about a town that is synonymous with simply making money for no purpose than making money, and for that we are willing to sacrifice these last few precious, wonderful areas that all of us need as a form of spiritual retreat and which the animals and plants that live there need as a place to survive and live.



Annette Garland
Teacher
Callao, Utah

This interview has not been edited for content.

Annette Garland: We have a one-room schoolhouse, actually it's a one-classroom school. We have multiple classes in our classroom and I teach kindergarten through eighth grade. I have eleven students and they're grouped in different ways—some cooperative learning, some individual learning, some whole-class learning. It's a good opportunity to group the kids in different ways. We've been in this building since 1993. Before that we were at West Desert Elementary School because we closed the Callao Elementary School because we had a lack of students for school. So we came back in 1993 and we've been in this building since then. We've had as high as twenty-two students and as few as eight. Most of the kids are from Callao, were born here. Some of them came from town, Grantsville. Most of their parents were educated in our school system and I've taught many of their parents. So most of them come from within a half a mile. My oldest is a fourteen year old and my youngest is six years

old, kindergarten and my oldest is in the seventh grade and they range all the way from kindergarten to seventh grade. I've known most of them since they were young or babies and a couple of them are new this year. I think all teachers want to make a difference in lives. I think that's not unique. When you work in this kind of a situation you can make an investment in kids and keep working with them year after year and see progress that you don't see otherwise. It's great satisfaction for me to start them in kindergarten and see them graduate from high school and see the progress they made. Also I think it's a wonderful teaching opportunity because the younger ones are listening and the older ones are doing lessons and the older ones are listening while the younger ones are doing lessons and it reinforces what you've already taught them. Callao is an old community as far as Utah goes. Most of the people here in Callao are related and have been here since the 1960s and I'm a relatively newcomer. I've only been here thirty years but we have a strong heritage of ranching and independence. We are independent and we've learned how to survive and be independent and there is great satisfaction in that in knowing how to take care of yourself. Hopefully we can keep our lifestyle intact for our children and our grandchildren. My biggest fear is that my children and grandchildren will never know the independence that we've known. I want to give them the opportunity and be able to choose and have the option of being able to stay here. If we aren't successful we won't have the option and they won't have the option and I don't know how long it will take for our lifestyle to be destroyed, but I don't think it will be that long. They say they'll reassess in 75 years. I don't have 75 years and my daughter doesn't have 75 years. I'm not sure my grandchildren have 75 years. I would like to see Las Vegas live within their means. They live in the middle of a desert and they should live within their means the same as we live within our means and I don't want to see the West defined as one big metropolitan area surrounded by desolate deserts where nobody can live. I've grown to love Callao and it's my home and I'd like to stay here for the rest of my life. I wasn't raised here, but I love it and I don't want to move and I don't want any other lifestyle. I like this lifestyle and I cherish it. The best thing is they (the kids) learn to work and entertain themselves. These kids play outside and invent games and shoot baskets. They go to basketball games with their families. They go to dances with their families and there is a real family cohesiveness and a feeling of community and even though we don't all belong to the same church, the school kind of brings us together and our lifestyle brings us together and it's a simple lifestyle but it's genuine and real. I don't think it's appropriate to take water from any place in Nevada that doesn't belong to their basin, you know. They've probably had their share as far as I'm concerned. I don't think it's appropriate for them to go to White Pine County. I don't think it's appropriate to go to my county or Elko County. I think the water that's in the basin should be for people who live there. Everyone has to learn to live within their means.



Cecil Garland
Snake Valley Rancher
Callao, Utah

This interview has not been edited for content.

At Big Spring located on Garland's Ranch

Cecil Garland: What we've got here is the Big Spring. It's been known from ever since the Europeans got here as the Big Spring I guess. It's recharged through the alluvial from the mountain aquifer. Its recharge occurs about a year after we get a good wet year in the mountains and the water begins to come up down here so this spring is the lowest spot in Callao, maybe in all of Snake Valley. It is, as I say, recharged from the hydrostatic pressure underneath the ground and water from the mountain. It has returned to its historic level of water. We're glad to see that because it had been below historic level for about eight years. It's the first sign from the good wet year that we got some recharge beginning to take place in the underground Callao aquifer. This spring is probably the largest spring in all of Snake Valley. Our mountains that go up over 12,000 feet are really an inverted reservoir—it collects a little snow and rain out of every storm that comes through and that becomes part of the mountain aquifer and then that gets into the alluvial material underneath and comes down under Callao and then it builds a hydrostatic pressure and that forms a spring. In other words these springs that you see here are the direct result of the amount of water that we get on the mountain and it follows the storms in mountain by year so what we have here is a reflection of the good year we had last year—the first good year that we've had maybe in eight years. So it would take several of these years in order for the aquifer underneath Callao to recharge itself to historic levels.

Interviewer: Let's talk about hydrostatic pressure. What happens when that is removed and why that is a problem with this ground water pumping?

Cecil Garland: The hydrostatic pressure is not an unusual phenomenon in the western mountains and valleys. The water comes under and gets down underneath. There are layers of clay that keep the water under there and as the water presses from the mountain, it begins to create that pressure underneath. Now these springs are a direct result—there's a pressure relief valve for the hydrostatic pressure underneath, but the truly significant thing is out to the Northeast is the great salt desert. That's filled with ice-age water. It's very brackish and has a lot of minerals in it. It's highly alkali and nothing will grow in it. Stock can't drink it and people can't drink it and you can't grow anything. If the hydrostatic pressure, which is underneath us here, is ever reduced by pumping or over pumping, then that very brackish toxic water from the great salt desert will rush into our aquifer here underneath and it will be destroyed for all practical times as a useful aquifer and our potent water will become brackish itself. That is are great fear. For many years this pond here was a pond and it was a beautiful pond and in the spring it would recharge, but in the winter the ice would form on it and there are ice skates hanging all around Callao here that haven't been used because this pond is dried up. That is the direct result of not having the recharge from the mountain aquifer that keeps these springs and ponds alive. Until we get that kind of recharge, this will only remain as a dried up water hole as it is now. The greasewood is a ubiquitous plant here in the valley floor. It's uniquely designed or has evolved to live here in this kind of an environment, but it has some limitations: #1 it has to have roots in water. The greasewood grows where only it can reach water, so you don't see it up out of the valley floor, but it lives here. The significant thing about greasewood is that if the water table is ever taken away from it, or it drops beyond it's root zone, which is about 45 feet, (in other words it's roots can go down about 45 feet) if that happens that greasewood dies and it is the significant vegetation that holds the valley floor together. Once it's gone, and it will go, then the valley floor is subject to the wind tunnel effect of the winds that roar up and down this valley north and south and what you're going to have here is frequent dust storms that are going to go 3,000 to 5,000 feet in the air and it will effect the Utah Test and Training Range, it will effect the wilderness area to the west, the Great Basin National Park to our south and Fish Springs Wildlife Refuge to the east. This is a catastrophic thing. It's not anything to play lightly with.

Interviewer: Tell us about Big Spring, and what we saw and what the significance of it is.

Cecil Garland: Big Spring is probably the biggest spring in Snake Valley. It's fed entirely by the underground hydrostatic pressure of the water that comes through the alluvial soils from the mountain and from the mountain aquifer. It is never fed nor does it have any way for water to get into it except from that source. In the last eight years Big Spring dropped about four feet. There has never been any record of that changing. It has never varied before, but this once in 500 years drought, plus the use that we ourselves are putting on it caused the Big Springs level to drop. Then we had this wonderful year last year in which the recharge is now reaching the valley floor from the mountain aquifer and it has come back to its normal elevation or height, but not to its normal flow. It hasn't reached the flow that it used to historically maintain. It's another one of those springs that is fed by the hydrostatic pressure of the water from the mountain. Of course these springs are a pressure relief valve, so to speak, for the hydrostatic pressure underneath. Well this beautiful pond back there, fed by these springs, when it would freeze over and get really cold in the winter, then all of the kids and whoever would like to ice skate and there were ice skates hanging around all over Callao and they'd go out and have a party and ice skate. That hasn't occurred for the last several years because we simply haven't had the water in that place to ice skate on.

Interviewer: Tell me in your opinion what is happening with the SNWA. What are their plans and what are your fears?

Cecil Garland: Well there is an enigma there. We don't know really know exactly. They are somewhat pretty tight-fisted about what they tell us and they presumably have their reasons for doing so, but this is one of the disturbing things about trying to deal with SNWA is that we really don't know their plans and they aren't willing to give us those plans until we do and until those plans are known to the rest of us, how in the world are we going to make some kind of a cohesive plan ourselves to have them understand what our problems are?

Interviewer: Is it a water grab and what do you fear the most is going to happen?

Cecil Garland: It is a water grab. It can't be anything else. Patty Mulroy said over in Ely that this is our last chance and our only prerogative and I stood up and said, "If this is your only chance, then you don't have another chance because we're in a water deficit ourselves. We have been for many years so how can you come to one of the driest valleys in the driest region of the whole United States and expect to take surplus water without destroying the surface water that exists there and destroying the community and their ability to farm and the ability of people to live there? That's essentially what you're going to do." I wish Miss Mulroy and people of Southern Nevada that we had an abundance of water that we could let you have. We don't. I'm sorry... we do not!

Interviewer: Talk about that. That's one of their points that there is a lot of surplus water. Is there surplus water and if not, why not?

Cecil Garland: The surplus water is a myth, or the idea that there is surplus water. First of all the springs the seeps, the wet areas, the marsh areas that we have are already under stress and I know of no better indicator than that. To look at those areas that contain free endophyte vegetation—this is where the migratory birds must come, this is where the wildlife must go to get their water and when the water table drops to the point where they dry up, and I say and continue to be redundant about this, it is drying up! We lose the value of living here because you cannot live without water. The first thing to go will be the wildlife and those things that are sensitive to having water. We by implication will be next.

Interviewer: The SNWA point of view is that there are regulations in place that would protect you and the wildlife in this area. What is your opinion of that?

Cecil Garland: The SNWA better realize that that is a fallacy and isn't so. You cannot come into a valley where we already have the set-up to make a living here. It's a very tenuous thing even at that to pump this water out of the ground and that's sheer propaganda. Let me give you a good example. Miss Mulroy says, "We will take water out of here and if this area begins to get dry, we'll come over and take water out in an area over here." And I say, "No, that isn't the way it really is." Look at the Colorado River. It's down to 50% of its carrying capacity to being full. Now that took the whole West, so when you say you'll take a little here and a little here, there is nothing to establish that you can do that because when a drought hits the West, it's all the way from the Canadian to the Mexican border and you don't have any choice about switching from one part of it to another. It doesn't work that way. It's a drought, it's pervasive, and it's usually long term.

Interviewer: Is it appropriate, in your opinion, for a metropolitan city like Las Vegas or any of the cities of the West to take ground water from a rural area—essentially far away from its boundaries. Is that an appropriate thing to do?

Cecil Garland: You know what bothers me most about taking water from these dry, rural valleys is are we to have a mega-metropolis that is green and beautiful with sixty golf courses and numerous swimming pools and water falls and all of the glitz and phoniness that exists in Las Vegas and dry up all of the valleys around it in order to perpetuate that thing and keep it going? I resist that. I think even if I didn't live here I wouldn't want that to happen because I think the Southwest has it's own flavor, it's own culture, it's own way of life that is developed over a period of time, and it's very valuable not only to us but the whole country.

Interviewer: Hal Rothman, a historian in Las Vegas has a new article out in New West magazine. His thesis essentially is that this water would benefit millions of people for jobs and the economy as opposed to water that benefits a very few. What is your response to that?

Cecil Garland: I love to read Hal Rothman and he writes very well and I'm envious of his ability to write and explain himself, although it borders on selfish and I wish he was on our side because he could take our side and do a beautiful job of explaining it. The point of it is, *isn't there room for diversity? And isn't there room for all of us?* Is it such that if we become wealthy we therefore have the right to everything else that we can buy, purchase or generally coerce people into allowing them to have? No I don't think so. Mr. Rothman is a professor—we who profess. I remember reading sometime ago a book by a gentleman by the name of Alan Bloom and one of things I remember about reading that book, and maybe the only thing is he said, "If you could choose 2,000 off of the street or the Harvard faculty to run the country, he would choose the 2,000 off of the street. And I can never read Mr. Rothman and I don't think of that part of that book.

Interviewer: Tell me about the heritage of the ranch and the people here. What does it actually mean to you?

Cecil Garland: Callao began as a pony express station and the people who came here for whatever reason came to love the area. It was hard—they lived in dugouts and there was a constant threat of the Indians and they hung on. Some of my neighbors have been here for five generations now. They don't want to leave. It's a tragedy to think of what these people would do. I've been here for 33 years and I'm kind of a "Johnny Come Lately." What would I do? I love being here. I want to continue to be here and I don't know that there is enough—I've been to Las Vegas and worked in Las Vegas. I'm not sure there is enough money down there to justify me selling my ranch and the future of my children and grandchildren to Las Vegas for any price.

Interviewer: Let's talk a little bit about trust and the SNWA. Do you trust them and if not, why not?

Cecil Garland: I don't trust SNWA for what we are about to lose. I honestly don't and I can't. I like to

trust people but I can't do that because there is too much at stake here; too much of our future and too much of value, and so it would be wrong to ask us to trust or for them to ask us. This is one of the great things that they continue to harp upon... "We are not going to disturb your environment. We are not going to disturb your way of life." That is tremendous hypocrisy. Let Mulroy et al come and take the tour that I would show them here in this valley. Let them come and look at it, not fly over in an airplane. When they come and actually take a look as Governor Huntsman did, and he spent a day with us, then I'll begin to believe that these people are sincere about knowing about our future and the ability for us to survive here and that requires water. I don't trust them.

Interviewer: If Mulroy was sitting across from you like I am right now, what would you say to her?

Cecil Garland: I would just simply say that we're going to resist! We will resist because we have no alternative to resist. We're going to resist because it's morally correct that we do resist. Is it right to take water from a place that represents or is personified by cattle, children, church and country and give it to a metropolis that is personified by glitter, gluttony, gambling and girls? You make the choice. What will it be—crops or craps?

Interviewer: Let's talk about the parallel with this issue and the Owens Valley and the infamous water grab around the turn of the century.

Cecil Garland: There is a parallel between taking the water out of this valley in some ways and in some ways not. In some ways Owens Valley was much more prepared to give water than we are because they had lakes and a river and they had a much higher rate of precipitation than we do, so this valley is going to show the stress and the distress much quicker than Owens Valley ever did. The simple fact is that what happened there is exactly a harbinger of what is going to happen here. There is no excuse for us doing it again. How many aquifers do we have to destroy to prove that we can destroy and aquifer? We know so much more now. There is no excuse for us doing this now.

Interviewer: Talk about the history of Lake Bonneville in this area and where this water came from and the age of the water. Where does all of this water come from?

Cecil Garland: This valley and where you are sitting once had 1,000 feet of water above our head right here. Where did that water come from? Living here I have to look around and say, "Where did all of that water come from and where did all of it go?" I believe that at some point in time, and our astronomy experts look off into space and tell us this is so, that there are two clouds out there that they know about, and it's my opinion that the earth passed in orbit through these, maybe starting 20,000 years ago and it took along time to go through, but it collected that water and filled up this Great Basin into a inland sea and then when we passed from that orbit it got dry. If you look again at the last 10,000 years there has been very little change except that the water has evaporated out of the valley so that the Great Salt Lake is only a tiny remnant of that great sea. Now the significance of that is that we are not gaining water in the Southwest, we're losing water. Scientist now believe that as water evaporates and gets closer to the stratosphere it is atomized and is lost into space. So for all we know, and I believe this from looking at all indications of the dry areas of the contentions for water all over this planet that we're getting low on water. We have to judiciously use that water. One final thought on that—I have no problem with Las Vegas being in existence. But if it wasn't in existence within ten years, you wouldn't know it and the country wouldn't be a whole lot worse off, but you start doing without your farmers and ranchers as past civilizations have tried it and failed, pretty soon you start to get hungry.

Interviewer: What would actually happen here if the ground water table was lowered due to pumping?

Cecil Garland: If you lowered the water table, and this is a conservative estimate, the water table would go down 100 feet rather quickly. The artesian wells and springs would of course dry up. We

who irrigate and farm and raise hay for our cattle would no longer be able to pump because water weighs 3,600 tons per acre-foot. So we'd have to deepen our wells. The electricity bill to pump would be greater than we could make a profit with. The people who live here and depend upon their artesian spring and shallow wells to live here would have to deepen their wells and the whole process would rapidly deteriorate into another form, as we have said, like the Owens Valley thing all over again.

Interviewer: Is there any scenario that SNWA could offer you that you think would be appropriate or would assuage your fears?

Cecil Garland: There is no appropriate way, in my opinion, to approach a community and say, "Sell your water and sell your future." You can't do that. It is an immoral, wrong thing for them to do. Now there are some things that are worth considering. We have to consider them and I think we are considering them. Water has inherently followed the money so if they came in here, for instance in Callao, and they bought one of the ranches and instead of pumping seasonally in the summer time to irrigate, they pumped 24/7 year round, this would put a pressure upon the rest of us to almost force us, because the water table would fall and we could no longer farm. What would we do? Our cattle would need water and we would need water. So we'd almost be forced to sell. So just considering the wellbeing of my community and my neighbors, they don't have enough money to come up here and buy me out.

Interviewer: How do you think this will resolve in the future? What do you think is going to happen over the next ten years?

Cecil Garland: I wish I could give you an answer as to what is really likely to happen in this. I don't allow myself to be pessimistic or optimistic--that's not a luxury either way. What I have to do is oppose this. That's my duty. I would say that we would be very lucky considering the exponential growth of these cities, whether Las Vegas, Wendover, Salt Lake City, or the whole complex to retain our beautiful valuable portable water underneath our ground here, but we'll try because there is no alternative.

Interviewer: What do you see for the future of the West?

Cecil Garland: The future of the West is pretty evident. It's often said that *those who cannot remember the mistakes of the past are condemned to repeat them*, and we're repeating them all in spades. We're building the megatropolis with an unquenchable, insatiable desire for all resources, particularly water. The ranchers are being bought up and being turned into small ranchettes or turned into housing projects. We're developing in Wyoming the whole oil and gas complex. It's doing terrible harm to those people. So we're in a real state of flux and change and I fear that it's not going to be for the best. People should remember, we should all know this by now, the congestion breeds regimentation and please let me say this to anyone that listens. The great American dream was not a car and a T.V. and a house that they can make a payment on--it was freedom. It was freedom that brought people to Callao in the beginning and made them stay--the freedom to be away to choose what to do for themselves and with congestion, that is inevitably lost because the more we are, the more laws we have to make to control ourselves.



Brian Greenspun
Editor
Las Vegas Sun

This interview has not been edited for content.

Interviewer: Las Vegas is one of the fastest growing communities in the country. What's so great about Vegas?

Brian Greenspun: What's so great about Vegas? There's a short question with a very long answer. I'll try to say it in just a few words. What's great about Vegas is Vegas. There is no place on earth like this. Adults, children--actually adults with children's minds--anybody whether it's Europe, United States, South America, you pick the spot, they've all heard of Vegas. I've been in places around the world where people are watching T.V. and they hear something Vegas on T.V. and they stop. There is a fascination about this place. It used to be gambling and still is to some extent, or to a large extent, but it's so much more. It's a state of mind. So when you ask me what's so great I'd say to you, "What's so great about your state of mind?" That's what it is. When you talk about growth in Las Vegas I don't think you can look at the last five years or ten years or ever twenty years. I remember growth being talked about in 1953 or '54. I was too young to remember anything before that and people were lamenting the fact that we were growing too fast. Where will we put all of these people? Who is going to show up here? Where are they going to live? It's nothing but desert and on and on and on. So I've heard about growth for half a century. The rest of the world has heard about growth, let's say since the early 1990's because I think we've reached some kind of critical mass where instead of growing from 50,000 to 100,000 and 100,000 to 200,000 we grew from 500 to a million and now we're approaching 2 million. So people sit up and take notice. And it's not stopping. It just continues. There is a great engine here and the engine is called entertainment and the great Southwest. Those are two things that are driving the growth in Las Vegas.

Interviewer: What about water in this community? What does water mean in this town? Who gets it and wants it?

Brian Greenspun: Water is for fighting over they used to say. Well maybe they say it now more than ever. We live in a desert. A good part of the Southwest is in the desert. Water is precious. Without water there is no growth, so they go hand in hand and if Las Vegas wants to continue to growth, as it seems naturally to do right now, it needs water so it's looking for water wherever it can get it.

Interviewer: Talk a little bit about the politics of water and where the power is.

Brian Greenspun: When you talk about water in Las Vegas in this valley, there are a number of different users. We have one giant engine in Las Vegas--it's called the entertainment gaming tourist industry. Surprisingly enough, it probably gets all the water it needs, but it uses this much water compared to the total usage in this valley. I think the largest users are probably people with homes and grass and trees and shrubs, outdoor use and things like that. That's most of the water and Las Vegas has been doing a reasonably good job of conserving it over the last few years once we've realized we have

a problem. But it's counter-intuitive for people to believe that it's the gaming industry that is using up all of the water with the fountains and the lakes and all that kind of stuff. It just uses, I don't know, 3% or 4% or 5% of the water. So when you ask who gets it and what the politics are, you've got 1.8 million people who want to water their lawns and swim in their pools and you've got a gaming entertainment industry that wants to take care of 38 million people a year and growing. I think that's where the friction is and that's where it will continue to be.

Interviewer: Talk a little bit about Las Vegas and the American dream. Why do people move there?

Brian Greenspun: Las Vegas is the American dream. At least it's the American dream in the 21st century. I think it was for the last half of the 20th. People are moving here for a couple of good reasons; number one there are jobs. Every time they build a new hotel here thousands of new job opportunities open up, not just for the hotel, but for all of the supporting industries that go along with that and then all of the professions that come along with that. I think the number is something like three or three and a half jobs for every hotel room. If you look out over the next five or eight years, we've got something like another 30,000 rooms coming down the stream. So what's that a hundred thousand jobs give or take? That's a lot of new people and a lot of families, so that's one thing that's causing the growth. The other thing is my age, my group--baby boomers. Many people are starting to retire and they're looking to move from those places where they've lived all of their life, especially in the Northeast and other places where it has either become too expensive or too oppressive. So they're looking for a warm, sunny climate and Las Vegas is right in the middle of it. So we're getting a whole lot of people who are coming here to retire. In fact a lot of young retirees are coming, not to just retire but to live before they retire.

Interviewer: What do you think about typical urban growth issues?

Brian Greenspun: I think more and more people are starting to be very concerned about it. In year's past we'd water our lawns three times a day and the greener the better and on and on. We didn't think about it. But when we went, let's say in the early '90's now where we've practically doubled going from a million to almost two million people, all of a sudden we can't water our lawns every day. You're told to not flush the toilet as often although there aren't those kind of restrictions, but we see lawns and golf courses going brown where it never use to happen before. And it's tangible—we notice it. I think most people are aware that we live in a desert, finally. There are restrictions on whether you can plant lawns anymore. All of the new subdivisions are coming up with cactus and desert landscape in their yards so people are clearly becoming more cognizant of it and I think the cost of water has gone way up. So in a very tangible way they are feeling that pinch also.

Interviewer: Are people here knowledgeable about the water issues here?

Brian Greenspun: I think most of the people here are relatively unaware of what it's going to take to get more water to the valley. I think from time to time we have bond issues about building new pipelines to the lake and things like that. There are stories every once in a while about the desire of the Water District to try and find water from other sources or in the middle of Nevada or eastern Nevada. But it's not the kind of thing that is top of the mind. The thing that brings that home would be if we run out of water some day and people say, ok turn your taps off for two days. Then we'd know we have a problem, but right now most people are just leaving it to our political water leadership to find the answer. There are answers. There are a myriad of answers and we're leaving it to others to find it. Those of us who are paying attention are probably aware of it. Most people? No, nor should they, not now.

Interviewer: What happens to Vegas without water?

Brian Greenspun: I can say we dry up and die and we don't grow. And if Las Vegas isn't growing, that

will do something significant not only to our community, but to every body else who believes that Las Vegas is the American dream and the dream city. We're 38.5 million tourists right now. A few years ago we were thirty-four and years before that we were twenty-six, and five years from now we could be forty-five. Those people won't come and have a place like Las Vegas. Maybe they'll go to Salt Lake, I don't know.

Interviewer: What do you see for the future of Las Vegas and water in the West?

Brian Greenspun: I've always believed maybe too simplistically that water is an economic issue. We live in a desert and don't have a lot of it. There are people who are drowning in water so there is water in some places in this country and there is very little water in other places. It's a question of how you get it there and what the trade-offs are. I've never really considered water a showstopper. It certainly is slowing things down and you have to go deal with people on a rational basis. Know one would ever suggest down here, for example, that we go do an Owens Valley thing. We don't go take water from people who have it and need it. But there are places where there is plenty of extra water, and to the extent that there is extra water, we just need to find a way to bring it down here. If compensation is involved, you compensate people. But you get the extra and you get it down here to the extent you need it, but never ever to the point of taking from people who are using it and need it.

Interviewer: What's the perception of growth in this community? Is it sprawling out of control?

Brian Greenspun: It depends what residents you ask. If you ask me, I think where we are sitting, and in one or two other areas of this community they are well planned. We're in planned communities out here. A lot of it still grows willy-nilly. There is an attitude in this community that is very pro-business and pro-growth and there is nothing wrong with that but to the extent that they put the kind of aesthetics in place so they require the kind of aesthetics to really make it a nice place to live. We're still learning. We're a very very young town and we're still learning from others so I'd say it's a very pro-growth town and it needs to mature a great deal still in the way we grow and how pretty we grow. But I don't see anything that is going to stop us from growing.

Interviewer: Can you give us your opinion on whether the ranchers should be trusting "Las Vegas" with their water.

Brian Greenspun: I think when you talk about the trust issue as it relates to the ranchers and farmers either in Utah or the eastern part of Nevada, I think that is a very proper and reasonable position for them to take. How can they trust us down here that we will keep our word? I've lived in this town my whole life. I know that sometimes you can't trust this or that politician or you can't even trust the people you work with from time to time, but I've never known the political structure of Las Vegas to ever go back on its word, especially with something like water. You need goodwill on both sides and sure it's a matter of faith because it has never been done before. So I understand that there is a natural fear. What is going to happen if we give them an inch? Will they be a mile down the road before we ever look up? I know as long as I live here and as long as I have input, I'm going to do whatever I can to make sure that people in this state are never looked on by their neighbors as people they cannot trust. That's just not the way neighbors should work. We need them. We need them badly. I think we're going to be able to find a way to show the ranchers and the farmers and the people who live in the rural areas that they can also benefit from an arrangement with Las Vegas. But you make your contracts and you make your deals and you have your understanding just in case the trust thing breaks down. I understand the fear, but I think it will ultimately be an irrational fear. Today it may be a rational fear just because they don't know, but look down the road five or ten or fifty years from now and we will all look back and say, like most things, look what we were afraid of...wasn't that silly?

Interviewer: Most of these cities in the West are growing exponentially. Where do you think the resources will come from in the future, not just for Las Vegas, but for Tucson and Phoenix and many of

these other western cities?

Brian Greenspun: If you're talking about how this exponential growth that we're all assuming is going to happen from the baby-boomers retiring and moving into the Southwest, a major resource is obviously going to be water. And it's not just Las Vegas that will need water--it's Southern California, Arizona, New Mexico. They all have different water sources and some of us share the same water sources. I hope that the drought will end. Droughts do end and then happen again. So the real question is finding something more permanent—finding the places that have the water and don't need it and won't need it for thousands of years and finding a way to transport it to those places in the Southwest who will need it. The people moving here, not just Las Vegas but all over the Southwest... millions and millions of people will move here. They are the ones who are going to drive that determination to find the resources and a lot of them are moving from places that had the water. So they're coming with relationships. So yes it's a huge problem, but problems can be solved. This is America. We solve problems here.

Interviewer: What are the biggest misconceptions about Las Vegas?

Brian Greenspun: When you talk about misconceptions that people have about Las Vegas, I would think that the single overriding misconception that I hear a lot is about the kind and quality of the people who live here—that we're all gamblers and dealers, waitresses, gaming moguls and that's it, and that we all just live for the money that comes in here. I don't know if that has ever been true. Many times in the past, Las Vegas has encouraged that kind of conception about Las Vegas because they wanted people to come and visit and see the gangsters and the hookers if you will and all of that stuff. There are 1.8 million people here and I'd say 1.795 of them are decent, honorable, responsible people and they just want to do the right things for themselves and for their families and for this community. But remember we are a very young town so we're still learning how to do all of those things. So if you look at misconceptions, I think it's who the people are because actually we all come from everywhere else. We're the same people that live next door to you in Salt Lake City, or lives next door in Demoiné or New York City or Los Angeles. They just come here to live—they're the same people. So that's what I think is the largest misconception and it's a misconception that is way off.

Interviewer: I was mentioning that the ranchers really fear the Water Authority and indirectly Las Vegas. Are you concerned about that?

Brian Greenspun: I think in the end the ranchers and farmers in Eastern Nevada and Western Utah who have exhibited or expressed some fear about this voracious appetite for water that Las Vegas seems to have, that once we get our hooks into them, if you will, we're just going to take all of there water. I think that will clearly be an unfounded fear. Do I understand the fear? Yes I do, but like many fears they go up and then they go away and are never looked at again. I wouldn't put too much stock if I were living in Utah or Eastern Nevada, in that kind of fear. There is a way to overcome it. Again, part of it is the trust issue and part of it is just in being good responsible people. We are not bad people here! When we say to the ranchers that "you can trust us" they really can. They may not know why right now but they can trust us. We're going to do the right thing. We have always done the right thing. We get 38 million people a year coming back to Las Vegas because we do the right thing by them. We treat them well. We treat them respectfully. They treat us pretty well and leave a little bit of what they brought, but there is a relationship where we don't abuse one another. We have the best gaming regulatory scheme in the world that has been set up in Nevada just so people won't feel cheated or disrespected in any way. We'll feel that they can trust us. That's who we are. Look at what we've done to create that ability over the last fifty to sixty years. It's the same credibility that we will have in dealing with the people out in the rural areas of Utah and Nevada. Again, you can look at them in the eye and say, "you can trust us" but that only takes you so far. The real issue is in the doing. As I said before we'll all look back in twenty or thirty years and say, can you imagine what we were afraid of, it

never came to pass.

John Hansen
Snake Valley Resident

This interview has not been edited for content.

Interviewer: Tell me what you think of these water issues and whether it's a good idea.

John Hansen: I think it's a horrible idea. It's taking water that isn't here. If the water was here that Vegas claims was here, basically there would be a lake and a swamp above ground where you could see the water. I think they're going to turn it into a dust bowl and that dust is going to blow to Salt Lake. It's a bad idea.



Kathy Hill
Teacher
Partoun, Utah

This interview has not been edited for content.

Kathy Hill: I'm a teacher here at West Desert School. I teach the elementary school. It's a one-room school with grades kindergarten through sixth grade. I have eighteen in my classroom right now. The reason I got interested in this issue is because this is my home and anything that threatens my home I get kind of passionate about.

Interviewer: What is your fear if this ground water pumping comes to fruition?

Kathy Hill: My fear is that our one resource that really makes this land special for us is the water and I think the water is going to diminish. It may diminish greatly or it may diminish in a comparatively small amount, but whatever it's going to do, it's going to have some significant impacts on a very fragile environment.

Interviewer: Talk a little bit about the trust issue with the Water Authority.

Kathy Hill: There is no trust with the Water Authority. They've gone overboard to get what they want. They've interpreted everything in the way that makes them look good and they have not paid any attention to our concerns here or what might happen. I think it takes a lot of gall for Las Vegas to figure that since they're running out of water in a desert area they can come to another desert area and deplete that water also. For a long time I feel like water has been considered a renewable resource, particularly ground water because it gets recharged during the winter months and then we use it. But science is starting to show now that a lot of the water that's in the ground came during the ice-age and our area, particularly Lake Bonneville was the result of the ice-age melting and it put down a lot of water and that water is slowly diminishing and the recharge is going to be very insignificant compared with what was put down with Lake Bonneville so it's a very slightly renewable resource. It's not the renewable source we thought about in the past. This community is my home, but more than my home I think it's a very important part of Utah's resource—it's different. Utah has a lot of varied resources and some people love the desert. Some people love the mountains, so I feel like I'm sort of a conservationist to preserve this area for me but also for everybody in Utah and everybody in the nation that values this kind of land.

Interviewer: One of the points that the Water Authority says is there are federal regulations that will protect these areas. What's your response to that?

Kathy Hill: I'm pretty skeptical about federal regulations. I think they mean well but I think they can be bypassed. If you look at some of the mining areas in Kentucky and Virginia where they have cut down mountain tops to help the mining industry when they knew it was very detrimental to the towns and cities that lay below in danger of flooding all the time, I think federal regulations can be changed to fit the need and desires of the powerful people which in this case is Las Vegas. I think it's a very dangerous idea to think that something needs to benefit a large population therefore a small population doesn't count. We can make a lot of things go extinct with that attitude.

Interviewer: What would you like to see happen here for the future?

Kathy Hill: In the short run, I would like to see us win over SNWA and have the pipelines rejected so they can't get the water, and in the long run I really hope that we can make aware the problems of aquifers all over the country. There are a lot of aquifers that are in danger and I think that maybe this is one battle in a big war we're fighting here.

Interviewer: We were talking about Owens Valley. What's the parallel in your opinion?

Kathy Hill: I think there is a very close parallel. For one thing it was the small people against the powerful and the powerful won out. It was a big area that needed water and even though SNWA claims that there are a lot more regulations in place now that will protect us, I don't see SNWA really respecting those conditions and they would like to bypass them any way they can. The science is correct, but the problem is our definitions of what surplus water is. According to the Kirby-Harlow study probably close to 80% of our water goes to evapotranspiration. That means our greasewood and a lot of the plants here take that water from the aquifer and release it into the atmosphere. We think that is a valid use of water if you consider what we don't have. Without that we would lose all of our ground cover, which would create great dust storms... it allows humidity... the amount of rainfall that we have now without that... so we think that's a pretty important part of water usage. SNWA does not

even want to consider that as valid use.

Interviewer: So how would the residents here be affected as oppose to the ranchers?
For people who are not ranchers, how would it affect this community?

Kathy Hill: Let me tell you about my little well. On our place we have a regular culinary well with a pump in it but we also have an artesian well. An artesian well means that it flows all of the time and so when the power is out, we still have a little flow of water. And when it gets really cold and some of our other water flow freezes up, that one never freezes up because it's a constant flow and if the water levels drop we can put down a deeper well for our culinary well, but the artesian well is stopped forever at that point because you can't just keep digging deeper for an artesian flow. That's something that we've depended on all of our lives and without that there is absolutely no way to recover from that.

Interview: Talk about the politics. What is your opinion of the politicians involved in this story and have they been attentive to your point of view?

Kathy Hill: Most of the politicians in Utah, particularly the Governor, have been very supportive and I know they want to do what's right. They want to consider the science but they are very attuned to what's going to effect our homes. We really appreciate that. Nevada politicians are not nearly as receptive. For them growth and the gambling industry is what makes survival to them and that's all they want to listen to. For me it's not an issue of what Las Vegas stands for. I don't approve of Las Vegas but Las Vegas has the right to be what they are. What I do disapprove of is when they argue that why should a desert who raises alfalfa have any right to water... isn't that a waste of water? compared to why should a great big city raised in the desert to do gambling get the water? I don't understand the complexity of the issue that they would like to spell out for us. It doesn't make sense. I would like to ask Pat Mulroy to put herself into our position and not think of herself as a powerful figure getting a lot of water for Las Vegas, but from somebody who lives here, this is our home and all we have. We're not wealthy and does she really want to take away one of the few things that we have? I think Pat Mulroy is basically a decent person, but I think she's listening to some bad information.



Ken Hill
Teacher Aide
Partoun, Utah

This interview has not been edited for content.

Ken Hill: I don't think it's a very good idea to take water from... like somebody said, "This is the driest valley and the second driest state in the union." To think there is a lot of water here is ridiculous. There are a lot of options like desalinization that have not been considered very well, I don't think so. I

think they've got better options. It basically scares me to death to think that they're going to lower the water table and if that happens that would pretty much make life miserable. I don't trust them because they have a lot of powerful people who figure they need to have growth in Las Vegas and between the developers and the gaming corporations and politicians, SNWA seems to have a lot of backing and power in this and we just get the feeling that we're getting steamrolled by something that is out of control and uncontrollable. This is probably better than in the days that Owens Valley was raped but it still seems like going into this that if the science is there and they can somehow convince the BLM to go ahead and approve this project, the project is so expensive that it's going to take them seventy-five years to pay off the bonds. They're thinking that the first review of this will be seventy-five years from now or from when the pumps start. That seems like an awful long time and once that water is in that pipe and that money needs to be paid back, it's going to be awfully hard to stop it. There obviously are a lot more people in Las Vegas than here and I have a personal preference that I don't want to see this area be destroyed even though there are just a few people and frankly I think a lot of that development down there is out of control. If they would just be able to somehow control themselves then it wouldn't be as near as desperate a situation for them. In this particular case I'd like to see them look elsewhere for water. I think that would solve their problem. But I would also like to see the science be investigated so they understand the aquifers better because this is not going to be the only time that the cities start looking for water and I'm afraid we're going to be a target continuously. Even Las Vegas will come looking for more water so I would like to see them find alternatives, but I'd also like to see the people understand what the science is around here.



Milton Hooper
Confederated Tribes of the Goshute
Reservation

This interview has not been edited for content.

Milton Hooper: I'm Milton Hooper with the Natural Resources Commission here on the reservation. As a member I've also been delegated to speak regarding the Southern Nevada water grab. Our concerns are in losing our water here and a lot of our interests. We feel that our aquifer may be affected or depleted and that would not provide water for fish habitat or Bonneville Cutthroat or different wildlife species that we have here which are a source of revenue. We're fond of the Bonneville Cutthroat. It has taken us quite sometime for all of our activities and work into it so we feel that would be threatened.

I'd like to see the Water Authority to seek other alternatives other than to grab the water out here in the west desert area. I know there are other options with some of the water rights that they have. They can make the deals elsewhere and they don't need to pursue other resources out here.



Jon Huntsman, Jr.
Governor
State of Utah

This interview has not been edited for content.

Interviewer: Lets start out, Governor Huntsman by just telling us what your position is on this ground water issue, especially regarding the Snake Valley ranchers and the Las Vegas interests.

Governor Huntsman: I think it really comes down to an issue of sovereignty and the sovereignty then defines what our natural resources are and what we do with our resources including water which is perhaps the most precious natural resource of all. You can't exist without water--it has made the West, so to speak. If you've got water, you flourish. If you don't have water there is no way you can survive and be prosperous. Here in the western part of the state, in Snake Valley, you have a very interesting dynamic. You have an old traditional lifestyle, ranching, in a hard, scrabble part of the American West that is juxtaposed with Clark County, the fastest growing county in the United States today. Of course they have conflicting interests. I stand up strongly for the interests of our ranchers—those who want to protect their way of life and have done so for a hundred years in the western part of our state. The resources are ours and I do believe the EIS that is being done, the Environmental Impact Study, by the Department of the Interior and others I think will result in our all discovering that this big straw concept would in fact draw resources right out of the backyards of people who are trying to make a life for themselves in the western part of Utah.

Interviewer: What is your position in terms of assuaging their fears? It seems a lot of what their concerns are, are based on fears especially regarding the Southern Nevada Water Authority.

Governor Huntsman: They have to know that their state, right up to the very top and I've had them in my office a couple of times as I've gone out to see them on site, will stand with them and fight for their interests. In fact we as a state have veto authority over any decision that is made. This has to be sort of mutually acceded to between Utah and Nevada in order for this to work and I'm going to make sure that the interests of our people in the Snake Valley region are protected and that their life-styles are protected before we make any decision that would funnel water into Clark County.

Interviewer: What happens if Utah determines if there is really not surplus to be had, especially for Nevada?

Governor Huntsman: Well I think if we determine that there is not surplus water to be had then I think that Nevada has to look at some other alternative and they have to go farther in their own states or they have to look at desalinization technology. Listen if we're going to grow as rapidly as we're growing here in the West—you've got Clark County, you've got Maricopa County in Arizona, you've got the Greater Wasatch Front all growing at a very rapid clip and among the fastest in the United States—then

we certainly ought to be focused on technologies that will allow us to accommodate that growth and not rip off natural resources that aren't ours. I say the same thing about nuclear waste. You know, why on earth would somebody want to bury nuclear waste in our state and disrupt pristine lands when we ought to let technology catch pace with our need to reprocess spent nuclear waste on site and not dumped in our back yard? I see water resources as no different. We need to work on technologies that will allow us to desalinate and maybe draw from some other resource where you find water aplenty, maybe with a higher salinity content, but nonetheless water that you can draw from and maybe transform it into something that is im potable. I think we're some years away from doing that and I suspect fifty years from now we're going to look back on this water war and say, that really was a thing of history because now we have the kind of technology that allows us to accommodate growth in the West.

Interviewer: What kind of technology would protect the ranchers from this kind of activity?

Governor Huntsman: In the form of, more or less, understanding between Utah and the Water Authority in Nevada where we basically have to do this kind of thing jointly and the protection would be Utah simply saying no! To me that is the ultimate protection that our State has.

Interviewer: The ranchers fear this may turn into another Owens Valley. Do you think it's that dire and what can be done to protect their way of life?

Governor Huntsman: Well I think we protect their way of life by keeping their water shed or water resources in tact. They understand it far better than the rest of us. We come in pretending that we're experts with kind of an episodic visit to their valley. They've been working it for generations and they know where the resources are and they know what is theirs and they know how to use it. They know the difficulty in tapping it—good years versus bad years, and I tend to defer to the good judgment of the people of the Snake Valley region to guide my thinking anyway.

Interviewer: Talk about how these cities are growing so rapidly and taking resources from outside their area. What do you think is going to happen with these cities as they boom?

Governor Huntsman: I think John Weseley Powell basically called it right after the Civil War when he came traipsing through here in 1869/1870 where he knew better than anyone else that the Colorado River would not be able to feed the growth that would likely occur here in the West and in fact that was fairly prophetic. We are now the fastest growing region in the United States when you look at the Intermountain West and our growth does need to be supported by technologies and resources that allow us to keep pace with growth. We're not going to be able to turn this off and it will be a constant companion over the next twenty and forty years simply because we have a quality of life here in the West that is the envy of most people in the United States and indeed other place in the world. So I suspect we're going to see technologies develop that will accommodate this growth. It has to be coupled with a sense of conservation. There has to be a conservation ethic that is instilled in our younger generation so that the idea of consuming three to four hundred gallons per day per person is throttled back to a more "user friendly" level. The thought of having green grass landscapes in front of all homes and buildings is maybe re-thought fundamentally. The idea that you can have a massive water fountain in front of every grand hotel in Las Vegas probably has to be re-thought just a little bit with a sense that going forward without technologies for desalination or some other way, we've got to maintain and even strength in a conservation ethic.

Interviewer: Is there a correlation between the pipeline project on Lake Powell and the one we have in Las Vegas?

Governor Huntsman: I don't think so unless politicians on a regional basis want to play power politics. As if to say, if you don't live here then we're not going to give there. I see them very much as stand-

alone projects. We have our own growth needs in Washington County, which today has 110 to 115,000 going on 300,000—it's the second fastest growing county in the country and for all the reasons that you would imagine in Clark County and Maricopa County—an enviable quality of life. People want to live there because it's affordable and it's beautiful. The air is breathable and the water is drinkable and we do have some very serious growth issues and that's land-use planning, it's how our growth occurs in terms of maintaining livable communities and quality of life and it is of course water. We live in a very thirsty and dry part of the country where water traditionally has been very cheap, second only I think to Nevada historically. So we're going to have to think through how we tackle the Lake Powell pipeline project and I'm here to tell you that it likely will not be on the twenty-year building block schedule but more likely on the ten-year schedule. That's how quickly we're growing and we're going to need to draw from the resources that it would provide.

Interviewer: One of the issues is that millions of people would benefit from this water in Las Vegas in terms of the economy and jobs and that kind of thing, as opposed to a very few in Snake Valley where water is needed for agriculture. What do you think about that in terms of should a very few sacrifice to the many can benefit?

Governor Huntsman: I think that's a disingenuous argument. We have a way of life that ought to be protected. People have invested their livelihoods in their way of life for generations and I wouldn't want to be the arrogant one who comes along saying that their lifestyle is now anachronistic and we've got to feed the burgeoning casino and hotel business just south of them... for heaven's sake if that's where our country is going in terms of public policy, then you can expect an outbreak of civil war at some point.

I received an invitation—a group of them came in my office and they had some concerns and they wondered where I was going to come down on this issue. They were concerned about it so we had a round-table discussion. Cecil was there and we had county commissioners and ranchers there and I thought we had a very comprehensive discussion about the pros and cons and where things were from a public policy standpoint. I told them that I wanted to go out and visit Snake Valley to see firsthand what they were up against and so I took them up on it and Cecil was my guide and I found in Cecil an indispensable source of information about the region and the history of the region, the truth about the resources they draw upon and what kind of deleterious impact it would have ultimately if they were to have water drawn from their region. He certainly influenced my own thinking in that regard. I don't think there will be any movement at all over the next few years. I think they will be used in support of a study and I think that the study will probably lead to another study and maybe yet another study and that's sometimes the way government decision-making works. Sometimes studies are the decisions. Nobody can quite agree on what to do so another study is launched and it wouldn't surprise me if we found ourselves caught up in endless studies in the next few years and I hope by that point we get serious about some technology that would allow us to better feed, from a water resources standpoint, our burgeoning communities.



William Kahrl
Author/Historian

This interview has not been edited for content.

Interviewer: Let's start out by talking about the history of Owens Valley. What transpired in Owens Valley and why is it important?

William Kahrl: Owens Valley became the symbol for people throughout the Western states of what can happen when a small, rural area community that has abundant water resources runs into a city that is thirsty and needs to tap into those resources. In the case of Owens Valley, the city of Los Angeles drained the valley and bought out the ranches and then beyond that devastated the region—tore up the orchards and removed the vegetation so there would be nothing to interfere with the flow of water into the aqueduct and down to the city.

Interviewer: What happened to the farmers and the people involved?

William Kahrl: In the battle that occurred in 1927 there was real confrontation. It turned out that the local bank, which was at the center of the economy was also helping to fund a lot of the resistance to Los Angeles. When Los Angeles revealed this and the bankers were arrested for a variety of crimes, the bank was broken and everyone lost their life savings and so a lot of people faced absolute poverty and it was under those circumstances that Los Angeles made its final set of purchases buying up not just the ranch lands but also the whole towns and cities within the Owens Valley turning it essentially into a colony of Los Angeles.

Interviewer: And what was the result of that on the environment? What happened to Owens Valley?

William Kahrl: There is an irony here. From the perspective of its economic and agricultural character it was devastated. However, looking at it fifty years later the Sierra Club, for example, said this was a great thing because it preserved that environment and put it back into its most basic condition and didn't allow any interference because of course Los Angeles would not allow any significant business development or housing of any kind to occur in the valley because that would create competitors for the water supply. So it depends on your perspective. From an environmental perspective maybe it was a good thing. From a human perspective it was terrible.

Interviewer: Tell me about the history of what actually transpired building the aqueduct and taking the water. First of all why did they want it and how did they get it?

William Kahrl: Los Angeles faces a problem that they faced throughout their history. A lot of people come to California from the Eastern states and then they turn left—they go South to a semi-arid plain where God clearly never intended large numbers of people to live. So the question is how do you support them? At the beginning of the 20th century, Los Angeles begins to bump up against the limits of its natural water supply and they used water to overcome the natural limitations of their setting. There were no available supplies close in so they developed what was at the time a very visionary

scheme of reaching 250 miles away and creating an aqueduct that would drain the Owens Valley. Initially they only took the water that was left over after the farmers and ranchers of the Owens Valley had used it for their crops. So in a sense everyone prospered under those circumstances at both ends of the aqueduct. But by the 1920's Los Angeles was growing so rapidly and did run into a real drought that they panicked and began to secretly buy up ranches and began pumping them dry and thereby destroying the ground water basin for the adjacent ranchers and farmers... basically a checker-board kind of scheme. At the same time they reached out to the Colorado River and laid the groundwork for what would eventually become an abundant water supply for the entire metropolitan region. The ranchers were hood-winked. What occurred was that Los Angeles was working hand in glove with a federal agency, the Bureau of Reclamation. There was a reclamation agent who was taking the properties... the ranchers were turning the water rights over to what they thought would be a reclamation project to benefit their community. Instead, the reclamation official was turning the water rights over to Los Angeles. So as the local newspaper publisher put it, the federal government held Owens Valley while Los Angeles skinned it.

Interviewer: Tell me about the significance of William Mulholland--who was he and what roll did he play in Owens Valley?

William Kahl: Mulholland was one of the great city builders and really the father of Los Angeles as we know it today. He got that position because he knew where the pipes were. This is a guy who was an immigrant from Ireland directly, came to Los Angeles with no particular education or background of any kind and was digging ditches for the local water department living in a shantee in one of the parks. Eventually he rose to become General Manager of the city water company and when the company sold out to the public agency to the city, the city had to hire him because they didn't have any records and Mulholland was the only one who knew where all of the pipes were. He became general manager and conceived of the aqueduct and went on to demonstrate an enormous political capability for gathering the support of the city behind him and entering into a venture that could have bankrupted the city if it had failed. Instead it laid the basis for a modern metropolis. It also made him an enormously controversial figure who ultimately his career ended in devastating loss when one of the major projects that he had built, a dam, collapsed killing hundreds of people in an event that was as devastating as the San Francisco earthquake except that in Los Angeles most of the records and the memory of that event were suppressed for decades.

Interviewer: Who benefited from the Owens Valley water and why?

William Kahl: Primary beneficiaries were the land speculators in the San Fernando Valley. The San Fernando Valley was not part of Los Angeles at the part of the time the aqueduct was proposed and when they got the voters support for the bonds to build the aqueduct, they never told the people of Los Angeles that the water wouldn't actually come to Los Angeles, but instead the (determine-ness?) of the aqueduct would be in the San Fernando Valley so that all of those properties that were dry and worthless would suddenly become enormously valuable and the people who owned that property were people like Sherman, the founder of Sherman-Oaks or E.J. Harriman, the head of the Union Pacific Railroad, and most significantly Harrison Grey Otis, who was the owner of the Los Angeles Times and one of the principle sponsors and advocates of the aqueduct project.

Interviewer: You were talking earlier about the conflict being primarily economic. How did that work?

William Kahl: I don't know that I know an answer to that in a sense that Los Angeles had the wealth and they were dealing with small town bankers.

Interviewer: We were talking that there really wasn't an armed conflict but it was basically an economic conflict of taking the economy of Owens Valley and shutting it down.

William Kahrl: It was an economic conflict in the sense that the war was over when the valley's economy was destroyed but there was not a loss of life or a shooting conflict. That's not to say that there wasn't violence and real confrontation. When the Owens Valley ranchers realized what Los Angeles was doing in the 1920's and that the future of the valley was forfeit, initially they seized the aqueduct. They took a hold of it at the Alabama gates, they held it for several days and they spilled all of the water that was intended for Los Angeles out onto the ground around them. Subsequently the aqueduct was bombed repeatedly. Nightriders would dynamite sections of the pipe and put it out of commission for a few days until Los Angeles could make necessary repairs. As these incidence increased, Los Angeles began sending train loads of armed guards into the valley and we were getting very close to a situation that would have ended in armed conflict except for the fact that Los Angeles was successful in breaking the banks of the Owens Valley and devastating the ranchers and that's what put an end to any possibility to any resistance.

Interviewer: What was the end result of this water going to the San Fernando Valley? What actually happened there?

William Kahrl: This is kind of fun... Los Angeles needed the approval of the federal government to cross public lands with their aqueduct. Teddy Roosevelt, knowing that the land speculators in the San Fernando Valley would get all of the profits from this project, thought he would solve the problem by specifying in the law that the water from the Owens Valley can never be used outside of the city of Los Angeles. The response in Los Angeles was simply, o.k. we will annex the San Fernando Valley. So one of the affects is you suddenly have this sprawling city and they did very much the same sort of thing when they reached south to the San Pedro area to create a harbor. So this vast series of annexations that greatly expanded the city of Los Angeles is really what water made possible and it was also what was required. This means, for example, that the city of Los Angeles, even if they have abundant supplies from somewhere else that are much cheaper than the Owens Valley water, they can't sell the Owens Valley water outside of the city limits. The city of San Francisco, for example, draws a tremendous amount of water from the Hech Heche Project not very far away from the Owens Valley, but most of that water goes to feed other communities. And so as a result, Los Angeles pays to receive water which means that the other supplies that it has rights to from the state water project, for example, go unused and instead go down to benefit other communities in other cities throughout the southern California area, or they are resold to farms in the central valley, but there is no economic benefit whatsoever for Los Angeles from that.

Interviewer: What are the lessons learned from Owens Valley?

William Kahrl: In California the primary lesson was that you must enact strict protections for the areas of origin to ensure that, what in this state would mean the rural and mountain communities where our water supplies originate can never be stripped of those supplies for higher and better uses in the cities and farms at lower levels. So we have strict limitations to protect the areas of origin and their local economies. Those restrictions, in term, dictate to a large extent, how our large water systems can operate in ways that will not devastate the undeveloped areas of the state.

Interviewer: As we were talking before, the ranchers of Snake Valley and White Pine are very concerned about losing their ground water to Las Vegas. Do you consider that to be a parallel to Owens Valley and is there a correlation there?

William Kahrl: I can't speak to the details of that project. If you have a situation in which there are parallels in the sense that Las Vegas like Los Angeles is an area that doesn't have a water supply that can support the population it's attracting, they're reaching out to a rural area and the key element there is for the owners of the land in that area to hire a lot of lawyers and hydrologists to make certain that they are well protected and that whatever the stipulations of the law are to protect those rights are being

observed at all times. The watchword here is the same as what Ronald Regan used to talk about —"Trust but verify."

Interviewer: Tell me a little bit about the Colorado River compact. What's your opinion of it and is California using its share or more of its share of the Colorado River water?

William Kahrl: That's a very good example... what has happened on the Colorado River is a very good example of the importance of protecting these rights and being always observant. The basic problem with the Colorado compact is that it drew up a plan for sharing more water than is in fact in the river. This has created problems for all of the states that draw on it, but California has, to a large extent, set the pace for those conflicts and those controversies because we've developed faster than anyone else. We've been using more water than we were ever intended. The important thing about what the state of California has done is that we began taking more water than we were allowed or suppose to take for about forty years before the Supreme Court ruled that we were violating the compact. It has been more than fifty years since that ruling and California is now only beginning to give up the water that it has been taking illicitly for nearly a century. So in other words, you can have the rights and defend the rights, but if you let them slip you may not get them back for a very long time.

Interviewer: Why are the water issues in the West so volatile? What does water mean to development of the West?

William Kahrl: Water is the means we remove other kinds of restraints on the way we can grow. It is the primary engine for shaping the quality of our lives on the land and because it's scarce and because it's distributed between areas of great abundance in areas of extraordinary aridity, unlike the Midwest for example, then there is always going to be an opportunity for real conflict as you attempt to move it from where it is to where someone wants it to be.

Interviewer: What are the recent issues that are going on now as related to the past?

William Kahrl: A number of things have changed. One of the most important is the city of Los Angeles has begun to relax its control and it has given up the town properties, it's restoring flows in the Owens river—things are getting better. One of the ironic aspects of this is that although the city of Los Angeles continues to control the water rights in the area, the Indians who are residents of the area and have been forever in many ways have superior water rights to the rest of the community and so as a result, a people who have been part of that community forever but have never had a significant role in its economy could become extremely important. A second major conflict involves the Owens Dry Lake—a lake that was eliminated by the city of Los Angeles when it built the aqueduct and which is a source of a great deal of dust. The federal government has required the city of Los Angeles to begin putting water back into Owens Dry Lake in order to keep down... but this is likely to produce a murderous sump of all kinds of salts that may be devastating to wildlife in the area. It's going to be a very complicated and very messy and certainly a very expensive project for the city of Los Angeles. And then of course there has been an ongoing controversy now mostly solved with respect to the future of Mono Lake—a lake that could also have been dried up by the operation of the city of Los Angeles's second barrel of the aqueduct but the conflict over Mono seems to have been satisfactorily resolved in the creating of a preserved area there that will keep the lake at its current level.

Interviewer: These cities in the West seem to have very common problems with growth and water-- Phoenix, Tucson, San Diego, Los Angeles—should these cities have been built in the first place in such an arid environment without adequate resources for a growing population?

William Kahrl: Is Los Angeles a good idea? That's a question we ask ourselves in California every day. The fact is it's a reality. I think you put your finger on it in terms of saying that we have to make certain that before we allow new development to occur that they have a water resource that can sustain

them. Part of the problem that we're confronting in the future in California is the tendency to secure distant resources on a purchase basis—water marketing, but the contracts may only be good for a few years. How do you build a housing development on the promise of a water supply that's only going to be available for ten years and what happens to the homeowners when the contract runs out? That's a problem for the person who is selling the water as much as it is for the purchases of the homes because what it says is that if you sell the rights to your water, you may only get to sell it once. You may think it's a lease, but what court is ever going to allow you to recover it if it means wiping out a community? These are real problems as well for the environment because clearly if we're going to begin moving large quantities of water around to supply the cities, this is going to have serious environmental consequences for the communities that are being de-watered and the environmental consequences for the Owens Valley were not recognized in the 1920's but they will certainly be a focus of major consideration once you begin talking about, for example, the changes that are occurring in the desert irrigation districts of California—the Imperial and Coachella Valleys where, just as in the case of the Owens Valley, large quantities of agricultural lands are being taken out of production in order to sell water to San Diego. In that case you have willing sellers and willing buyers, but the effects on the communities that depend upon a continued agricultural community can be very serious.

Interviewer: Talk just a little bit about the Colorado River, Delta and Mexico. What are some of the main issues relating to that and what do you see for the future of the Colorado River/Delta?

William Kahr: Well the so-called grid Delta... the Colorado River is terminus, and is likely to be one of the biggest issues we will face in the next ten years. This is a coming environmental crisis. It is an area of extraordinary beauty and extraordinary environmental resources of extraordinary importance to a wide range of environmental as well as national Mexican organizations. We have obligations, the United States, not only to keep the water flowing but to deliver it in a sufficient quality to sustain agriculture in that Delta region. We're not meeting those requirements. If anything, the changes that are occurring north of the Mexican border in the growth of the cities is reducing the amount of the water and the quality of the water that we are able to spill down into that Delta region. This, as the capabilities of Mexico to develop that region become more real, is going to be a major source of not just international tension, but a conflict of real environmental importance.

Interview: What kind of advice would you have for the ranchers in Snake Valley with this ground water issue in dealing with a large metropolis like Las Vegas and also the Southern Nevada Water Authority based on your historical perspective?

William Kahr: I'm sure that what will be occurring today will be much more tightly regulated than what occurred in the Owens Valley. We have a more sophisticated system of laws, but I would not rely on the laws alone to protect the region if I were a landowner or rancher in those areas. You're going to need to have attorneys, you're going to need to have hydrologists to constantly monitor what is occurring to ensure that the letter of the law is being observed--that's simple common sense. Ronald Reagan use to say, "Trust but verify."



Leah Layland
Snake Valley Resident

This interview has not been edited for content.

Interviewer: Tell me what you think of these water issues and whether this idea of taking water from this area to Las Vegas is a good idea or not and why?

Leah Layland: We don't have any water to spare for the first thing and to take it to Las Vegas—we crossed Lake Mead... when it was getting built and you could go down in it and see all of the things and they told us what a good thing that was going to be for Las Vegas. As I understand it now, Las Vegas doesn't seem to think much of a Lake Mead squatter.

Interviewer: How do you feel about Las Vegas having water from this area?

Leah Layland: If they really needed it and we had it to spare, I'd say fine, but probably if they get it and our water all goes down there, they'll bottle it and sell it all back to us. I could be wrong.



Daniel McArthur
Mayor
St. George, Utah

This interview has not been edited for content.

Interviewer: What's so great about St. George? Why are so many people moving here?

Daniel McArthur: I call it the Dixie Spirit! You know it comes about from the early days. It was not a place that people enjoyed. Brigham Young, the Mormon prophet, had to command the people to come down here. There were about 309 families and after about a year there were only about 100 of them left. My great-grandfather was one of those so we've been here since the beginning in 1861. When people come into St. George I ask them why did you move here from Minnesota? They go on about how cold it was and everything else, but they come to this unique place called St. George and there is

just a feeling here. That's why I call it the Dixie Spirit! It's a constant battle but we inherited things from people before us so I've always said that we ride on the shoulders of giants who prepared the way for us to have what we're doing today. Hopefully when there is somebody in this place, they'll say that the people before me did the same--we inherit something, we give it back. It's like the property we own, we don't really own it. It's always there but somebody else is going to own it later whether it's our kids or we sell it or something else, it's there so we just don't want to distract or take away from that. We're giving stewardship to this for a time and we do the best we can with what it is and we hand it on to others hopefully in as good a situation as it was handed or us or maybe better. We know where are water comes from--most of it from south of the Virgin River drainage whether it's in the aquifer, the Navajo stand-stone. We have 20 or 30 wells that give us water and I know our early pioneers took it from Pine Valley mountain forty miles away and brought it to an open ditch and later it was put in a pipeline and then we take it from springs and wells around the area and then in conjunction with the water conservancy district in our surrounding communities we pool our water resources and when that's used up the only place we can go is to Powell and so we're looking at Utah water that is stored in Lake Powell.

Interviewer: Talk about the potential pipeline that would come here. How would that work and how would it benefit this community?

Daniel McArthur: It would benefit us tremendously. Obviously we're the last community in the state before water leaves the state. In state law here you can't sell water. When it leaves your jurisdiction it's going to go to another jurisdiction because water is always there, it's just treated and sent on. Obviously when it leaves our state we would have the opportunity of either leasing that water, selling that water or doing something else but state law doesn't allow that. We don't say that we have any extra water anyway. But because the same thing... we're really the only place that can use the water that was stored out of the Flaming Gorge Reservoir, it goes down the Colorado River and it's stored in Lake Powell basically. We have the opportunity to use that water so we're looking at that 80,000 acre feet of water that could actually be used for Washington County for growth and that's a higher quality of water than the water we're using out of the Virgin River today.

Interviewer: Lets talk about this area. Is this burgeoning growth good for St. George?

Daniel McArthur: A growing community is a thriving community. If you're not thriving and you're dead on the vine, you're not growing. Now whether that growth... is it too big? We've always been more than what the Governors Office of Planning and Budget is planning for and we see spurts. We kind of go at an up and down curve and we're riding on one of the tops of one of those waves and it has been a long one and it does put a lot of stress on a lot of us trying to take care of it. But if we couldn't take care of the infrastructure that we had, then we'd probably be the first to actually put a stop to it or slow it down on purpose, but because we're in a land of America and we believe that people have the right and freedom to do those things—sell their land and move and live where they want to live—our charge as government officials in my opinion, is to try to provide and take care of that growth without losing the quality of life. That's where walking that fine line is tough because where do you lose that? We're very successful in bringing outside people in here for lots of tournaments because of our weather and climate, our elevation and all of these things that people want to live and retire. They pick healthy communities and we're a healthy community with very small amounts of private land and lots of federal and open space and national parks and scenic wonders and mixed in with all of that are a lot of environmental issues that we have to deal with. We walk a very fine line but to answer your question about is growth good for us, yes growth is good in most cases but along with it comes some things that you don't like, maybe crime that you haven't had in the past and maybe some of the things that bring the gang element and other things that we're dealing with, but we're trying to do the best we can and we don't have any higher incident than any place else in the nation. One time

St. George was bigger than Las Vegas. It was along time ago. We attract a different clientele. Vegas is the night life and the food and the glitter and all that. Ours is more the open space and healthy environment and the family atmosphere, all of those kind of things, but yet get close to the other but not living there which to me it tends to say that there is higher crime in that area and other things that I don't want to have. I'd much rather live here but I'm close enough to there that I can access the world through their airport and other things and so this is a good distance for me from a metropolitan area such as Las Vegas.

Interviewer: Many cities in the West are growing so quickly, not just St. George but Phoenix, Tucson and Las Vegas, and Salt Lake City. What do you think is going to happen say in the next ten to twenty years in terms of growth?

Daniel McArthur: Well we have to plan our growth and then just look at it because you take me... I'm the only one out of... I've got ten grandchildren, six children, a spouse that comes from the Wasatch Front and only one of all of those other people were actually residents or natives of St. George. All of the rest of them were from somewhere else. So as I look at this, most of our growth is coming from within. People want to return to their roots, come back to St. George or they're related to somebody that wants to come here and it fills this little niche that I say there are only two types of people: those who live in St. George and those that are going to. There is a lot of truth to that. A lot of people want to come here. We use to be...our Chamber of Commerce one time when I was a young kid it was called "where the summer sun spends the winter." Then we became known as "The other Palm Springs." Now we're St. George—we're the destination. We've got all the amenities and stores and everything, except maybe the connectivity that we really want to the world through air services which we're working on.



Patricia Mulroy
General Manager
Southern Nevada Water Authority

This interview has not been edited for content.

Interviewer: What do you see for the future of Las Vegas and how does water determine it's future?

Mulroy: I think water will always be a factor in the growth of all of the western cities. I don't think Las Vegas is any different from Salt Lake, Phoenix, Los Angeles or any of the urban centers that are developing in the west. It will be a factor, but it need not be a limitation if two things happen—if we are clever in creating some strategic partnerships and overcome some of those historic divides and if we learn to live more in tune with the desert environs in which find ourselves. Those two ingredients come into play and I think that, although water will always be something that any western resident

needs to think about, I don't think it needs to be a limiter.

Interviewer: What do you think are the biggest misconceptions about water use in Las Vegas?

Mulroy: Oh I think the biggest misconceptions are those that we advertise. When you drive down the Las Vegas strip and you see the fountains, what do you think of? You think of water waste. People don't understand that the hotels are the most efficient users actually—they only use 3% of all the water in southern Nevada. They generate the vast preponderance of the gross product of the state of Nevada. And I think there is a misperception that there is nothing but waste and disregard for the resource going on. In truth, there has been a metamorphosis that has happened in this community, and people have become very aware of the resource, and in all fairness it's an on-going challenge. Every month thousands move into Las Vegas who has to be educated and don't understand. But the community has been removing grass and re-thinking their landscaping, and that's where we use our water. As long as the water is used inside, it is recycled. We're 100% recycled. So, what is used outside is what is lost to us, and there is ample opportunity for us to conserve even more outside. But we've made great progress.

Interviewer: Tell me about your plans for the ground water in Snake Valley. What would you like to do there?

Mulroy: We have filings and we've had filings since the late '80s in Lincoln County and in White Pine County. And we have an agreement in Lincoln County on how to divide those waters, and in fact, the project that we're going to build is now both to benefit Lincoln County and Clark County. It's a joint project now between us, and Lincoln County and they will share capacity in those facilities. And we are in the process of negotiating an agreement with White Pine County about Spring Valley and Snake Valley. Under Nevada water law, the waters of the state of Nevada belong to the state of Nevada. And when you look around the state of Nevada, you will be hard-pressed to find a community that once it reaches a certain size, has an imported water from a basin outside it's immediate environment. Ironically, Las Vegas is the only one that doesn't. But if you look at Carson City or Wendover—it doesn't matter what community you look at in Nevada—we're a state because we're so arid. We have to move water around, and Nevada water law envisioned that in 1905 when the law was put on the books. That's why the waters belong to the state. And you can move them around. Now, the state will only grab the water right for perennial yield—that which, on an average, annually re-plentishes itself into the basin from run-off from mountains, from rain, whatever happens. You can't mine ground-water basins in Nevada. The waters that we filed on are waters that have, for years, identified by the US geological service as being unused, un-appropriated waters that can safely be removed from those basins (in other words, perennial yield water) that can be used for beneficial use. Given the limitations that southern Nevada has on the Colorado River, and probably most importantly, what gave us the impetus to really begin to fast track these applications again, because quite honestly they sat on a shelf for awhile, and our number one objective was to try as hard as we could to maximize Colorado River water. The drought that has began in 2000, and that we're quite frankly still in because the reservoirs are only at just over 50% combined capacity, was a wake-up call. Southern Nevada can't protect itself against a drought. When you compound that fact by the desire of the upper basin, (Utah, Colorado, Wyoming and New Mexico) that we in the lower basin don't make a call on the river, if you will. In other words, create a confrontation with the basin and force the upper basin to cut off uses in order to meet their delivery obligations to the lower basin and to Mexico. In order to avoid that, we have to have a back-up system when and if a drought happens. Quite honestly, it's not a question of if it's a question of when. Where do we go? There is not enough water in our basin for us to be able—it's only 10% of our supply. And you can't supply 100% of the demand with 10% of the supply. There are limitations to how much you can bank in this ground-water basin. And we've been very aggressive. We have about 300,000 acres feet banked in this ground-water basin. But with access to other parts of the state, that

are separate and apart from the Colorado River, we have opportunities to back up the supply in times of drought. We have opportunities to store water in basins other than our own that don't require a Colorado River exchange, because if the Colorado River ever gets that bad, (and to say that it won't would be irresponsible) then we have a bank, if you will—a back-up supply to protect the health and safety of southern Nevada—be it Henderson Las Vegas, North Las Vegas or Boulder City. That is probably the most important part of this project from my vantage point. In the short term, yes it will provide additional supplies to southern Nevada. There is a range of water supply available in those basins that the state engineer has to evaluate. There is a low and a high—we estimate that when you combine all six basins, that we have filed and are pursuing, it's anywhere from 125 to 180,000 acre-feet. So in the short term it will provide additional supplies to us. But we know that in the long run all of the metropolitan areas in the lower basin will be turning their eyes to the ocean. In fact, Nevada is paying for a historic seven-state study of what waters can be developed to augment the supplies of the Colorado River. Whether that's ocean de-salting, in-land de-salting, cold bed methane in Wyoming, it doesn't matter. There are no limits on putting together a matrix of all possibilities and then evaluating the feasibility of those. So in the long term we will be getting additional supplies from the Colorado River, of that I'm sure. In the short term, however, we need to develop these supplies, use the supplies safely and responsibly and then one day, and we have offered this to White Pine County, that say in seventy to seventy-five years when they have grown in Ely to a point where Steptoe Valley, which is the valley that Ely lies in, and which we have no filings in, exceeds (the demand exceeds the supply in that basin) we concede waters to White Pine County. And we have offered. The state engineer grants permanent water rights, but if there is one thing I have learned in this business, this notion of permanency is really flawed. We're the victim of permanent of allocations because no one can look in a crystal ball today and envision what the world's going to look like in seventy or seventy-five years. We also offered to White Pine County... it's not a matter of "trust us!" We're not asking you to trust us. We're asking you to participate. In other words, why not create a two-county group, if you will, that every year have the responsibility to approve a pumping strategy. So if there is a drought, or if there is a need to re-charge more aggressively in any basin, if there are some danger signals that begin to emerge, you can participate in helping forge backing off pumping in certain areas, which we will have the flexibility to do. That's what makes this different from what I call the Owens Valley model.

Interviewer: Is that a legitimate parallel to this situation?

Mulroy: The Owens Valley comparison is one that is always brought up when we talk about this project. And quite frankly, the Owens Valley was developed by Los Angeles in the early part of the last century. There were no environmental laws on the books. The values that we as a country and as the west embraced were very different than they are today. And part of our objective in developing these water supplies in Lincoln and White Pine County, is to once and for all relegate Owens Valley to its rightful place in history with the dinosaur and the cave-man. Waters can no longer be developed that way. We envision a much more actively managed, through participation with the rural counties where this project will be a benefit to them and a benefit to us. We know that our number one and two responsibility is to not harm the environment, and to no harm the ranching and farming operations. That is going to be difficult for some people to believe which is why we have offered them a seat at the table, and said, "Help us do this!" I think if it's approached right, with the right attitude, it would be brazen of us to just go up into rural Nevada and say, "We're the big bad Las Vegas, and we're going to stake our claim on waters, and to hell with you!" That's not what we're trying to say. What we're saying is that is the only way Nevada water law has always worked. And that's the only place that Nevada, as a state, can develop additional water supplies. When you look at Fernley, which is a community up in the northern part of Nevada, which has experienced some significant growth south of Reno. They have filed for one hundred thousand-acre feet in an adjacent ground-water basin. When you look at Reno... Reno was looking to bring waters in from Honey Lake Valley, which is in Northern

Warshall County. That's the way Nevada has to function, or Nevada has no future. This is an issue for the entire state. We're not fortunate like Colorado or Utah, to have an abundance of streams that run through out state. We're the most arid state in the union. We have to find a safe and responsible way to develop our ground water supplies. So knowing that, it puts a whole different significance on our ability to develop these water supplies.

Interviewer: Why do you think that some of the ranchers and residents are so upset with this issue? Do you think those are legitimate complaints?

Mulroy: That's fair. If I were a rancher in White Pine County, I would share their concerns. In the absence of anything else to go on, I would be equally worried. The only example out there is Owens Valley, and I would be terrified that my way of life would be destroyed. I think knowing that was why we offered them the ability to participate forever in the management of those resources, which is not something we have to do. We have not tried to rollover or bully them. We have simply, in every way we know how, tried to find a way for them to be able to alleviate their fears. I think you're not going to find complete unanimity in those areas about how they feel about that. But if I'm threatened and somebody gives me an opportunity to protect myself and mitigates those fears that I have of being emasculated in the future, of losing all say, then I have to start looking at that a little differently. And I think that's where we were encouraged when we went up to White Pine County. We offered the review committee, and we offered the 75- year review, the ceding of the water rights back to White Pine County. Those to me are the enablers, and that's the issue that we have to get through in order to have any other meaningful dialogue around this.

Interviewer: Tell me about surplus water issue. One of things that they told me, is they don't feel that there is a lot of surplus water. Address that concern for me.

Mulroy: I think from their experience pumping, their wells are not very deep. They don't have the same ability for re-charge that we do. In the environment that they have experienced, they've probably seen a higher degree of vulnerability for the ground water basin. On the other hand I think they overstate it too, and that's natural. We're going to have to step through this one step at a time.

Interviewer: Lets start out about the topic of water grab.

Mulroy: Yes, I have heard over and over again it described as a water grab, and I have to smile. The only reason it's called a water grab is because it's southern Nevada. No one is calling Reno's importation of honey-lake water a water grab. No one is calling Fernley's movement of water from another basin a water grab. No one called what Virginia City did, what Carson City did, a water grab. It is the great divide between rural Nevada and urban Nevada, and we're the biggest urban area in the state of Nevada, and so we're looked at through a different filter. And the very same rules that apply for every other community in the state somehow aren't felt to be equitable when it comes to southern Nevada. I've had legislators say to me, "We need a water log that addresses only Southern Nevada. Well, that doesn't work. So I understand that a lot of this is a visceral, emotional reaction.

Interviewer: What do you see the impact being on say, Great Basin National Park or Fish Springs National Wild-life Refuge?

Mulroy: None. I see no impact on either the Great Basin National Park or the Fish Springs Refuge by this project. And I think you need to look at the agreement that we just negotiated with the U.S. Fish and Wildlife about protecting the head-waters of the Muddy river, and the extent to which we are willing to go to make sure the environment is not devastated. We have entered into a multi-party agreement with U.S. Fish and Wildlife and all the other pumpers--Coyote Springs investment, the Indian tribe, to protect the head-waters of the Muddy. We've gone so far as to look to acquire eleven

hundred acres of land that is the habitat area around the base in the Muddy river, and we are committed to spending what it takes to build the fish barriers to prevent the base from being devastated by the Tilapia and other non-indigenous species. So we're willing to do what it takes to protect the environment. We just need to be afforded the opportunity to do that.

Interviewer: Las Vegas is one of the fastest growing areas of the country. What happens to an economy when it is artificially stopped and started?

Mulroy: When you look around at areas that have attempted to stop their economy, they've only been marginally successful. The methods they usually choose are ones that make life more uncomfortable for the existing residents, but do little to change the overall growth. It may mute it somewhat, but it doesn't stop it altogether. What is scary to me... you know we have in the west have looked at growth as an in-migration issue. When you look at California, and you look at their growth projections, I was flabbergasted to hear that California's millions that they expect to add over the course of the next ten to twenty years is mostly due to birthrates exceeding death-rates. It's not due to in-migration, so the dynamic changes. You have an economy like southern Nevada that fuels the rest of the state. It is the economic engine for the entire state of Nevada. If you were to artificially shut it down, the dominoes would fall throughout the state of Nevada. Nevada's sales tax dollars is what builds roads in northern Nevada, pays for school, and they don't like to hear it, but when you look at the numbers, that's what happens. Once you've stopped it, or tinkered with it or tried to stop it, to kick it back in and say, "I think we made a mistake, lets try and reinvigorate this, has never really worked well, and it takes a long, long time to create that same level of economic interest and economic trust because once a community has done that, who wants to invest there. So the risk to the state of Nevada is pretty significant if you were to do that. There is one community here in southern Nevada, a water-authority member agency that is very much a no-growth community. It is Boulder City. But they own every square inch of land within the city boundaries. They are not subject to any federal land releases, and they are a bedroom community. The people who live in Boulder City work in Las Vegas, Henderson, and North Las Vegas. So if you have that kind of environment, you can create a no-growth because you can have that economic hub. So it's a risky proposition. We have very strict guidelines on water use for existing residences and new residences. Our existing residences have been put on a very strict watering schedule. In the summer months they can't water between 11 a.m. and 7 p.m. In the fall and in the spring they are only allowed to water three days a week. In winter they are only allowed to water once a week on an assigned day. We have a four-tier rate structure that gets more expensive the higher you get up in those rate structures, and we've narrowed those tiers to where you jump through those rate thresholds much more quickly. Probably one of our most successful programs has been paying our customers to take their grass out. We have spent almost 57 million dollars paying our customers a dollar per square foot to remove turf. We have put the golf courses on a water budget. They cannot exceed 6.3 acre-feet per acre of golf course. If they do, they pay a penalty at the end of the year, which is a multiple of their highest monthly bill, which will run them into the millions. We have fines for wasting water and allowing it to run down the street or watering on the wrong day. We have restrictions on new construction. You can have no turf in the front yard, and only 50% of the back yard can be turf. And the reason why we're focusing on outside is because that's where we lose the water. I said earlier, we're 100% recycled. So the only real consumptive use we have is what we use on our landscaping. So we have some very strict rules in place and we put them in place for purposes of the drought. But the board right now is going through a process to make those regulations permanent, because in truth they haven't hurt anyone's quality of life. They are actually more indicative of what a desert dweller should live like, and it's a cultural thing. I think with every generation, the awareness around water use will be significantly heightened, and people will become more aware and stingy about how they utilize that water resource.

Interviewer: What is the biggest use in Las Vegas and how can that be addressed?

Mulroy: The single biggest user of water is turf. And we're not suggesting that every blade of grass be removed. But we need to be smart about where we put that turf. It's appropriate in parks, ball-fields, and backyards for children to play on and family recreation. But do we need it in the medians of streets? Do we need it on those narrow strips between the sidewalk and the block wall? There is so much attractive desert landscaping or drought-tolerant landscaping that can be put in place and can be fueled by drip irrigation. Like I said, we're paying to remove unnecessary turf and that's what has to be the focus, and people have to change their visual appreciation. You know, people move here from the east and their eyes are use to a vista that is very green. And all of a sudden that landscape changes. So they try to recreate the world from whence they came, and you can't do that. You can't live in defiance of the area that you are moving into. Las Vegans are beginning to appreciate the desert that they live in, and we're in the process of building a 180-acre preserve that will have a huge 78 piece, which is our endangered plants and animals where we're storing some original habitat. We will have a large desert botanical garden. We will have one of our flood channels re-done as a (see-en-i-ca) where the storm runoff water will fuel the see-en-i-ca. We will have a sustainability center where we educate, not only the youth but the community in general about what it takes to live sustainably in the desert. We're building a 180-acre preserve off of Alta, which is going to highlight desert living. It will have 70 acres of a restored preserve with endangered plants and animals that were naturally found here. It will have a 12-acre botanical garden. It will have a sustainability desert living center where people can learn what it takes to live sustainably in a desert community. It will have a visitors- center which celebrates the history of Las Vegas, both geologically and historically and then grounds you right back into today and what it takes to live today. We think it's going to have a tremendous impact on the fiber of Las Vegas. People have moved here in such large numbers over the last fifteen years that a sense of place and a sense of home needs to be created. We're not just a community of transients or of temporary residents. We're a community. The key for us is that people take ownership of the community. You can't live responsibly if you don't feel that sense of responsibility—if you don't feel that tie and need to be part of the community fiber. And so we're hoping, and we're very optimistic that it will work—that starting to create those kinds of natural cultural centers that are really educational will help significantly in our long-term goal to change how people view living in the desert.

The Las Vegas wash is the drain for the entire valley—all groundwater, be it shallow or deeper ground water, all storm water, and all wastewater. Exit the Las Vegas valley via the Las Vegas wash into Lake Mead. As the wastewater flows and increased over the years, it was starting to really create huge head cutting in the wash. The wetlands that had existed there in the '70's and '80's were disappearing. So, in partnership with the Federal and the State government, we brought twenty seven agencies together, all with some responsibility to the wash, and created essentially a master-plan on how to preserve that wash—to stop the head-cutting, stop the silt going into Lake Mead, and recreate the wetlands that once were there. We have already completed nine structures. We have thirteen more to build, and you wouldn't believe the difference of what the Las Vegas wash looked like ten years ago, and what it looks like today. We have been committed to that and now we have quite a bird sanctuary out there and the wetlands park that exists out there is a marvelous community asset.

Interviewer: Lets talk about the trust issues with the ranchers.

Mulroy: I'm not asking them to trust me. Why would I ask them to trust me? I'm asking them to participate and trust themselves. Trust yourself, in your community to always have what is the best for your community at heart and take a seat at the table to protect those interests. If I were them and someone said to me, trust me I wouldn't believe it, so why would I expect them, whether I'm sincerely motivated or not, it's not a matter of trust. It's a matter of "I don't trust Utah!" "I don't trust Colorado!" "I don't trust Wyoming!" I don't dislike them, but they're always, always going to look out

for the interest of the residents in those communities. White Pine County residents need to assert themselves in the same way, and protect the interests of the residents of White Pine County in the long term by being a participant, and participate in the process.

Interviewer: What do you see for the issue of water in the West? What do you think will happen in the next ten to twenty years?

Mulroy: We're going to get a lot smatter in the cities about water. I think we'll forge some creative partnerships with agricultural communities. The seeds for those have already been planted. San Diego was investing in the imperial irrigation district--lining canals and creating efficiencies and then enjoying the benefits of those waters that are saved. There are drought opportunities through dryer options that we can embark on with agriculture and I think that one of the ironies is that a mutual dependency will be created over the next fifty years where the agricultural areas will be dependent on the cities and the cities will be dependent on the agricultural areas. I also see the cities becoming much more aggressive in the areas of conservation and I think every generation tries to push that issue out in front of them because it's not a fun one to embark on with your community. I'm married to a native Las Vegas, and I get an earful about conservation and having to change, and those in my generation don't want to change, you know. But I think it's inevitable. It has to happen or we will run out. We will be much more creative and aggressive when it comes to ocean de-salting. We will have formed strategic partnerships between states and I think more and more, you will see water being managed more regionally than in tight little defined government units because it won't work any other way, so I'm optimistic. It's a political issue so we just need to find ways to overcome those political obstacles. I'm not sure I understand from the ranchers, how they see their lifestyle and their heritage lost. It defies logic to me. If they choose to continue that lifestyle, and those communities cherish that lifestyle, and there are protections put in place that don't cause a disruption in their water supply—how that lifestyle will be eroded. Now if that is a fear of economic development. If that is a fear that all of a sudden people will be moving into their communities that will change their communities, that's a mixed message. On the one hand, White Pine County desperately wants economic development. They want a job base. They don't want their children to leave because they can't find employment. On the other hand there's fear, so I think you have a tug and pull going on in those communities between those that want them to have a future, and those that want nothing to change. They need to make that decision.

Interviewer: What do you see as your main job in the mission of the Water Authority?

Mulroy: The main job of the Water Authority is to protect the health and safety of the residents of Southern Nevada, and to make sure we have done everything humanly possible to protect both water quantity and quality, be it through conservation, be it through new resources, be it through whatever tools we have available, to be a responsible partner in any relationship that we get into, be it on the Colorado river or within the state of Nevada where we share resources. The days of winners and losers, which is a phrase that I heard emanating out of the state of California when I first started in this business, (and would just rub in my ear) are over. That's not our ethic. When we enter an area where we partner with somebody, then we assume partial responsibility for their future as well. That to me is responsible water development. That to me affords you the opportunity to be responsible to the environment, and responsible to the community. You have a larger mission. The days where water agencies were simply pipes and pumps and motors and making sure that those get to the home, are over. We are stewards of the environment, whether we like it or not. We can't just take blindly. We have to give back, and we have a preservation responsibility. So to me a water agency in this century is a much larger job than simply delivering water to customers, although at its core that's where it starts.

Interviewer: Lets talk about the casino water use. I think people have the idea... traveling along the strip and you see all of these water features... talk to me about where that water comes from.

Mulroy: The hotels have been wonderful partners. I remember when we were first bludgeoned for the fountains on the Las Vegas strip and the perception of water waste, and I had a conversation with Steve Wynn and he said, "Well what kind of water can I use?" So when he built Treasure Island, he started it. He put a full wastewater treatment plant in the basement of his parking garage. He uses both gray, and shallow-system water. Southern Nevada has a bed of caliche that is under it, so a lot of water that is put on landscaping on the west side of town, won't percolate all the way down to the ground water basin. It gets trapped above the caliche, and it's highly contaminated and it travels across the valley and exits via the Las Vegas wash. That's nuisance water, but it's a resource, and he captures portions of that, blends it with his gray water in this treatment facility, and that's what he puts in his water features. Every strip hotel that has put in a water feature has had to develop a conservation plan. They have to present a water use plan, and they've had to identify what kinds of water and how they're going to use that water for those features. So they are some of the most responsible customers we have. They use 80% of their water inside. They're the exact reverse of our residential customer who uses 70% of their water outside where it is lost, and only thirty percent inside where it is recaptured and reused. The hotels use 80% inside. They are the main generator of return-flow credits and only use 20% of their water outside.

Interviewer: What do we know about the science of hydrology of this basin aquifer?

Mulroy: Ever since the days of the MX missile project, which was in the 70's when the MX program was going to be developed in Lincoln County, the state of Nevada every year put up money and jointly studied with the USGS—the Basins. We have taken that even further. So for decades there has been research done on those basins. Now if I'm a scientist, especially in an area like hydrology, there will never be enough data for me to definitively say, "This is the amount of water..." and I don't think it's a static number to begin with... that's why doing test pumping in those basins is that important, because until we actually drill wells and stress the system, we won't know what the effect is. The state engineers require that we embark of three years of test pumping at Coyote Springs before he issues any more ground water permits there, so that we can start measuring from a real usage perspective, what the impact on the carbon it is. For decades we have said the flow of the Colorado River is about fifteen, sixteen million acre feet, and then all of a sudden we've experienced a drought and a different weather pattern, and we've began to question that. Is that really the flow of the Colorado River, or is the average more like thirteen million? I think what that is teaching us is that number is not static, whether it's ground water, or whether it's surface water, it's going to change, and in any fifty year period, the average annual flow, or the average yield in a basin is going to be different. So how do you manage around that? How do you force re-charge into ground water basins that would otherwise simply lay on the ply(?) and evaporate, or manage partnerships on the river to where you can be adaptable--the static, reliable framework that water agencies have always functioned under—belt and suspenders. We have to have reliability. No surprises. Mother nature isn't that gracious. Mother nature is full of surprises... has to be replaced by being adaptable and flexible. If we can make that transition, then we can work through those ground-water issues as well, and there as been a lot of science. The ranchers have this notion that there is a number out there... a hard number. They see the basin as a bathtub and the spigot is turned on every year with so much and it goes in... yes you might have a drought. But you have a bathtub and how much you take out of that bathtub is what's going to have an effect, and they want the number of what is in that bathtub. It's going to change. Let me throw in another variable. Lets say... global warming... and I happen to believe that climate change is real. I'll just put that out there. I'm not going to argue about why it is or how it is, but there is a climate change that we're experiencing. Now lets overlay the over issue of hydrology and water resources in the west with the climate change that's occurring. And I happen to believe that we are experiencing a significant climate change, and I'm not going to get into why that is, or who the cause of it is, or how we're ultimately going to get out of it. Lets assume as a water manager I have to assume the worst and

I have to look at what is happening around us and assume that climate change is happening. Well we have a reservoir system and a water management system that's built on snowmelt. In other words the snow accumulates in the winter months, it rapidly melts in the spring. It's more than the ground can absorb, and it runs off and creates the Colorado River and feeds ground water basins. If that falls on rain, there's going to be an impact on water resources. The ground is going to absorb more and we're not equipped to deal with it as rain. How does man intervene? How do we increase recharge into basins when we're faced with rain rather than snow? It's going to have an impact, and it's going to force us even more to begin to work together and again will re-define hydrology. I've had this conversation with friends of mine at the GS and the Interior time and time again. There is never enough data because the data always changes, and every time you add ten years, you would have generated new statistics based on a new weather pattern, or a new rainfall during that ten-year period. So it's not magic of finding the number. The magic lies in managing that basin moving forward year to year adaptively to be in sync with what is happening in the environment.



Ken Nichols
Water Waste Investigator
Southern Nevada Water Authority

This interview has not been edited for content.

Interviewer: Go ahead and tell me the process that you go through... what are you looking for here?

Ken Nichols: We noticed a house that was watering during the day and they shouldn't have been watering so we stopped and gave them a door hanger and we notified that they are in water group "C" and they should only be watering on Monday and Wednesday and Fridays. That notification will lead to them getting a letter in the mail.

Interviewer: We were talking to the Water Authority. Tell me the process that you go through—it really doesn't have to be specific to this individual here but tell me what you're doing. You're patrolling these neighborhoods and doing what? What are you looking for?

Ken Nichols: We're looking for people who are watering on days that they shouldn't or in time periods where they shouldn't be watering. We're looking for broken sprinklers in areas where people are watering on their assigned days. We're looking for irrigation problems like stuck irrigation valves and breaks in irrigation systems and people draining pools to the street, water feature in front yards that exceed the limitations and that are operating, misters that might be running on commercial properties. When we see a violation we stop and videotape it and contact the customer through a door hanger or phone call or letter and then we try to help educate them on the process and correct the problem so it doesn't occur again. If they don't correct the problem in a timely manner then it leads to a fee.

Interviewer: Talk about the educational purpose of what you're trying to do here.

Ken Nichols: Often where we see a misaligned sprinkler system or someone is over- irrigating, we can help educate them by explaining how to properly align nozzles and how to adjust their irrigation run time so we don't have water flowing off onto the street. We also have lots of pamphlets that show where sewer drain points so they can drain their swimming pools into the sewer system and not to the street. We spend a lot of time trying to help the customer with conservation efforts in saving water. We try to inform individuals to water on the correct days. It will save them money and help us save a precious resource. We try to help them irrigate their lawns efficiently so they won't have brown spots and we also try to help them out and not have water flowing to the streets with their drained swimming pools and spas.



Cindy Nielsen
Superintendent
Great Basin National Park

This interview has not been edited for content.

Interviewer: Why should the general public care about the park assuming it would be in jeopardy?

Cindy Nielsen: I think the Great Basin has a couple of icons and then the remainder of the attraction and significance of the park has to do with wildlife and visitor experience. Icons would be the bristlecone pines—we have bristlecone pines here that have been dated at almost 5,000 years old. They grow up above 10,000 feet towards the summits of the mountains. We have Mt. Wheeler, which is for hundreds of miles north and south, the tallest peak in the Great Basin as 13,700 feet above sea level. I think Great Basin, as a lot of our national parks, gives visitors a chance for solitude, for quiet, for outdoor recreation. I hope we can hear Leeman Creek here in the background. This is a popular campsite, as is the one on Mt. Wheeler at 10,000 feet, so we have that out-door experience, and that opportunity for solitude.

Interviewer: Tell me about this ground-water project, if it comes to you what would be your concerns in relation to Great Basin?

Cindy Nielsen: Well we've got a couple of concerns. As an umbrella over everything, we're concerned we don't have good and complete science yet on what the facts are going to be and we're in partnership with other federal agencies, with the state of Utah and Nevada, the state water engineers in Nevada as well as our own scientists and those from U.S. Geological Survey to try to get a handle on some important parameters of the water flow system, and we've got lots of different kinds of water and water features that go together that make Great Basin National Park important, especially here in the middle

of the desert. We've got wetlands. We've got perennial flowing streams like Leeman Creek and Baker Creek that have native trout and game-fish in them, in the case of Leeman Creek. We have surface springs and the groundwater system itself, which includes caves—Leeman Cave is that other icon in addition to the bristlecone pine of Great Basin National Park. It's a significant part of the visitor experience and the resource here.

Interviewer: Is there a threat to these icons?

The bristlecones at 10,000 feet above sea level would probably be safe certainly from a drought or water because certainly they're going to get the precipitation that the mountains capture as the weather moves from west to east and snow and rain falls on the high peaks. But Leeman Caves and the Springs and the surface reaches of Leeman Creek, Strawberry Creek, Baker Creek, Snake Creek here, on the east side of the southern snake range and located within the park, are all at risk because as you draw down ground-water you create a void of some sort. You've got to re-charge that from a variety of sources. One of the natural recharges of course is for the snow to melt, and rain to run downhill and flow into that ground-water system. But that happens in an unpredictable and uneven way from year to year so as we permanently, or IF we permanently draw down the ground water system at the base of the range in the Snake Valley, we run the risk of losing wells that the ranchers are dependent upon, springs that the wildlife are dependent upon and even concern about Leeman Cave itself, which is an active, dripping, flowing cave with water in it and the lower elevation reaches about where we are, between eight to nine thousand feet. Here at Leeman Creek we can see our streams go sub or get smaller as they became part of that recharge system.

Interview: What are your concerns specifically with Leeman Cave?

Cindy Nielsen: Leeman Cave has been a national monument since 1922. That makes it at least thirty-five to forty years older than the park itself. It was recognized early on as outstanding. And when you think about limestone caves, they're a pretty unusual feature for the Great Basin and the desert. It's part of a limestone karst formation that's cracked and fractured. Water has flowed through there at times in greater levels than it does now, probably at times at smaller levels than it does now. The thing about Leeman Cave is it's big. It's highly decorated with lots of typical cave formations like stalactites, stalagmites, columns, pools of water, and invertebrate life that we haven't even fully studied yet. And then some unusual cave formations like the shield and the parachutes that you'll see when you go into the cave this afternoon. So, it's highly decorated and dynamic. It's not finished yet. The water that flows through the cracks and flows through the cave is an important part of its ongoing formation, and that's a big concern when you start to talk about draw down—loss of water pressure and just a decrease in the amount of water available.

Interviewer: What kind of jeopardy is Leeman Caves in?

Cindy Nielsen: I go back to one thing I seem to return to over and over with this issue and that is, we don't have complete science yet. We don't know what the effects of pumping water down in the Snake Valley and in the lower flanks of the mountain just outside the park is going to have especially on these lower elevation features like Leeman Caves. The worst potential would be that as water is drawn down in the underground aquifer that decreases water-pressure throughout the area and to a certain extent as much as 1000 to 1500 feet above the valley floor. So even above the pump locations, water level could get drawn down. That does two things; there's less water to support these surface streams and creeks to support the water that's seeping and creeping into Leeman Caves and that also means there's less water pressure. We have features in Leeman Cave that are called helectites(?) where water actually spurts out during the springtime when runoff is high and there's a lot of melt water—spurts out sideways. Now I don't know if you'll see those today because we're just having an average spring and we've had about two weeks of that phenomena last month, but that really implies a lot of water pressure as well as just

the presence of water. So active cave formations, and to a certain extent sustaining both the geologic features and the invertebrate life in the cave, would both be of concern.

Interviewer: The point some people make is that there are already adequate laws that would actually protect the natural park, what's your opinion?

Cindy Nielsen: The laws and regulations that protect a national park like the Great Basin are in place, no doubt about it. There is really two, perhaps three that are of great importance. One of those is the legislation that established the park itself in 1986. That defines the size of the park. It defines the significant features like bristlecone and wildlife and Leeman Caves and it provides for their protection in perpetuity—forever without impairment. That's the hard part. NEPA, the National Environmental Policy Act is the other big piece of legislation, and for some parks, the historic Preservation Act, but here NEPA provides that other piece of legislation and regulation that helps protect these resources. We'll be involved along with the Fish and Wildlife Service, along with other national parks that have the potential to be affected like Lake Mead, Death Valley and perhaps even Zion National Park in western Utah, but certainly with Lake Mead in an environmental impact statement process that looks at this ground water development project proposed by Southern Nevada Water Authority. So that's how we get entrance and put our concerns at the table. The challenge again is win the two billion dollar, hundred-plus mile pipeline is built when that water is sold and provided to the people downstream in Southern Nevada who need it, and even if you have monitoring on your wells and your streams and even in the cave potentially, what do you do when you find there is an affect? How do you mitigate that? How do you make sure that it's unimpaired? That's the challenge, and that's why I think I see the Nevada State Engineer working with our agencies and we're working with SNWA to go slow to try and get as much good science and be able to project into the future what could happen so we don't do irreparable or irretrievable damage. That's the challenge.

Interviewer: So much of this issue seems, especially from the rancher's standpoint, and other interested parties revolves around trust. Do you think you can actually trust the water authorities?

Cindy Nielsen: The issue of trust with South Nevada Water Authority and of course both state engineers in Utah and Nevada will also have an involvement in this portion of the project here on the east side of the snake range in Great Basin National Park and Snake Valley. I think that we're all honorable people trying to do the best for our clientele. My clientele is made up of antelope and sage grass, and Bonneville cutthroat trout, park visitors and cave formations. Those are the interests, if you will--the significant experiences and feature of the park that I have to bring to the table and make sure are protected. You asked me about ranchers. Of course, ranchers and water are inseparable. Water is the limiting factor in ranching and cattle grazing and making hay in the Great Basin. So when your livelihood or your significant resources are at risk, you have to take time and build trust. You have to share information. You have to agree on the science as much as possible. Science is a product of rigorous longitudinal study after-all. But it is done by humans, so there will be differences of opinion. That part of the process is just starting. As we move into the environmental impact statement we'll be working with both technical teams and at the management level with the states and SNWA and our sister agencies in the Department of Interior to make sure that we do this in an open and transparent way that tries to bring benefits to all of our clients.

Interviewer: Tell me about what we're looking at, Leeman Çreek, and the jeopardy with this ground-water project and maybe you could lead it off with this island concept for me.

Cindy Nielsen: We're right along the shores of Leeman Creek. It's one of many perennial mountain streams we've got in Great Basin National Park. It flows year-round. It's small but it's important. But what's really important about it is it's fed by snowmelt and it flows all the way down the mountain to the valley floor. It's part of the Leeman Cave system. There are springs along Leeman Creek, well and

springs and there is quite a large one just three miles downstream here. This is all part of a system—you know, there are mountain streams all over the world and throughout the national park system, but Leeman Creek, Strawberry Creek, Snake Creek, and to a certain extent Baker Creek and Millcreek—a lot of streams on this part of the valley—are important because we're in the middle of the desert. Great Basin National Park is really a sky-island surrounded by a sea of grease-wood and sagebrush on the lower slopes of the mountains and the ply is beyond and the valley floor. That makes water features, riparian habitat, springs and streams especially important because of wildlife. Eight percent of all birds that nest in Great Basin National Park, and there are hundreds of different species, nest in these riparian areas that occur only along streams and around springs and to a certain extent, the edges of the wetland areas in the lower elevations of the park. So this idea of a wet, snow-covered, melt-water island in the middle of a huge desert in the case of Great Basin means that this water resource is really important.

(Exterior tour)

This is Roland Springs. We're just inside the park boundary and it's a good example of one of the springs that could be at risk with a lot of pumping and draw down of the ground water aquifer in the Snake Valley.

Jerry Olds **Utah State Engineer, Division of Water Rights**

This interview has not been edited for content.

Interviewer: Jerry let's start out by telling me what the process will be. What will be the process you will go through to make this decision?

Jerry Olds: First of all John, if you look at the project, there are no applications filed with the Utah State Engineer—they are all with the Nevada State Engineer, so the administrative process will be handled in Nevada.

Interviewer: What about the science? That is one of the rancher's concerns—whether the science is adequate, especially in terms of surplus water. What's your opinion about that?

Jerry Olds: We've had some reconnaissance level studies done of the ground water resource in the area. The major one for Snake Valley was done in the mid 1960's. It does set forth, what they think, is the sustainable yield of the basin. But undoubtedly the data could be updated and enhanced, but will it change the bottom line--probably not.

Interviewer: Talk about recharge of this aquifer system.

Jerry Olds: The aquifer system in Snake Valley is located both in Nevada and Utah. About 60-65% of the recharge occurs in Nevada. The other portion occurs in Utah. It's somewhere around 100,000 to 105,000 acre feet annually. Currently we're using in Utah from wells somewhere around 15,000 acres a feet a year.

Interviewer: What do you think can be done for the rancher's fears in terms of the science? That's one of

the things they're worried about.

Jerry Olds: The ranchers are very concerned about the potential impact this project will have upon their water rights and the springs they rely on for their water supply. As you do these types of studies, you'll never have enough data. The question becomes, will you have adequate data to make an informed decision, and then maybe require some monitoring as you move forward with it? Whether they will ever feel comfortable that we have enough data, that remains to be seen, but we're hopeful that the studies that are currently underway will give us adequate information where we can make an informed decision.

Interviewer: Who owns the water?

Jerry Olds: Under Utah water law the public owns the water, and then through our water rights process, people obtain a right to use that water under certain terms and conditions. The water right is considered to be a property right and as such people buy, sell, trade that water within the market system throughout the state of Utah as well as the Western United States. We're quite a bit different from California. They have a number of unique statutes that are different from ours, but we're fairly similar to Nevada. Many of their statutes are fairly similar, and their approach to it is similar between the two states.

Interviewer: Let's talk about Mr. Ricci, and how does the collaboration between Utah and the Nevada State Engineer work?

Jerry Olds: My relationship with Mr. Hugh Ricci, the State Engineer in Nevada I believe is very good. We communicate on a regular basis with regards to issues that are common to our states and we are members of various organizations that meet on an annual basis so we converse there. As I've discussed issues with him related to this project, he knows that we're concerned about it, and we'll be watching it very closely, and we'll want to work with them making sure that Utah water rights are protected and Utah's interests within the water resources are protected in Snake Valley.

Interviewer: So if you feel like there is not surplus water on the Utah side, there is a disagreement between the states?

Jerry Olds: There again, as the states work through this problem, I would hope that at the engineering level we would be able to reach a consensus as to what we believe the resource is and how much can be developed and what would be the basic impacts as a result of that, and so I do not anticipate that we would be at opposite ends of the spectrum as it comes down to what the science is, and how much of the resource is there.

Interviewer: What is the future of the west in terms of these water-rights issues? As these cities of the West continue to grow and boom, what do you think is going to happen over the next ten to twenty years?

Jerry Olds: If you look at the West, it's growing significantly, particularly the Southwest and as you look at the water supply we're basically bumping up against the limits of what is available there. As you look throughout the Western United States, the major water use is for agriculture and irrigation. And so, as the cities continue to grow and need more municipal and industrial water, they will have to then go out and acquire existing water rights and transfer them over to meet their growing water needs.

Interviewer: Let's talk about the Colorado River from Utah's standpoint, and also Nevada's share of that river.

Jerry Olds: If you look at the history of the Colorado River compact, it was entered into in 1922. As you look at the hydrology at the system at that time, the data information that was available to the people that were negotiating that compact, they were probably a little optimistic as to what the long-

term water supply was within the basin. But as I look at the compact, I think it provides certainty to Utah. We know how much water we have to develop within the upper Colorado River basin and as a result we can go forward and deal with that. Nevada in 1922 received 300,000 acre-feet as their portion under the compact. At that period of time they thought they would never use 300,000 acre-feet. Las Vegas has grown, as you know, significantly, and so now they are running out of water and need to go elsewhere to find additional water supplies.

Interview: Looking in the future in terms of cities looking outside their area for water and do any of these technologies like desalination be a solution for future growth?

Jerry Olds: If you look at the growth, many basins are fully appropriated and the water supply is being fully utilized, so they either have to acquire existing rights within the basin or go outside and import it in. We'll probably see a combination of that through the West as they develop it. As far as alternatives out there, there are now efforts underway to look at augmenting some of the stream flows through cloud seeding. Currently there are efforts moving forward in that regard. Desalinization is undoubtedly a technology that has come a long ways in the last twenty years. It's still very expensive but the science is there. The real drawback is just the cost related to it.

Interview: Why is there so much debate over water rights?

Jerry Olds: If you look at the Western United States, when the pioneers first settled here in Utah as well as in other states, I think they realized early on that water would be the limiting factor of growth. As you look throughout the West, water has shaped the lifestyle that we have and undoubtedly in the future shape the growth throughout the entire region.

Interview: How big of an issue is the delta in Mexico in delivering water in sufficient quality to Mexico?

Jerry Olds: With regards to the delta in Mexico, there are a number of people who are very concerned with it and its resource values and so forth. Undoubtedly if the country of Mexico felt strongly that that was an important resource that they wanted to protect then it would be my feeling that they could commit a portion of their entitlement from the Colorado to do that. I do not believe under the compacts or any other law of the river that Utah is obligated to provide water for those purposes.

Interview: If a state takes more than their share of the Colorado River, how do you enforce that?

Old: With regards to states taking more water than what they're entitled to under the compact, there are provisions under the compact that allow a state to basically use and unused portion from another state. Presently in the state of California, they are using in excess of their 4.4 million acre-feet that they are allocated, but they're not in the process of basically getting their house in order and coming in line with the provisions of the compact.

Interview: Tell us about the recent agreement and whether that will solve the problems we are now discussing.

Old: I'm not as well versed on that as perhaps others are, but it is a major step forward in basically allowing the states to come to some agreement to allow some of the needs of Nevada and others to meet their growing water needs within constraints that all of the states can agree to.



Gary Perea,
White Pine County Commissioner

This interview has not been edited for content.

Interviewer: Tell me what most of the residents of White Pine County think of the water situation here?

Gary Perea: Most of White Pine County, a majority of the county is against what we call the water grab. We believe that taking the water is going to take away our future and any type of potential growth or expansion of industries. They haven't come out with an official number or how much they want to pay for the water that they take, but money is not a factor for them. They have a lot of money and Las Vegas, as fast as it's growing and the amount of money that they have and the political pressure that they have, they have no problem taking the water. We have been told that when they take the water that it will lower the water table and it will affect some of the springs in the national park and the wildlife—it could be devastating. The effects won't happen all of a sudden, but it will take years to create. Southern Nevada Water Authority has offered the county large sums of money or have made the reference that they would be able to support or mitigate any kind of potential harm that they would do to the county and that isn't what the county and its residents are looking for. It takes a special kind of people to live in this rural type of an area and we don't need the money, we need the water. One of the things I've been looking at when we go to the different presentations is the growth in Las Vegas and I know that there is a figure that goes around that every twenty minutes a new home is being built in the Las Vegas Valley and for every home that is built in Las Vegas, Southern Nevada Water Authority receives \$20,000 for that hook-up and with that kind of money they can throw it at any problem they have and they think that money is the solution and that White Pine County, because of the financial situation that we have in the county and the fact that we don't have a booming economy, that we'll take that money, but there is a lot of resistance. When they take the water away, it takes away our future and we want to be able to have a future for our children to live this type of a lifestyle in this area. There is a fund which was created to... the BLM sells property and land in the Las Vegas area and Southern Nevada Water Authority receives some funding from those lands sells to provide water for those developments. Money is just not an issue with them. They have hired lobbyists in both Nevada and in Utah to help fund this project.



Mike Prather
Owens Valley Outreach Coordinator

This interview has not been edited for content.

Mike Prather: This is an area of the Owen's Valley called Pine Springs. It's an area that at one time in the 1960's was an area of green lushness—water near the surface supporting acres and acres of bunch grasses and vegetation. In an effort to fill the second Los Angeles aqueduct in 1970, there was massive ground water pumping in this area and other areas in the Owens Valley that resulted in the water tables dropping and the loss of vegetation, the invasion of weeds, the creation of a large regional dust problem in the valley. An example of the some of the bunch grasses that have been destroyed is right below me here. This is a bunch grass called alkali sacaton. It is wide-spread in the Great Basin. This would normally be up to the belly of a horse with large plumes, and solid masses of bunch grasses, which supported lots of wildlife and kept the dust down. Most of these have died since 1970 when the pumps came on. We have bare ground in between and we can tell by the dark soils that we had a lot of organics here. We can tell the pictures from the past by analyzing the soil as well as the skeletons of the dead plants. We have the invasion of weeds, like Russian thistle, which is not a fair trade. It is something to be avoided anywhere else in the world where it can be. Below me here is a bunch grass. This is a skeleton of a bunch grass called alkali sacaton. You can see that it's gone and there is bare ground amongst the skeletons in the invasion of Russian thistle—a real ecological tragedy—violence to a natural world.

Where I'm walking right here are the pools where Hind Springs had been up until 1970. The water at that time would have been about up to my shoulders. This is Hind Springs that was pumped to extinction around 1970 to fill the second Los Angeles aqueduct. This area held not only this pond but several slews that flowed for a mile or two that were up to waist deep supporting all kinds of wildlife. What happened when the ground water was pumped here is this spring was pumped to extinction. I'm surrounded by weeds and the skeletons of mature willows. This spring will never come back, even when the pumps go off. These springs have all cemented up inside and the flows will not resume. When you lose a spring, it's gone.

I'm walking across the bottom of what was the pool at Hinds Springs. This is one of the Owens Valley smaller springs. It was pumped to extinction by the city of Los Angeles in 1970 to fill the second aqueduct. The water would have been about up to my shoulders. There was not only a pool here, but there were also slews that went down towards the Owens River supporting all kinds of wildlife and different vegetation types. What I'm surrounded with now is just the ultimate sadness; the skeletons of dead mature willow trees and the straw-colored plants are just invasive weeds. It's something that has to be avoided because these springs don't come back. They cement up inside and even after the wells are turned off, the waters will not resume flowing at these springs. They are gone forever. These dead skeletons around the pool of Hines Springs were mature willows. The size of them, maybe they were sixty to ninety years old at the time the pumps came on in 1970 and destroyed the spring. This was an oasis in the desert, if you can imagine that—a very valuable thing. Ground water pumps, when they

come on, they lower the water table. It's like a bank account. They withdraw more money than you're earning. Snow melts in these mountains and moves underground through these lava flows, through the soil until it hits some impermeable surface, comes to the top and we call it a spring. It's a very simple thing. And if you withdraw more water than is coming, then these places go extinct and the damage is forever. I'm walking along the skeletons of mature willows that grew around the pool here at Hind's springs. These willows looked to be sixty to ninety years old. They existed because water came through the ground here. Snow melts in these mountains and moves underground until it hits something where it can't flow anymore and it comes to the surface and we call it a spring. It's a very simple thing. It's much like your bank account, however, if you begin to take more water through pumping than water is coming in in recharge, then you begin to lose. Bankruptcy here is the extinction of the spring that is gone forever. The wildlife has depended on it, the beauty, the dust created in terms of human health problems—just a completely negative situation. What happened in the Owens Valley and its significance of its history can help us learn about the present, especially in Nevada, is that a large city (an urban area far away) took water from here. At first it was surface water, then in 1970 they began massive ground water pumping. And because of that pumping there has been significant damage to vegetation throughout areas in the Owens Valley and many of these may never be healed. In terms of local people and the economies, when you lose your water, you've lost your future and you have certainly lost many of the choices and the opportunities, some that you may not even know about in the future. When the city of Los Angeles took water south in 1913, they took all of the streams that flowed into the Owens River. The Owens River would no longer flow into Owens Lake and it began to dry so it was 110 square miles of alkaline lake, a typical Great Basin lake. The river ended there. Over the course of about ten years this lake that had huge importance for wildlife and migration, it also suppressed dust by covering its bottom. It disappeared. By the 1920's Owens Lake was gone. Much of the water history in the Eastern Sierra in terms of the good news, started at Mono Lake. At Mono Lake the Mono Lake committee was able to do secure flows in the streams that will raise the level of Mono Lake—cover some of the dust-prone areas, and protect the eco-system there. Because of those efforts, I think that added or gave encouragement to others of us who live along the aqueduct, and in the Owens Valley certainly we've needed that encouragement. Many of the people in our communities have accepted that there is no hope. We feel there is hope and the Owens Valley committee has shown that there is hope—that we've had significant victories and we've continued to make slow progress. When you live in a rural area and you deal with a very very large city, especially one that is quite powerful within our state, (I'm talking about the city of Los Angeles here and in Nevada they'd be talking about Las Vegas) it is difficult to open doors, it's difficult to have people not think that you're just rural people making noise and not enough to bother with, a bunch of hillbillies. It takes years to find people that have the power to make decisions that will listen to you and then to have decisions follow that actually help your area. It depends on mayor to mayor here, the city council, but meetings we've had down in Los Angeles and visits we've had with leaders up here in the Owens Valley often we just have to spend all of our time educating people about what's even going on here. There's a 75-mile an hour trip up highway 395, they aren't aware of much of anything besides snow in the mountains, their backs are to the valley, they're thinking of skiing.

The history of the Owens Valley does parallel a lot with what's going on in Nevada right now. It's something that I never thought I would see happen, but I think I was just simply naïve or not very bright. We see, once again a hundred years later, a large city far away proposing, planning to take water from rural areas. When you take water from rural areas, like I said earlier, you take away their future. You take away their independence. It is environmentally and socially not a just thing to do. The way I see it is that we have the city of Los Angeles, the most powerful city in California that has huge influence in Sacramento, our state capitol. In Nevada you have Las Vegas, which effectively and certainly in terms of money going towards land and water, they're making the decisions. They're electing governors, and the governor appoints the state water engineer and it doesn't take too much

math to figure which way the water is going to go or which way is downhill.

Interviewer: What advice do you have for the ranchers in Snake Valley and White Pine and the residents there?

Mike Prather: The advice I would have for anyone living in rural Nevada where the Southern Nevada Water Authority has filed for water, is to resist it in every possible way—to deal with it in terms of simple justice and fairness, that you cannot take away water from one area--something that is worth something in terms of beauty, life, economic vitality and future options, and take that away. The water may belong to everyone in the state in Nevada that is under White Pine County and elsewhere but it most affects the people that live there and I think we need to fight it in terms of fighting environmental impact statements, fight it legally, fight it in the state house in Carson City, try to bring it to life within in the city of Las Vegas, to what is happening and how a small ground, an underdog (you know an underdog is something in America—we fight for underdogs) we should not allow people to just run roughshod over rural areas in Nevada—people like from Las Vegas without them knowing what they've done. If after seeing all of the facts, and the things that are going to happen if they choose to do it, then that can't be helped. They need to be educated and shamed if necessary.

Interviewer: Mike what are we seeing in the aqueduct? Where does the water come from and where is it going?

Mike Prather: By me is the Los Angeles aqueduct that is carrying the water 230 miles down to the city of Los Angeles. The portion that is behind and under me is a part that was actually dug. It's a man-made canal that was dug. Upstream it diverts the Owens River, the entire volume of the Owens River into this dug ditch then onto Los Angeles. So in our valley we lost about 62 miles of the lower Owens River--it dried up and then the lake also. This carries pumped water as well as surface water. With surface water the great volume is the snow melt every May and June.

Interviewer: Tell me who owns this water?

Mike Prather: In the state of California water is owned by the property owner. In other words, in our valley here, where most of the entire valley (240,000 acres is owned by the city of Los Angeles), they own the water underneath it, so they can pump that water. In our case they can also export that water and there is virtually no limit unless some environmental damage is going to occur where we do have legal tools, like the California Environmental Quality Act that we can use here. In Nevada the case is different where there is a state water engineer that determines how the water will be used. These large projects, I guess the water is held in trust by the state of Nevada and this single person appointed by the governor makes the decision on how projects are going to be put together and whether they're going to go forward or not.

Interviewer: How were the water rights in Owens Valley acquired?

Mike Prather: Well the city of Los Angeles around 1905 was faced with a shortfall of water. They had a booming population. They had a lot of boosters in terms of real estate and economic industry down there even then still today, and they were looking around for where they could get more water and they found the Owens Valley. So they began to buy ranches that were along streams, along the river, and places that were along the canals--eventually all of the canal companies, and slowly bought out land. A lot of it before the first aqueduct was completed in 1913. Since they held the rights to that land they also owned the water and the rights underneath that land, and they can pump it or divert it at will.

What you're hearing and seeing here is the sound of money. This water makes land have value. There is a lot of money in the city of Los Angeles and that value is magnified if there is water added. This is a deep aquifer monitoring well. It goes down approximately three to five hundred feet. It's sealed in certain sections and it has perforations in others so it can take water at different depths. When pumps

come on, water levels can be measured here, the behavior of the water in a sense. Computer models can be made so you can try to understand what happens underground when these pumps come on. (Repeats) This is the sound of money. This is a deep aquifer monitoring well. Its purpose is to measure how the water behaves when production wells go on—when the pumps go on. This well has a depth of three, four, five hundred feet. It has perforations at different levels that can take water and also measure water and see what its behavior is when pumps go on and off. From that data, if there is enough of these wells in different directions around the production wells, you can make computer models and hopefully try to understand how water behaves underground.

Interviewer: Tell us what we're seeing behind us with the Owens River, sometimes it's dry, but not necessarily today, and what did it look like originally?

Mike Prather: Well I'm standing at the bottom of the lower Owens River. In the old days before the first diversion for the Los Angeles aqueduct, this river would flow bank to bank and during the snow run-off in May and June would spill over the banks and really recharge not only the ground water but also spread the lush vegetation this valley had.

At times now days, since the 1913 diversion, this will often be quite dry during the hot months. The trickle today is maybe one cubic foot of water per second is what it looks like. The very expensive re-watering project that takes place for the city would have a base-flow year round of about 40 cubic feet per second.

Interviewer: Talk about taking water from the Owens River to Los Angeles, and the ramifications of what that dream has been.

Mike Prather: Really Mulholland always had a great commitment to this city of Los Angeles. He wanted the city to grow and fulfill its destiny, and to do that it needed to have water and if the water was up here in the Owens Valley and if they could get it to Los Angeles, then that's where it should go. It should be the greatest good for the greatest number. The problem with that is it often tramples on the minority. In the United States that's always the balance in democracy. How do you not just go roughshod over the rural people? I think in a modern day, where we've learned so much from mistakes of the past especially with the Owens Valley is that all cities need to live within their means. We do that as families, living within our means, and if water is a limiting factor, then they need to deal with that. If they need to use less, or more efficiently or whatever, use it over again, that's what they need to do. They shouldn't just be able to go out into the rural areas where there are fewer people, and take away their current situation and their future.

Interviewer: That's one of the arguments that we've heard, certainly in Las Vegas, is that the huge sacrifice of the rural for the many to benefit from the economy, talk about that.

Mike Prather: I think the rural versus the urban conflict, where the majority feels that the sacrifice should be made by the few, I don't think that's really a valid argument, because they're really not arguing about jobs and economy for the current people in this city. They're dealing with boosters and speculators. They're dealing with people that want to increase the land base in those cities and that's a cancer. There is simply no end to that. There is no sign that any kind of real planning that has teeth takes place—that basically if enough money can come in the door for a new development, sometimes entirely new cities, then that's what they're boosting. It's the same as it's always been, especially back in the '20s in the city of Los Angeles. That kind of boom is taking place right now in Las Vegas and what Los Angeles had in the teens, the '20s and the '30s. Los Angeles, the city proper, is built out now. But Las Vegas can go in all directions. They are to the point where they can influence federal land ownership—the transfer of land to the city so they can just have more and more growth. They're not talking about growth for the current people. They're talking about more and more people coming in. Cities need to live within their means. They need to work on densities, control traffic, cleaner air and

more quality of life issues.

Merle Rawlings
Snake Valley Resident

This interview has not been edited for content.

Interviewer: Tell me if it's a good idea for Las Vegas to get access to water in this area.

Merle Rawlings: We have been in the midst of a seven-year drought in our area, North Snake Valley and Western Utah. Last year when there were officials from the Southern Nevada Water Authority coming to visit us, we happened to have some good snow pack on the mountains and the first time in seven years. As you noticed, perhaps driving into this afternoon our mountains don't have very much snow on them this year. The strangest thing—we haven't had people from Southern Nevada Water Authority flying over and noticing. There is no snow up there to be recharged into our aquifer. If we had surplus water the issue would be entirely different. We don't have surplus water. Our wells are dropping and certainly our springs are drying up. The aquifer that they propose to pump from is just not there. If they pump 180,000 acre feet per year proposed for at least seventy years, there won't be anything here but an Owens Valley. We happen to be a wind tunnel, this Snake Valley area and Spring Valley also, and the dust from our area will be just like the dust in Owens Valley except it's going to go visit Southern Nevada and Northern Utah.

Interviewer: Do you trust the SNWA?

Merle Rawlings: I trust the Water Authority to do what's right in the sight of their own eyes, for their constituents, and that could be very harmful to Snake Valley and Spring Valley, all of Eastern Nevada and Western Utah. It could be very difficult for us, but I trust them to do what they say they're going to do, and that's take our water if they possibly can.

Snake Valley Resident

This interview has not been edited for content.

Interviewer: Tell me what you think of these water issues and whether this is a good idea or not for Las Vegas to be able to have access to your water.

John Reil: I believe it's a terrible idea. It's going to be devastating for the people around here—the ranchers and the wildlife. I've rode all over these hills and the mountains up there are beautiful but everything is watered-off springs, all of the wildlife and livestock and the wild horses—it's all off of springs and the ranches in Pleasant Valley are all irrigated off of springs and if you start drawing the water table down that's going to be devastating. It's going to be devastating for us here in Callao and it's also going to be devastating for the Goshute Indian Reservation—they depend on the wildlife for some of their income. It's going to be devastating all around.



Hugh Ricci
Retired Nevada State Engineer
Nevada Division of Water Resources

This interview has not been edited for content.

Interviewer: Lets start out talking about the process you will go through in evaluating the permits applications.

Hugh Ricci: The process under the Nevada water law I will make in terms of general comments. There are a number of criteria in which the State Engineer reviews application and I'm speaking in generalities here right now as opposed to any particular application. One, is there water available at the source? Will it impact existing rights? Will it prove to be detrimental to the public interest? and in issues where there are surrounding domestic wells will it have an impact on domestic wells? Those are the four criteria that are used. When it comes to inter-basin transfers, there are some additional criteria that the legislature introduced in 1999 or 2001, I don't recall the year, that included, which is key here... will the inter-basin transfer prohibit growth within the basin of origin? That probably is the most key one right there. Throughout the years the State Engineer's Office, Division of Water Resources I probably will use those two terms synonymously and they are synonymous because I am the State Engineer who is the head of the Division of Water Resources I'll sometimes use those to get at

one or the other. We have entered into cooperative agreements with the US Geological Survey to do studies in various valleys. Between about 1970 and the late 1980's they were done on a reconnaissance level. Since that time there have been some additional studies to go into a little more depth and as technology increases they can make a better determination of certain parameters.

Interviewer: We were talking about the data and how this data is gathered for information to make your decision. How do you go about gathering this data?

Hugh Ricci: The data that is used by the State Engineer's Office in a number of instances has been gathered by the US Geological Survey through reconnaissance level reports ranging from about the late 1960's to the 1980's, however since that time there have been some additional studies done. Also when we go through the hearing process, there are the applicants and the protestants that present their data and they also have their reasons for presenting that data and that is all used in this whole process.

Interviewer: Who actually owns this water?

Hugh Ricci: The water under the statues of Nevada, the water belongs to the public. It doesn't belong to the state. It doesn't belong to any individual. It belongs to the public.

Interviewer: How do you determine if there is actually surplus water to be allocated?

Hugh Ricci: In these reports that I mentioned that are done by the US Geologic Survey, there is a determination of recharge and discharge. Recharge comes from precipitation and stream flow infiltration. Discharge is either through vegetation and the evapotranspiration that occurs from there or the actual amount of pumping that goes on from any particular wells, that being the discharge side. If everything is in equilibrium, the water levels remain the same but when you start pumping, there is going to be some kind of drawdown around that particular pumping area. In those evaluations, they make a determination of which is called perennial yield, which this office uses and that is the maximum amount of water that can be salvaged on a yearly basis without detrimental effects to the basin.

Interviewer: What will be the criteria you will use in determining this permit application from SNWA?

Hugh Ricci: Well the criteria under any change application relating to Snake Valley will go through the two processes that I mentioned. The first is the four simple criteria that have been in place throughout the water law except the domestic well portion of it. The newer ones—the criteria is, as I mentioned earlier, is there sufficient water that would not prohibit the growth in the basin of origin. One of the other criteria—is there a need where the water is being applied to go? that being Southern Nevada. There also is a necessity to determine whether they have a conservation plan and whether that is carried out effectively. One of the other criteria—is it environmentally sound? We haven't had any challenges on any of those yet because we've only applied it in one instance to date and we have not had a determination through the court system yet as to whether that was applied correctly.

Interviewer: Are there laws that would protect the rancher's water rights?

Hugh Ricci: In Nevada the doctrine of prior appropriation is what is in play. That means that first in time, first in right. First in time means that whoever applied for that water right and got a permit for that particular use, and has used it in accordance with the statues is the first priority holder. Everyone else is junior to that particular permit and so you keep granting permits and every permit that is granted is granted subject to existing rights.

Interviewer: Ranchers fear their springs and wells will be affected. Are those fears valid?

Hugh Ricci: Every situation is a little different and that is one of the reasons why we go to hearing to make a determination as to what information, which we may not be aware that someone else has whether it be the applicant or protestant, that has some information and all of that information between

those two parties and what information we have, whether it be from the US Geological Survey or some other scientific organization we evaluate all of that and make a determination. Under certain conditions we'll make a requirement for monitoring and mitigation, if necessary, as a condition of the permit. Now what you're asking me if specifically this would be down in Snake Valley—that would have to wait until we made a determination as to what if any water rights would be transferred out of there. There is no prohibition under the state law to say that they are asking for all of the un-appropriated water. Again though, keeping in mind that the criteria for an inter-basin transfer cannot prohibit future growth in development in the basin of origin, so that has to be taken into account as to how much water needs to be left in the basin of origin for future growth. What's going to end up happening is there is going to be a decision by this office, and I say by this office because there may be some successor of mine that eventually ends up with this many years from now... but the process of permitting in the state is, the application is filed, we make a decision as to whether to grant a permit or not. If a permit is granted or if a permit is not granted, anybody who feels aggrieved by that decision can appeal that to the court of the proper jurisdiction. In this particular instance it would be where the points of diversion are located, and then it goes through a judicial process and the judicial process reviews it as to whether the State Engineer abused his discretion in making that decision and did not base his decision on the evidence of testimony. It is not a brand new trial.

Interviewer: If the USGS gives you data that would actually impact a national park like Great Basin National Park for example, what happens then?

Hugh Ricci: Again, what we would do is look at what sources are impacted and to what degree and then have to make a decision as to whether you curtail pumping—that is under the assumption that you've granted then the permit in which to pump—or could they mitigate that in some way?

Interviewer: Some folks have called this a water grab and point to a parallel with Owens Valley. Are there regulations that would prevent that from happening today?

Hugh Ricci: The issue of interbasin transfers has come up a number of instances and references have been made to the Owens Valley... is this just another one waiting to happen? Interbasin transfers have been in this state almost as long as Nevada was admitted into the Union. The first interbasin transfer occurred in 1873 and there have been a number of interbasin transfers, for whatever number of reasons—whether it be for municipal purposes or agriculture—there are a number of towns, Wendover Nevada and Utah for example gets their water mostly from basins that are in Nevada way west of Wendover. So this is a process that is not something that is relatively new and the legislature sought in the legislation they made on the interbasin transfer to try to insure that Owens Valley doesn't occur again, mainly by the reason that you look up front as to what impacts may occur, leaving enough water for development within the basin and that pumping can be regulated if there is an adverse impact.

Interviewer: Let's talk about the few sacrificing so the many may benefit, being that there are very few populations in White Pine and Snake Valley etc... compared to millions of people who could conceivably benefit in Las Vegas from this water. Does that enter into your decision making at all?

Hugh Ricci: They only place that could possibly enter into the decision is in that part that I mentioned earlier of will it prove to be detrimental to the public interest? And I want to make sure that it's understood that the project doesn't need to be in the public interest, it just can't prove to be detrimental to the public interest. There is a Nevada supreme court case that came out in 1996 I believe that addressed the State Engineer and his ruling on what "detrimental to the public interest" is. So we'll use those guidelines, whether there is going to be new stuff coming out--as any decision may be rendered in these through the court process, who knows?

Interviewer: As cities in the West continue to grow, they are obviously going to need water sources probably from far away places. What do you think is going to happen say over the next 10 to 20 years?

Hugh Ricci: The idea of water for Nevada cities is going to have to come from some other places than the areas from which they actually are located. Southern Nevada is obviously an issue today, the Northern part of the Nevada—Reno and Carson City will mostly likely have to find other water sources outside of their basins in which to continue to grow also. There are applications on file right now for some of those interbasin transfers.

Interviewer: Is it at all possible to make everybody happy here?

Hugh Ricci: No, I don't think you can make everybody happen. I think that the way we look at it is we make at least 50% of the people happy because there is the applicant and the protestant being two, and hopefully one of them is happy. Except in some instance we have been appealed on a decision by both sides as the decision being wrong.

Interviewer: Are there any outside pressures that try to sway your opinion?

Hugh Ricci: I won't say explicitly, but you know there are newspaper articles. I mean I don't live in a cave. I see what some of the newspaper articles are and no, none of that... I have to base my decision on the information I have available to me and make the best decision that I can based on that information and if someone doesn't like it, they can appeal it.

Interviewer: Las Vegas is a very powerful city against a very small group of ranchers who don't have a whole lot of political power. How does that influence your decision? Does it come into play at all in your decision?

Hugh Ricci: Any decision that is rendered by this office takes... whether it is a big city as to a small community... the water law is very impartial to that. It makes those determinations based again on the way the law allows the State Engineer in which to make that decision. He can only go as far as the law allows him to go.

Interviewer: How long is this actually resolved in terms of hearings and the next steps?

Hugh Ricci: The process for these applications that we're talking about here, which some are in Snake Valley, started a long time ago... 1989 when the Las Vegas Valley Water District applied for these applications outside of the Las Vegas area in Clark County, which Las Vegas is located and Lincoln, White Pine counties. They just lingered for a number of years and then the drought on the Colorado River brought these to the forefront again and we have now started looking at them as to what do we need to do? January 5th of this year, 2006 a pre-hearing conference was held on five of the basins of which Snake Valley was one of them, Spring Valley being in White Pine County, Cray Valley which is in White Pine and Lincoln, Dry Lake and Delamar Valleys in Lincoln County are all part of this process that was to schedule as to when to go to hearing. I wrote an order just last week, March 15th, that indicated that we would go to hearing on Spring Valley September 11th and there are a number of requirements there for the protesants and the applicants to exchange data so there are no surprises at the hearing date and we'll go forward with the other valleys after that. So it could be any number of years for these things to go on.



Hal Rothman
History Professor
University of Nevada, Las Vegas

This interview has not been edited for content.

Interviewer: Tell us about Las Vegas and why it's booming. Why is this town growing so rapidly?

Hal Rothman: I think Las Vegas is growing so rapidly because of the fundamental changes in American culture. If you think about it, the baby-boomers are getting close to the time when people are seeking leisure. We've become a self-indulgent culture of experience. When you wrap all of that up, people end up here in larger numbers than before, both as visitors and ultimately as residents.

Interviewer: Does water follow growth or visa versa?

Hal Rothman: As the late Mark Risner use to say, "Water flows uphill toward money in the American West." There is no truer vision of that than Las Vegas today.

Interviewer: Are rancher's concerns valid? Do they have reasons to be worried about a ground water pipeline coming from their area to Las Vegas?

Hal Rothman: I would never be the one to tell ranchers not to be worried about a pipeline taking their water from rural Nevada and rural Utah to Las Vegas. But on the other hand, when you start to make this into an economic equation, their position is in defense. That is, that ultimately in the new West we build four things; prisons, theme parks, casinos and sub-divisions and none of those have anything to do with agriculture and ranching. The result is that in the last twenty-five years water has been moving from rural areas to urban areas and the states have benefited economically as a result. It's not a question of "if" it's a question of when. So in that way, they should be worried, but can they maintain their lifestyle, cut them-selves a deal that will work for them? Absolutely!

Interviewer: Should they trust the water authority in this case?

Hal Rothman: I think they should trust the Southern Nevada Water Authority for no other reason than they have revolutionized western water. They have taken it from the old whiskey is for drinking and water is for fighting model to a side where everybody sits at the table and negotiates like grown-ups. I think that would be a remarkable step forward, not only for western ranchers but for all of us in the West. We've gone here from the local water district to a Southern Nevada one. Someday there will be a statewide water district and ultimately there will be inter-state water districts that manage water throughout the region. That's the feature, and the question is, do you want to be on the bus or under the wheels?

Interviewer: Is this a water grab, and are there any parallels to that in your opinion?

Hal Rothman: There are no parallels to Owens Valley. One hundred and ten years ago, we lived in a very different kind of world. You simply could not do something like that today. Everything today goes through environmental processes and there are a whole range of phenomena that didn't exist in

1900, and so the idea that somebody can draw the basin dry in the way that it happened in the 1900 is simply not feasible today.

Interviewer: One of the principles is, should the few give up their resources for the many in terms of the economy?

Hal Rothman: It's not that the few are giving up their resources to the many. What's going on here, and Nevada in particular, urban areas subsidize roads and rural communities and subsidize almost every measure of life in rural areas. So the question becomes, do they want to start paying for their own roads, schools, medical or do they want the state, which generates 75% of its revenue in our economy, to continue doing it for them? If they sit on their water, the prospect exists that they have to find a way to pay their own bills, and that will raise the taxes on the very ranchers that are complaining about water being taken from them.

Interviewer: One of the concerns is they feel they're losing their lifestyle and their heritage. What do you think about that?

Hal Rothman: I'm not a fan of culture and custom arguments. The fact that we should do something because we've always done something makes absolutely no sense. If that were the case, we would still have slavery in the United States, women wouldn't vote, and a whole range of other things that are unconscionable.

Interviewer: As you look down the road, what are the biggest issues for water in the West?

Hal Rothman: I think the greatest problem with water in the West the way we do it today is you've got a hundred-year old system which never worked very well, and is totally broken down. And in a hundred years, if it continues, it will put an indent into the culture of the West itself. Why? Because simply what it will do is, the way we use water in the West will destroy agriculture because it put selenium in the fields, it will make the fields unusable in the end and production simply won't exist. So the question becomes, since we know that the wheels are broken now, what are we going to do about it? The biggest problem is whether we're going to continue to have any agriculture at all. I think the consequence of continuing to behave the way we do is the end of the environment as we know it, and agriculture as we know it. So I don't think that's tenable. I think over time we're going to have to find new ways. We know that the cart is broken now, and we should start fixing it instead of waiting until our demise is eminent.

Interviewer: Should Las Vegas have been built in such an arid environment?

Hal Rothman: If you think about it, Las Vegas is a city that is actually an oasis. It was built and existed until 1970 on its own groundwater. Now what's happened since then is Nevada has harnessed its miniscule share of the Colorado River—an agreement that is so preposterous that it defies all comprehension. The result is its growth has continued because it has been able to get Colorado River water, not ground water. And ultimately groundwater is a sideshow in Las Vegas. The real future for Las Vegas is in redoing the Colorado River compact either administratively as it currently goes on or by writing a new one.

Interviewer: Explain to me what is meant by "the fiction of the river?"

Hal Rothman: People call the Colorado compact the law of the river. I call it the fiction of the river. Why? Because it is not based in any reality. It allocates too much water. Its allocations to rural districts are far away to urban areas that generate money. It's an eighty-five year old piece of legislation now. It is absurd now.

Interviewer: What would you like to see the ranchers do in terms of resolving this with the water authorities?

Hal Rothman: I'd like to see the ranchers come to the table and take a seat and negotiate like grownups and cut the grandstanding and sit there and say, what can we do here to make this a fair, better system for everybody? And to help the middle-class of the future get into footing so it can pay into social security and we can all retire in the end.

Interviewer: What is the biggest misconception about water use in Las Vegas?

Hal Rothman: The biggest misconception about water use in Las Vegas is that it is wasteful. Dollar for dollar Las Vegas is the most efficient use of water in the state. At no point does urban Nevada use any more than 20% of the state's water. It generates more than 99% of the state's revenue any way you measure it—jobs, taxation. So what we've got here is an odd anachronism that has water only because it has. It has no justification, social or economic, for having that water and that ultimately it impoverishes the rest of us. In the rural parts of the state very few people benefit from the water. You see very little job growth, very little employment, and very small opportunities and so the result is people come to the cities from inside and outside of Nevada because that's where the economic opportunity is. Meanwhile we're using all of the water to grow alfalfa in rural places, and it makes no sense.

Interviewer: Who uses most of the water resources in the state?

Hal Rothman: In the Nevada, the county that uses the most water is Elko County, not Clark County, which has 75% of the people.

Interviewer: What is that water used for?

Hal Rothman: Water in Elko County is used to grow alfalfa. More than 80% of the water from Nevada is used for agriculture and ranching.



Michael Styler
Executive Director
**Utah Department of Natural
Resources**

This interview has not been edited for content.

Interviewer: Tell me about Utah's position on this issue? Can Nevada legally take the water from this area into Las Vegas?

Michael Styler: Utah's position on Southern Nevada Water proposal was originally a proposal that came from Utah. They wanted to take more of the Colorado River and we said, no, you can't have more of the Colorado River... you must develop the water within your own state. So can they legally take water from within their own state? Yes they can! Our position is, if they get close enough to the border that their pumping of water from the Snake Valley impairs Utah water rights, we can't allow

that. One of the things that happened in the federal statute is we got an agreement put into the federal statute that said Utah and Nevada must come to an agreement before any trans-basin diversion of water takes place. We're working with Nevada to work on that agreement and we feel that that is our ace in the hole for protecting water rights for Utah ranchers. If there is a drawdown of water, Southern Nevada Water has always said that they will pay for mitigation. They've got money to spend on mitigation. We're happy to hear that but we're even more concerned that Utah water rights are not lost as they pull water out of this proposal.

Interviewer: How do you determine if there is surplus water to be had?

Michael Styler: That's an interesting question. Utah water right doesn't guarantee a flowing well. It guarantees that there is water there and you may have to go get it. It may be that we reach equilibrium with water five feet below the surface rather than flowing above the surface. What we're talking about here is a safe yield. We don't want more water to be taken out of that basin than can recharge. That's our aim—to reach that equilibrium of recharge.

Interviewer: And how do you know what that recharge is? One of their concerns is they feel there is not adequate science.

Michael Styler: We don't know until we do some testing. That is one of the reasons Utah is proposing a series of about thirteen wells to do some stress testing, some pumping to see what equilibrium might be. There has got to be a lot more studied before we know the answers.

Interviewer: Talk just a little bit about the process and how these decisions will be made ultimately.

Michael Styler: There are several things that are involved. First of all let me just share with you what the federal statute says because I think this is important, it says "Prior to any trans-basin diversion from groundwater basins located within both the State of Nevada and the State of Utah, the State of Nevada and the State of Utah shall reach an agreement regarding the division of water resources of those interstate groundwater flow systems from which water shall be diverted and used by the project. The agreement shall allow for the maximum sustainable beneficial use of the water resources and protect existing water rights." So we're just barely now starting to set up the framework for reaching that agreement. We have had some discussions—the State Engineer from Nevada and Utah have actually appointed a team from within their divisions to start working on this framework of this agreement. We have talked and the feeling right now is I will be the signatory from Utah and my counterpart from Nevada, Allan Biagi, will be the signatory on behalf of Nevada. In the meanwhile, there is a huge study being done to look at this groundwater system that there was six million dollars appropriated, and we don't want to get ahead of the science. We want to set up a framework so that we'll have things in place so we can talk about actual numbers when the science numbers come in.

Interviewer: What happens in the case that Utah determines that there is not sufficient water for what Southern Nevada Water Authority wants to do?

Michael Styler: I think the first person who would make that decision would be Hugh Ricci, the Nevada State Engineer. Already he has made some rulings on their proposal for withdrawing groundwater and he has not done exactly what the Southern Nevada Water people wanted him to do. He is very independent. He makes decisions based on science and what he believes is there. If it boils down to the point, eventually along ways down the road, a dispute where they think there is "x" amount of water and we think there is only "y" amount of water to be taken, then we wouldn't agree to sign this agreement.

Interviewer: As these cities of the West boom, overpopulation and other things, and you can see it all over the West—Las Vegas, Phoenix, Tucson, Salt Lake City—where will these resources come from in terms of water?

Michael Styler: First of all conservation is very important to us. That is one of things we are doing here in Utah through our "Slow the Flow" campaign that everyone has heard of. It's actually working and we've had a goal of 25% conservation. We're about $\frac{3}{4}$ of the way there—we're about 17% of the way to reaching our goal towards the 25% so conservation in the West has got to be very important and Las Vegas is probably one of the most vivid places where conservation is going into effect.

Conservation number one... there will be some change of use of water where there use to be crops like in Davis and Salt Lake County. There are now homes and that water that went to irrigate those crops goes towards maintaining those homes. It's interesting that the amount of water needed to irrigate crops per acre is just about exactly what it needs to take to sustain families and homes on that same acreage. So that will be the second place. The third place that water will come from is through developing and reaching out to develop sources like the Colorado River or agricultural water that are away from the cities as Las Vegas is now doing. I know close to home, the town of Tooele has in years past reached out and bought a sod-farm that is many miles away from town in the event that some day they need that water. If they do they'll dry up the sod farm and pump the water into Tooele. So that's happening all over the West. Salt Lake City has a tremendous amount of water compared with Las Vegas. We have water that we're not yet using in Salt Lake City and if we need more we still have Colorado River water, we have Bear River water and we have underground water that is not being used. Salt Lake is so blessed compared to Las Vegas. They are not even comparable because Salt Lake City has so much more water. St. George is comparable to Las Vegas because they have reached out and they have developed most of the agriculture water in their area and they're now working on conservation and with their current growth rates, in about fifteen years they'll be out of water so they need the Lake Powell pipe-line. Fortunately Utah has an undeveloped pool of water in Lake Powell that can be used and so it was actually Larry Anderson our just retired Division of Water Resources Director who came up with that idea some years ago and they first thought, why would we ever want to do that? And as they gave it more thought it started to make sense just as the idea of Southern Nevada is starting to make sense to them to go up through the center of the state and look for water there.

Interviewer: What do you think is going to happen over the next ten or twenty years?

Michael Styler: You've looked at the future and it's there. In Las Vegas's case, water is more important than money and it will be the case, I believe, in Washington County as well. Fortunately we have a pool of water for Washington County, but Las Vegas will probably be looking at some desalinization. They're already building some dams in Southern California to capture what is now almost wastewater that they can use and they're spending millions of dollars to catch a small amount of water that is turned down the Colorado River. That's just on the hope that they can use that water and transfer it out of the Colorado River, which they have reached an agreement for California to do. Yes, desalinization and other more expensive means of developing water will be used.

Interviewer: What do you think can be done to alleviate the rancher's fears especially with the trust issue with the Southern Nevada Water Authority? I guess from the Utah angle.

Michael Styler: I think what we could tell them... Governor Huntsman went out and visited with them, which is really unprecedented. He went out and listened and had a town meeting and heard their concerns and he told them that we will not allow Utah water rights to be taken in this process. In every conversation we've had since, he tells me to look out for those people's water rights. I guess the only comfort that we could give the folks out there who are my friends and neighbors, is that we will not give up. We will be concerned for their water rights and we will protect them every way we can.



Alan H. Welch, Ph.D.
Hydrologist
United States Geological Survey

This interview has not been edited for content.

Alan H. Welch: To understand the role of the USGS within this process, it's perhaps important to understand the role of the USGS in general. We're an independent fact-finding and reporting agency. We don't have policy or management responsibilities and as such we will evaluate impacts of human or natural phenomenon, but we don't then make recommendations as to what a particular action should or is recommended to be. So within this process we're conducting a study that was mandated by congress to look at a particular part of the country with the intent of coming up with an integrated look at the hydrology of this particular part of the country. USGS role in this process is as an independent fact-finding agency. We have no responsibility for management or policy recommendations. We provide information that other agencies can use to make decisions. Within this particular issue the survey is conducting a study of a part of Eastern Nevada and an adjacent part of Utah to understand the hydrology of that part of the country.

Interviewer: What is known about that hydrology at this point. Tell me a little bit about the aquifer itself. How was it discovered and what is the history of it?

Alan H. Welch: That part of the country has undergone hydrological studies for over a hundred years. We've understood for a long time that groundwater within this basin system travels considerable distances and we see large warm springs that are issue from recharge that occurred in mountain blocks tens to hundreds of miles removed from where the water is really discharging. This part of the world has had relatively little stress on it, by which I mean, very little pumping and so we know quite a bit about this system but that understanding is limited because the stresses on the system so far have been quite limited. The recharge occurs both in the mountain blocks as well as where the geology results in flow off of the mountain blocks into the valleys where it recharges into the sediments that lie within the basins themselves. We're conducting as part of the BARCASS Study a modeling effort to describe the distribution both in time and space of recharge, to the overall aquifer system.

Interviewer: Tell me what BARCUSS is and the potential for BARCASS?

Alan H. Welch: BARCUS, which stands for Basin and Range Carbonate Aquifer Study System, is a study that was mandated by congress to describe in a consistent fashion the hydrology of White Pine and adjacent areas in Eastern Nevada. The study is a finite three-year study. There are currently discussions to look at additional areas using the same methodology as we're using in this study as well as to take what we've learned from this study and move on to producing a calibrated groundwater model, which is something that can be used to evaluate potential impacts due to development of the resource.

Interviewer: Explain what an aquifer is and the size of this one.

Alan H. Welch: An aquifer is composed of earth materials that transmit water. Within this part of the world, we have what we think of as two different aquifer systems. They interact, but consist of sediments, which partially fill basins, which can have depths up to and exceeding five to ten thousand feet thick. Beneath those, as well as within the mountain blocks, are bedrock aquifers, which primarily consist of carbonate rocks, which were formed several hundred million years ago and are now transmitting water over large distances. The carbonate aquifer has a thickness in excess of 10,000 feet, so we see a very large aquifer system which has a bedrock underlying a variety of basin fill aquifers which are exploited both for municipal as well as agricultural use.

Interview: So what happens if an aquifer, or groundwater in this case is pumped too much and what would alleviate the fears of the ranchers here that that would not happen (from a scientific standpoint)?

Alan H. Welch: From a scientific standpoint, if you pump an aquifer, the water table will drop and that lowering of the water table will diminish the amount of evapotranspiration, which is the amount of water that is lost from plant growth as well as evaporation from open water surfaces as well as the soil. So as that pumping occurs, evapotranspiration declines in equilibrium, then we come to a system where the amount of groundwater that is pumped is equal to that which is then less from evapotranspiration over time.

Interviewer: What can be done to alleviate the rancher's fears on over-pumping?

Alan H. Welch: What we can do with groundwater flow models is predict what the response in water level as well as spring flow would be both in space and time given a particular pumping scenario, so by understanding that then people with water rights or other interests can then decide whether that is an acceptable or unacceptable impact on the environment.

Interviewer: How would the pumping of this aquifer effect the National Parks and Fish Springs National Wildlife refuge?

Alan H. Welch: The real question in terms of understanding impacts on places like the Great Basin National Park and Wildlife Refuge is the amount as where the water is pumped. There may very well be places where the impacts of pumping may be minimal or something that would occur only over a very large time scale so the place that one diverts water as well as the volume is key to understanding what the impacts are going to be.

Interviewer: How was this large carbonic aquifer discovered?

Alan H. Welch: A carbonate aquifer was really recognized as something that is transmitting water over large distances well in the past, over 50 years ago. It has been largely understood from looking at flows from springs that there have been a limited number of wells drilled for water supply and there are a fair number of wells that have been drilled for oil and gas exploration that we do use to help us understand the properties of the aquifer.

Interviewer: Tell me again what the acronym stands for.

Alan H. Welch: The BARCASS Project, which stands for Basin and Range Carbonate Aquifer System Study, is a study of the hydrology of White Pine and adjacent areas. It's a description of the hydrology of the area, but does not include an attempt to look at impacts from future development.

Interviewer: Talk about the concerns of the ranchers.

Alan H. Welch: It is well-known that if we develop an aquifer, by which I mean if we increase the pumping from the aquifer, will draw lower water levels as well as potentially dry up springs. We have many examples, both within this study area, as well as many other places in the world that this has occurred. The question is not whether there will be impacts--it's whether or not those impacts will

adversely affect aquifers that are used by current water users. So we know there will be impacts. We just don't know whether those will be acceptable impacts. From a science standpoint what we can do is provide information as to what the response would be given different pumping locations and pumping volumes and provide answers as to what the timing and extent of those impacts would be, but we cannot prevent those impacts from happening. All we can do is provide a basis to make decisions from predicted impacts.

Interviewer: What happens to that groundwater table if it's pumped and is lowered even ten feet?

Alan H. Welch: When you develop an aquifer, like pumping from wells that can have several different impacts--one is on spring flow. By lowering the water table you are preventing that water from issuing from the surface so springs can and do dry up in response to development of aquifers. The second thing that can happen is that by lowering the water table, vegetation that relies on shallow groundwater no longer will have that water and there will be a change in the vegetation type as a result.

Interviewer: The ranchers are obviously worried about the groundwater pumping. Are these legitimate concerns from a scientific standpoint?

Alan H. Welch: From a science standpoint the impact on pumping on current water users, including people who are using water for agriculture, is a legitimate concern from a standpoint that it is quite possible that water tables will decline and limit their spring flow as well as requiring greater pumping depths. Whether that will occur is dependent on where pumping is taking place, the volume and length of that pumping. So it's very much dependent on the details of where and what is going to happen and what will and will not be impacted. There may very well be places where there will be minimal impact on any water users, but until we're able to scientifically study it using things like groundwater flow models, we can't make those predictions. When you pump an aquifer two things will happen—one is that you will initially have a water level at a particular depth, perhaps very near the surface. As you pump that water table will decline and vegetation that depends on that water, where it's very shallow, will no longer be able to use that water. Also if you have a water table that comes out at the surface and is expressed as a spring, that spring flow can then diminish because we're dropping the water table and then that water can no longer reach the earth's surface and discharge.



Margo Wheeler
Director of Planning and Development
Las Vegas, Nevada

This interview has not been edited for content.

Interviewer: What's the biggest misconception about growth in Las Vegas?

Margo Wheeler: Growth in Las Vegas is a conscious-level decision by the elected officials not only in the city of Las Vegas but really in all of Southern Nevada. In the creation of cities, the purpose of doing so is to have local control and in these cities the local elected officials have chosen to champion growth and that is something that we wish to see happen, we wish to have continuing and we wish to do so in a rational, logical way that we provide the infrastructure necessary to go forward with the growth we want and expect.

Interviewer: How do you answer the critics who look at Las Vegas as a sprawl?

Margo Wheeler: Sprawl is certainly an issue that many communities deal with and it's the utilization of land. Land is a commodity whose utilization must be decided by again the elected officials within the local jurisdiction whether it be the city or the county. Local control is what allows these elected officials to decide whether growth will occur and where it does occur. In the Las Vegas Valley we are constricted by the valley itself. There are limitations of federal land, mountains and rivers eventually to the south, and our notion is to do the best utilization of growth within the valley and to allow growth to continue but to do so in a fashion that is well addressed by the infrastructure.

Interviewer: What is your plan for future growth? What do you see for the next ten to twenty years?

Margo Wheeler: In the Las Vegas Valley we do see a continuation of the growth, maybe not as fast as it has been, but within the area of Southern Nevada to the restrictions of red rock to the west and the Indian reservation to the north, and again the mountains to the east, we believe that filling in this valley, doing it at an appropriate density and creating a major metropolitan area, one of the largest and most important in the country, is our goal and generally we are unapologetic about that.

Interviewer: Obviously this area is booming in terms of population growth. How do you plan for that kind of growth?

Margo Wheeler: Planning for growth is something that must be coordinating between all of the public entities—the cities and the counties and also the school district, it's the water district, it's the power companies. All of those agencies must cooperate and work together. Here in Nevada we have the Southern Nevada Regional Planning Coalition. We meet monthly, both at the planning director level or city managers or appointed elected officials. We met just yesterday, and all of those agencies are involved—the cities, the county, the school district, Nevada Power, the RTC (our transportation commission). We all meet together and plan in a consolidated fashion so when there is growth in one area, not only are the cities aware of it but so are the utilities in the school district that serve the population that is here and is growing.

Interviewer: Is there land for this future growth? Where will this land come from and how will it be acquired?

Margo Wheeler: The State of Nevada is still held, primarily by the Federal Government and I believe it's still somewhere around 80% of the land is still held by the Department of Interior, Bureau of Land Management. The local agencies nominate land that is located approximate to existing development and the developers are interested in, and then it is auctioned off as is reported in the press, those developers bid on the land to develop that land. The plan for that land is done before that auction occurs so that in the case of the city where I work, about which I can speak, we already said what type of development and how we wanted to develop, the protection of the ororios(?), where there street system and transportation system would be, and we had that plan in place prior to that land being made available for auction to private developers.

Interviewer: What is the future of the city in terms of growth? What do you think is going to happen?

Margo Wheeler: I like to think that as a city and region that matures, which we are—we are not at the point of maturation, we will continue to have density come into the core. We have 20,000 units to be developed in the downtown area. To bring density into the downtown is crucial in a maturing area and that's something that we're terribly excited about. We want to see a population growth here that is as dense as is necessary to support a public transportation system. We want to provide a variety housing types whether it's inner city urban or the wonderful suburban areas we have in the mountain areas where we still have protected areas of equestrian trails and horse parks that are still part of our planning area. We want to provide housing for all types of different markets and we're still affordable compared with many other urban areas where the blue-collar workers can still buy a single family home generally in most neighborhoods that they want to live in. I'm from California and I know that certainly can't be done there and that's what we want to create here.

Interviewer: Is this growth overwhelming the lifestyle, in your opinion, as to why people move here? Do they move here for this type of lifestyle and is the growth inhibiting that at all?

Margo Wheeler: I don't believe so. I think newcomers to this area still can appreciate the difference from the areas that they're from. Our density is still so much less so far as the traffic and commute times. You can get from one end of this valley to the other in a matter of minutes. There are neighborhoods, wonderful old neighborhoods a mile from downtown, which you won't find in a lot of older cities. We are at the stage of maturation now but we have not had to go through the decay that often occurs where you have a downtown or the periphery to downtown that has substantially declined and has to be rebuilt, painstakingly over decades. We haven't had that decline so we have the opportunity to become more dense, more mature and do so with existing wonderful neighborhoods in the same area.

Penny Woods
Bureau of Land Management
Nevada State Office

This interview has not been edited for content.

Interviewer: Lets start out by talking about the role of the BLM in this process.

Penny Woods: The role of the BLM is to process the right-of-way application that Southern Nevada Water Authority presented to us in 2004. Our role is to do an E.I.S. (Environmental Impact Statement) in order to assess the impacts of this pipeline and the wells and all the pertinent facilities to decide whether the right-of-way should be granted.

Interviewer: What's the purpose of the E.I.S.?

Penny Woods: The E.I.S. will assess all impacts and this would be scientific impacts or environmental impacts and also social and economic impacts of the pipeline to the communities, to the lands.

Interviewer: How is this research collected? Who is responsible for the research?

Penny Woods: Essentially BLM will be responsible for the research but we collect it from a number of sources and some of our sister agencies will be helping us hand in hand, USGS is one. The company has been collecting data for a number of years and they will be turning their research over to us and we will assess it to see if it's acceptable to us. We have scientists on our staff.

Interviewer: Lets talk about the pipeline itself. How does building of the pipeline relate to the E.I.S. and what kind of criteria will you look at as far as building this pipeline?

Penny Woods: It's the NEPA process, the National Environmental Policy Act, and that requires us to write an E.I.S. on this pipeline and all the wells and all of the other facilities. We will assess whether some of the normal things like the digging of the trench and what that will do to the lands and can we mitigate it and also some of the other more diverse ideas like the wells. Will the drilling of the wells affect the water sources that already exist on the surface of the land right now?

Interviewer: Talk about the timetable. What kind of time frame are we looking at for this E.I.S.? How does this process work in terms of time?

Penny Woods: The time frames that we are working on are... there is a several step process and we go through scoping, which is where we go out into the public and ask their opinions. We do the draft E.I.S. and then the final E.I.S. and then we render a decision. Right now we've done scoping but the company is reassessing their proposal so what we need to do now is go back out into the public and find out if there is anything new and then the ultimate time frame that I'm working with right now is the end of 2008.

Interviewer: Tell me how you work with Hugh Ricci, the Nevada State Engineer. What is the process between the BLM and the Nevada State Engineer?

Penny Woods: We don't really overlap. What happens in the State Engineer renders decisions on how much water he is going to grant these and then we're responsible for the granting of the rights to use the land. Once he grants a water right to a certain amount of water, then the proponent will come in and ask us for a right of way to drill wells and put pipelines in.

Interviewer: How do you work with the ranchers on their concerns? You mentioned for example, that you were going to meet with Dean Baker. What does the BLM do with these rancher concerns?

Penny Woods: We have a local office and also we interface with the ranchers concerns through scoping and then we meet with them off and on throughout the process. We do make a real effort to incorporate their concerns into the draft E.I.S.

Interviewer: What is scoping?

Penny Woods: Scoping is collecting information on what issues we need to concern ourselves with in the E.I.S.

Interviewer: Why don't you tell me again about scoping? When you're talking to the ranchers about alleviating their concerns, how does the BLM go about doing that?

Penny Woods: Well it's a lot of discussions. We talk to the ranchers a lot, and everybody else. The environmental community also has concerns. The communities do. There is an inordinate amount of people that are concerned about this project and we're making a real attempt to talking to them all to make sure that we have collected all of the information from them. A number of the people talk to us about how much they don't know about the project so we're making a real effort to clarify the proposal

and get as much information as necessary.

Interviewer: If this E.I.S. comes up with a negative response, what is the protocol at that point? If you go through this process, for example with the pipeline, and the E.I.S. says that there would be impacts, either environmental or otherwise, what is the process at that point?

Penny Woods: As part of the E.I.S. process we do make proposals for mitigation and monitoring and one of the things that we will be doing in this process is working with our other D.O.I. (Department of Interior) agencies and try to come up with a good proposal to mitigate whatever impacts arise from this. So we do a number of alternatives, a range of alternatives that the decision maker can look at to render a decision.

Interviewer: Penny we were talking about the future of how this issue might be resolved and you were talking about some of the legal ramifications and the protocol of that. What do you think is going to happen here in the future?

Penny Woods: I do believe that as Lincoln County had a land act in 2004 that defined the corridor for water pipelines, I do believe it will go north and White Pine County will also have their own land act to establish wilderness, define recreation and also perhaps to define water issues.