5th Annual Anne J. Schneider Memorial Lecture (April 2016)

FEATURING:
Honored Lecturer: *Pat Mulroy, Retired General Manager, Southern Nevada Water Authority*
In conversation with: *Jeff Kightlinger, General Manager, Metropolitan Water District*

Introductory remarks by: *Art Baggett, former Chair, California State Water Resources Control Board*
Welcome by: *Jennifer Bowles, Executive Director, Water Education Foundation*

WELCOME BY JENNIFER BOWLES, EXECUTIVE DIRECTOR, WATER EDUCATION FOUNDATION:

Welcome everybody. Welcome to the fifth annual Anne Schneider Lecture, a series of water law and policy lectures. We're going to honor our good friend and water attorney, Anne Schneider.

My name is Jennifer Bowles. I'm the executive director of the Water Education Foundation. The Foundation is sort of your host this evening along with members of the steering committee of the Anne Schneider Fund.

The Foundation is proud to work with the steering committee made up of a number of well-respected water leaders whose names are listed in your program and displayed on the PowerPoint as you guys walked in – to develop this lecture series and fund the scholarship and other educational endeavors in Anne's name.

I am particularly happy to be part of a program dedicated to Anne's memory as she was the first woman lawyer to receive, in 2006, the lifetime achievement award from the Water Education Foundation.

Back then the Foundation's executive director, Rita Schmidt Sudman, who is in the audience tonight up front, chose to honor Anne because she was a problem-solver rather than just a litigator, and she had the skills to bring opponents together.

I'd like to thank those who gave major donations to the Anne Schneider Fund, and those who donated online to the Fund when registering. The donations will benefit scholarships to be given out by the Anne Schneider Fund. The fund benefits the California Water Law Symposium, a student-run annual law conference; the Fall River Conservancy, an organization preserving the lands, water, and cultural heritage of Northern California's Fall River Valley; the Straw Project, a watershed restoration project involving teachers and students in Marin, Sonoma, Solano, and Napa counties; Yolo County Ag and Food Alliance, an innovations network guiding local agricultural policy; also, Water for People, a nonprofit that helps people in developing countries by supporting the development of locally sustainable drinking resources, sanitation facilities, and hygiene education programs, and the Water Education Foundation's Water Leaders Program, a one-year program that aims to deepen knowledge of California water and instill leadership skills. In fact, Matthew Danielcyzk, who is the recipient of this year's Anne Schneider Fund scholarship, is in the audience tonight. Matthew, please stand so that we can embarrass you

(laughter). Matthew is the restoration manager for Audubon California and he carries out on farm restoration projects. He's one of 20 members in our 2016 Water Leaders class.

Now I would like to introduce Art Baggett, a fellow lawyer of Anne's and close friend so he can say a few words about her.

INTRODUCTORY REMARKS BY ART BAGGETT, FORMER CHAIR, STATE WATER RESOURCES CONTROL BOARD:
A couple of weeks ago, a really long-time and close friend of mine and Anne's, Bob Schneider, and I did a back-country ski trip up to Yosemite, and it was fitting that Bob was skiing in Anne's old K2 tele skis. She was definitely with us in spirit.

Anne was a very strong advocate for Yosemite, wild places, and for free-flowing wild trout streams.

Anne was a well-respected expert on the law of the Colorado River, on groundwater, riparian law. She was a mentor to many of us in this room and a good friend to us.

She was a very proud mother of Charlie and Logan. Charlie is here. I would love to expound on her greatest adventures and artwork and cinematography; she had many interests.

And she was a sister and close to her brother, Billy, and her sister, Maggie.

Anne loved spirited discussions. She also, as noted, could find creative solutions to even the most intractable water and natural resources feuds via trying to reintroduce bighorn sheep to Yosemite or dealing with the complexities of the Klamath River.

She would really enjoy this series of lectures and discussion today, particularly – no doubt she would have many insightful questions for Pat and for Jeff later.

JENNIFER BOWLES:
This lecture series has hosted esteemed lectures these previous four years. Beginning with Justice Ron Robie of the Third District Court of Appeal, who I believe is here tonight; the late Joe Sax of Berkeley Law and one-time counselor to the Secretary of the Interior; Buzz Thompson of Stanford Law; and Dan Dooley, a distinguished policy leader.

This year is no different. I would like to introduce Jeff Kightlinger. He has been the General Manager of Metropolitan Water District for the past 10 years.

As a journalist in Southern California, I interviewed him and Pat several times. So hopefully they forgive me by now, for some of those stories.

I would like to introduce, Jeff Kightlinger.

JEFF KIGHTLINGER, GENERAL MANAGER, METROPOLITAN WATER DISTRICT
Thanks, Jennifer. Really briefly – the way we're going to do this – what I am going to do is introduce Pat – she'll come up here, she's going to give a talk; we're going to sit down. I'm going to start off the conversation with a couple of questions, and then we're going to look for questions from the audience.

I've known Pat, getting close to 20 years. She is a good friend. But I got to know her in the beginning when we were doing some quantification settlement agreement negotiations. I was representing Metropolitan. She was the General Manager of Southern Nevada Water Authority.

And her quote after I took some hard-liner positions was to the press: "Metropolitan is undoubtedly the most arrogant organization." (laughter)

And even though that's probably pretty accurate, it still didn't feel very good. But we ended up becoming terrific friends.

We actually – I think our two agencies – have become incredibly close in the time we got to work together, and Southern Nevada and Metropolitan have all sorts of incredibly creative programs and exchanges – exchanging water and money and all sorts of interesting exchanges on the Colorado River that have become a trademark of how we have cooperation among the urban agencies on the Colorado River when we used to spend all our time trying to see who can beat who to get to the Supreme Court to sue each other. It's been a great model working with Pat. One of the amazing things, too, is throughout the entire time you have dealt with anything that has to do with water law, you are generally dealing with a very male-oriented field. If you're dealing with the Colorado River, it's that way in spades. Pat was often the only lady in the room and was the toughest negotiator of everybody involved, and I think that's very important because Ann Schneider was also an incredibly gifted lady in water law.

So with that, we're going to bring Pat up. Pat, why don't you come on up?

PATRICIA MULROY, FEATURED SPEAKER
RETIRED GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY

PAT MULROY:
Don't let this man fool you. There are few tougher negotiators in the water world than Mr. Kightlinger over here – he can drive you to frustration (laughter) – just needed to be said – but that's what makes him fabulous.

I want to thank the Foundation and say thank you to all of you for inviting me. It's an incredible honor and privilege to be here and to be able to address you today. I was looking at the pictures of Anne as I was sitting in the back waiting for this to start and thought, what an incredible woman. She, too, was one of few women in a heavily male-dominated business, and she's an amazing person and really left her mark in an industry that is very tough to penetrate. So I think that honoring her every year and supporting her cause is something that really speaks highly of the Foundation and of the work you do.

"Gentlemen! You are piling up a heritage of conflict and litigation over water rights for there is not sufficient water to supply the land."

Those words were spoken in 1883 by John Wesley Powell as he addressed a convention of irrigators here in the western United States. How prophetic his words were. In 1883, we had very little understanding of what the flows of this river really were. We had even less understanding of the incredible changes in the climate that were going to be happening over the course of the next hundred years, which we finally came to realize as we enter into this century.

And I want to talk about the Colorado River today but talk about it in a different way.

Sitting here in Sacramento, it's probably very, very difficult for you to imagine that you are inextricably linked to what happens to the Colorado River. That the Bay-Delta system and the Colorado River system have been wed together, and they will not be separated.

I'm going to lay that out for you both through plumbing and through geography and then talk about the journey that's been going on in the Colorado River over the course of the 20th century to where it is today, and the transformations that have happened in human thinking around how to manage this sparse river.

The lessons that are being learned and have been learned on this river system are ones that are easily transferrable to many river systems around the world and to all of us who are wedded to this system in our local supply arenas. I have the great fortune now of being on the World Economic Forum on the Global Agenda Council for Water, and knowing the struggles that are going on around the world in shared river systems, and some of the bizarre behaviors that these challenges are evoking makes me all that much more proud to have been able to have been a part to watch some amazing people make some amazing transformations in how our river is managed.

But let's just talk about the general geography of the Colorado just for a minute. I'm just going to assume, and Rita [addressing Rita Schmidt Sudman, former Executive Director of the Water Education Foundation, who is in the audience], just don't even listen, okay? Just don't listen.

It is a river that is 1,400 miles long and has a natural square drainage of 250,000 square-miles.

Now compare that to the Mississippi, which is 2,320 miles long and has a drainage area of 1,151,000 square-miles.

But despite this relatively meager stream, it supports 40 million people, 20 native tribes, 5 million acres of farmland, environmental and recreational assets of a dozen national parks, 4,200 megawatts of hydroelectric generation, and cumulatively represents the fifth-largest economy in the world. That's the part where the interconnections start.

Now that, in some ways, was the natural hydrograph, but it also began to point to the artificial hydrograph that we have built over a century.

I put this map up – I found it online – and it probably, most poignantly shows what this basin really supports [refers to map in PowerPoint presentation].

Let's start at the very top in the state of Wyoming. Not much, but some of the water of the Colorado River watershed leaves and goes to Cheyenne.

Come down to Colorado: There are aqueducts that cross the continental divide, taking water from the west slope because we all know that the Rocky Mountains are the continental divide – all rivers on the eastern side flow into the Midwest – Kansas, Nebraska, and on further east. And on the west side, it flows into the Colorado River and streams adjacent to the river.

And in Colorado, the Front Range needed water. So the plumbing was changed. And water from the west slope of the Colorado is moved out of the Colorado River Basin to the Front Range, into the Kansas-Nebraska watershed.

Go across the river to Utah. Hundreds of miles of the Central Utah Project carry water from the Colorado River to the Wasatch Front, to Salt Lake, Provo and other urban areas in that state.

Come down to New Mexico. Water leaves the Colorado River watershed on the San Juan, because that's how the upper basin takes the Colorado River water, and moves down to Albuquerque, into the real watershed – ultimately forming the boundary between Texas and the country of Mexico.

Then we come down to the lower basin and in Arizona over 300 miles of the Central Arizona Project carry water from Lake Havasu to all the central cities of Arizona – Scottsdale, Mesa, even down to Tucson.

Most of you probably know that Metropolitan's aqueduct serves 20 million people in Southern California, and the All-American Canal provides water to some of the richest farmland and most productive farmland in the United States.

Let it cross over into Mexico, where it is used both on the Baja and the Sonoran side. And a leg off the All-American actually takes water to Tijuana. This is not a natural watershed any longer.

We heard what John Wesley Powell said. But in our normal human belief that we can conquer everything – we did. We built one of the most amazing plumbing systems anywhere in the world with two of the largest reservoirs anywhere in the world.

And how did it all start?

Most people in the Colorado River Basin don't like Mr. Blythe, especially if they don't come from California. Mr. Blythe, in traditional Western water law, under the Homestead Act, as the West is being settled – stuck a stick in the Colorado River and claimed the entire river for the State of California.

Now, if you have any friends who emanate from Colorado, you can only imagine the reaction that caused in the upper reaches of this basin. Colorado prides itself that the origin of most of the major rivers of the United States – the Missouri, the Arkansas, the Platte, the Rio, the Colorado – all start in the State of Colorado. So, when after devastating floods, the talk around the river basins, especially around the lower reaches, was about building dams, the upper basin got very nervous.

Something had to happen. Some agreement had to be forged that overlaid Western water law of first in time and first in right.

No state that bordered the Colorado River or one of its tributaries was willing to give up its future for the sake of California.

Hence began the discussions around the compact.

Now, I have heard speech after speech, and it doesn't matter which state I'm in, it's nuanced a little differently, but at the end of the day, each of the seven states got screwed in that process. [laughter]

Nobody won. One valuable lesson that I learned from a very old lawyer a long time ago – a deal that no one likes has to be good. If all the parties are unhappy with the deal, then somebody did something right.

I'm not going to talk about the nuances or the legal ins and outs of the compact. I want you to think about it differently.

It took a concept of an agreement between seven states under a tool allowed under federal law, which is a compact – approved by seven legislatures, signed by seven governors, approved by Congress, and signed by the President. Everybody's in, and it changed first in time, first in right for this river system amongst the states.

It said: We are an equal partnership. Every one of us has equal right to a future. Every one of us has equal right to waters that we share. We set aside first in time, first in right because in the interest of all, we are going to share this system.

What happened between that concept in 1922, and where we are today, has been a performance of – beginning in Act One with – well, we're going to find a way to get around it; we're going to find a way to make this more advantageous for ourselves – said by all seven states; to one where we recognize that didn't get us very far – to a new era of partnership – and now, a whole new approach to drought management.

But in that partnership, we divided this river in half. And we said: The four upper basin states from where most of the water in this system comes – will constitute the upper basin. The three lower basin states – Nevada, Arizona, California – will be the users of the main stem and have very little that they contribute to the system but probably have some of the greatest needs for the water – they're the lower basin.

So, that's seven-and-a-half and seven-and-a-half based on hydrology – the best science had at the time way overstated what the flows of the river were, but it's irrelevant. It was an equal division. Down the lower basin, the three states, through a painful process, ended up with hard allocations. The upper basin realized early on that they were vulnerable, and that they, in drought times, would take the first hit.

Today, go up to the upper basin, and there isn't a water conference around the Colorado where the upper basin's representatives don't talk about being the beneficiaries of the hydrologic leftovers.

They didn't divide according to hard numbers – they divided based on percentages.

Not that today they have any idea how they are going to apply those percentages, but the concept is great. We're going to divide the water amongst percentages because we in the Compact agreed that we guaranteed we would send 75 million acre feet over ten years to the lower basin states. We would not withhold the water. We would not hoard the water.

In the event that that ten-year obligation is not met, the compact says that the lower basin can call – issue a call; that means the upper basin, assuming all water is in use, has to cut back its use until it makes its Compact delivery obligation.

The plight of the upper basin becomes even more pronounced when in 1944, the United States signs a treaty with Mexico and guarantees it 1.5 million acre feet annually; the obligation to be shared equally with the upper and lower basins.

The burden that the upper basin feels and the strain that they feel on their water, and their ability to use their water – you can only imagine when you have those kinds of delivery obligations.

Fortunately, Wyoming uses very little of its Colorado River water. Colorado is getting a little closer as Utah succeeds in building a pipeline from Lake Powell into St. George. They will probably be at their Compact maximum. And New Mexico has reached its threshold on its allocation.

The uses are getting higher. Denver grows. Albuquerque grows. Salt Lake City grows. Communities all over the upper basin are growing.

So in the sixties when we wanted – in 1928, when the Boulder Canyon Project Act was signed, and Hoover Dam was authorized, and we began to build dams – the mother of all dams – in order to provide flood control and water supply in the lower basin, the upper basin started getting nervous again. And the upper basin said: "Wait a minute. We need another reservoir on this system that is our savings account. We know this river is going to run wet, and we know this river is going to run dry. So we want a reservoir that we can take water from, during those drought times, in order to meet our downstream regulation." Hence Glen Canyon – hence Lake Powell.

During the course of the sixties and seventies, our dear friends in the state of Arizona got mischievous. And don't get me wrong, I love them dearly. I can, at times, understand where they were coming from.

In the upper basin, most of the water is taken from tributaries – so tributary use equals Colorado River use in the upper basin. However, the State of Arizona decided that the Gila River – because in those days, only what happened north of the border, and this is pre-wall – only north of the border mattered. And so since the Gila River comes in right when the river enters Mexico, and doesn't benefit anybody really in the continental United States, their theory was, even though the Gila is a tributary, they should be able to use water in the Gila River while, at the same time, taking their allocation, in total, from the main stem of the Colorado.

That resulted in an ugly litigation between Arizona and California. And much to California's chagrin, Arizona prevailed. So think about this. We have a river where the rules around tributary use are different in the upper basin than they are in the lower basin. Because we couldn't figure out a way to get along, the Supreme Court gave us a great gift: we now have the federal government as our water master. [laughter] Had we never gone to court, we never would have ended up with the federal government enjoying the role that it does in the lower basin because it does not enjoy that role in the upper basin.

Even though Arizona won, and a month or so ago, I was in Arizona – much to the chagrin of the good folks of Phoenix where I was speaking – they didn't like hearing it – because in truth of fact, they won the lawsuit, and yet they lost. Because as any loser does in litigation, they look for the very first opportunity to right the wrong. And California, with its enormous population, commanded quite a congressional delegation. So when the funding for the Southern Arizona Project worked its way through Congress, guess what? You guys forced its total subordination to all water use to the State of California, by act of Congress. There is no single driver in the State of Arizona – politically, in the water world, and amongst water managers as fiercely worried about as that one premise – that Arizona has to take the whole brunt of any shortage.

So did they really win? No, they didn't. They spent a ton of money. At one point, they even sent their navy … now why Arizona has a navy, I don't get that. [laughter] But they sent their navy to go to war with Imperial and the vast State of California to protect their water. And yet at the end of the day, the playing field was level again even though they now stand to lose one-and-a-half million acre feet of water. All the water that Phoenix, Scottsdale, Mesa, Tucson rely on. An urban area – over 6 million in population now – depended on the Central Arizona Project, and yet because of their own belief that they could game the system – now is vulnerable in times of drought.

We got to the 1990s, having suffered victories, having suffered losses, and coming up against the completion of the Central Arizona Project, with Arizona beginning to take its full allocation. And Nevada going on a growth spurt – now, we're so small – we're hydrologically insignificant. [laughter] But don't tell anybody in Nevada.

Nevada was growing 17 percent per year in its water use starting in '87. It was off the charts. And if there's one thing that can't happen on this river, that's for the system to break down to a

point where one state can't access any more water. It's 90 percent of southern Nevada's water supply. The little bit of groundwater that exists in this Mojave Desert community is negligible. And I promise you – two to four inches of rain that fall one to two days every year aren't going to make a difference. You can put all the rain barrels you want out. People often say to me: "Why don't we put out rain barrels for our customers?" I said: "Fine, I'll go to Walmart, I'll buy everyone a thimble [laughter]. You can put it out in your yard." That's about as effective as it would be.

In the nineties, however, we began to realize that this kind of a relationship was not going to work. And we began to talk – these were the years of plenty. Shortage was something that none of us imagined. Oh sure, there will be a drought year here or a drought year there. The upper basin may have to make some tweaks. But with all the storage in those two reservoirs, there was no way it was ever going to affect us. We sat at the table for seven years – arguing about the shape of the table – who could be in the discussions, who couldn't be at the discussions. And we talked about surplus, and why? California had to go on a water diet.

California had been using Nevada's unused water and Arizona's unused water – every year – and they could. But these two states were going to start using it. And by now, they were well over 5 million acre-feet in annual use. Way above their 4.4 million, which was their allocation in their entitlement? This was where California's intersection with the Colorado River begins.

It was in these discussions, while Californians were arguing over quantification, that the rest of us in the basin really began to take a hard look at California's plumbing.

See the California Aqueduct coming down from the Bay Delta – Southern California gets water from two sources – it gets it from the Aqueduct, and it gets it from the Colorado. If one isn't working, the pressure on the other goes up.

The conversations in those days for Californians were it was going to strain the Bay-Delta because Met [referring to Metropolitan Water District] was going to have to go on an impossible crash diet. It was not feasible, because Met under California's internal priority system was at the end of the food chain. It was not feasible for them to cut that much use, in that short period of time, which could be a year.

Arizona had started a state groundwater banking authority. Any water they weren't going to deliver to a customer, just to tweak California, they were going to stick in the ground. Recharge their groundwater basins. It's a noble cause. And so they weren't accused of hoarding, they made it available to Nevada and California if water were available and unsubscribed for by their own users within the state.

However, the net for California was still the same. The water was going to leave Lake Havasu on the east side and not be available to be taken through Metropolitan's aqueduct on the west side.

During that time as we were arguing over – the other six states got into the quantification settlement up to their eyeballs – because California had to right its water house in order for the rest of the river to move forward and survive.

One year I spent more time in Sacramento than I did in Carson City. It was an amazing, eye-opening experience for all of us; that the internal plumbing within California was of that much importance to people in Cheyenne – to people in Denver – to people in Salt Lake.

But we worked our way through it. And in 2000, as his final act before he left as Secretary of the Interior, Bruce Babbitt signed the Interim Surplus Guidelines.

Now as ludicrous as an Interim Surplus Guideline sounds, in this day and age, in this era of drought, it was an enormous breakthrough of the relationships among the states.

And had we not gone through this exercise, we never would have been able to enter into some of the toughest discussions I've ever had around shortages – because the minute the ink dried on the document, the drought began. The drought that is still ongoing today. So the principles that were the building blocks of the surplus agreement became the underpinnings – and the relationships became the underpinnings – for the shortage agreement.

Now Met was laudable, because if we're talking about drought – we were going to see dry years in the Sierra. Imagine a double whammy – nothing on the Colorado and nothing in the Sierra. That's a nightmare for one of the world's largest economies and 20 million of your neighbors.

As we worked our way through the shortage agreement, as we had our bickering and our battles, we began to realize something fundamental – everyone had a responsibility. The discussions around rights were coming to an end. And the larger discussions around responsibility began to emerge.

We in the lower basin had to start taking shortages early in order to relieve that delivery obligation to the upper basin. We wanted Powell and Mead re-balanced. There was an arcane formula in existence that today I do not understand – on how water left Powell and came to me.

Today it is a much more simple approach – not that Bureau of Reclamation engineers can ever do anything simply – but in relative terms, even for us non-engineers, it was understandable. Essentially the two reservoirs are to be balanced. So if in dry years the upper basin is hit hard and Powell crashes, less goes to Lake Mead – that would have never happened before.

My friends in Arizona had banners made that said "8.23." And they would literally sit in the room and you'd start talking about shortages, and they would raise the banner and not say a word. That meant they wanted to see 8.23 million acre-feet leaving Powell coming to Lake Mead every single year. Why? Because Arizona was the most vulnerable to shortages. That is, the 75 million over 10 years – 7.5 – plus the Mexican duty. But we got through it. And all of sudden – think about what that did – Lake Mead now is going to go – as it starts dropping – and it's over 140 feet down – as it starts dropping, we're going to take shortages early so that the system doesn't crash.

What has been standard drought management in the West – we use our water in good years – if we go into drought, we go into draconian drought planning; we take draconian measures, we

weather through those couple of bad years; we heave a big sigh of relief when it snows or rains; and we go right back to what we did before.

We never say that drought and the effects of climate change are getting worse. What is it we can do to slow down a collapse of the entire water system?

One of my favorite conversations these days is with your dear neighbors down in the desert of southern California and in the farm areas of Imperial and Palo Verde. Because of the lawsuit in the Supreme Court, they were give a prior protected right. That piece of paper isn't worth the paper it's written on. Because when Lake Mead drops below elevation 900 – not a drop goes downstream. And you can have that paper right – I don't care what you do with it – wallpaper your wall with it; that's about as much value that it's got. So the artificial notion that I have this senior water right and it's going to protect in this world of a changed climate is ludicrous. It's not going to do you any good.

So coming out of 2007, these states – all of us – sent a letter to Interior – and we said to then Secretary Kempthorne – Mexico has to be a part of the solution. They are not on Mars. They are a Colorado River water user, and they have to be a part of the solution.

To avoid a diplomatic confrontation that we can still be dancing around the mulberry bush on, the federal government had to let the states in the room, and twixt everybody – by 2012, an agreement between two countries that is being talked about around the world was able to be signed. The country of Mexico agreed that they would take shortages when we in the United States took shortages.

We in the United States said to Mexico: Mexico, you have no place to store water. We will allow you to use U.S. facilities – Lake Mead – to store water.

We agreed to flush-flow for an environmental experiment to see how the Delta would react. The environmental groups, the Environmental Defense Fund, The Nature Conservancy, Sonoran Institute played an enormous role in these discussions. It was an absolutely historic agreement and it took it to the next step, which is: everyone has a responsibility in this.

Now, I want to give you a snapshot of last year. We had all the successes; we've grown amongst ourselves as states; we're coming to a new understanding. And 2014 was a devastating year on the Colorado, and it was a devastating year here in the state of California. And in that year when Met [Metropolitan Water District] had no water off the Sierra, the water that it had been allowed to bank in Lake Mead that it had acquired through dry year options with farmers in Palos Verdes, through shared arrangements with its neighbors; it had to take the water out of Lake Mead at the same time the lake was going to see the most dastardly drought it had experienced ever. We were going to come up against shortage, but Met had no choice. It was losing half of its water supply. And I know there are those who say that you can just make it up through local supplies. That's balderdash. It's not going to happen, and it can't happen – it's not the way the plumbing system worked. Because – and I have given this speech time and time again over the course of the last two years – the Colorado River had to bear an additional burden because Met had to pull virtually everything it had stored in Lake Mead out – driving that lake down further. What was

playing itself out in California from our view on the river is the story of missed opportunities. The strident unwillingness to find common ground. The strident "just say no" attitude that was coming out of California.

And we're paying the price. We're paying the price on the Colorado.

Now, as the states begin to realize that the next chapter has to be written, they are doing something phenomenal. They have put out a pilot project that worked exceptionally well last year. The urban areas, CAP [Central Arizona Project], Met [Metropolitan Water Authority, and SNWA [Southern Nevada Water Authority], in partnership with the federal government, put their ratepayer and taxpayer money on the table to lease water for one year from willing farmers – mostly agricultural users – to leave that water in Lake Mead with no one's name on it. No one ever gets to take that water for their own use because the whole mindset has changed. We will preserve this system – not let the system crash – and every one of us has an obligation to preserve the system. We are all equally dependent on it. Our communities can't survive without it.

That kind of partnership – not the standard "We have a drought and it's his fault" – "We have a drought and let's find the nearest villain we can find" – the villain is probably the one we like the least – the one we in our own little universe find the most expendable. I can't tell you how many speeches I've heard about how we don't eat alfalfa. Well, do you drink milk? Do you eat beef? And much of it is going into a global food economy. A global food economy that by the World Economic Forum's estimates has to go up. Worldwide food production has to go up by 50 to 60 percent by 2030. Because the global population is exploding, and the food supplies aren't there, and what is there is being destroyed by natural disasters as a result of climate change. Populations are migrating. The disconnect in the global food chain is enormous. No one's a villain, and everybody has their own stake at the table. There is nothing more important to those of us in the Colorado River community than for there to be peace in California. There is nothing more important for the sake of any number of national parks, any number of tribes, any number of city dwellers, farmers, up and down the basin, than for California to finally set their guns down, stop the hyperbole, and find a logical, rational methodology on how to work with one another.

And it's kind of silly, if seven states, who have very disparate cultural roots, and no, Nevada did not start with Bugsy Siegel [laughter]; very disparate state roots; very disparate water laws – can find common ground. If the United States and Mexico could find common ground on a river, which they can't on the Rio (Grande) – it's not that it's impossible – it's what do we want it to be? Arizona fought very hard to win. They won the Supreme Court case, only to lose. Every winner, I tell them, I hope your fate doesn't turn around here in short order.

We are all in awe of California. The things that you accomplish, the economy that you enjoy, the vastness of agricultural produce that you have, the leadership you have in so many places in this state. Finding common ground should be more natural here than anywhere else.

It is going to take a heavy lift for these seven states to survive what Mother Nature has in store for them. No judge is going to be able to find a solution. George Miller was – I met him very

early on in my career – I know he's a household name up here. But he said something to me that I have never, ever, ever forgotten: Change is coming, and you really only have two choices: you can be an architect of that change or you can be its tenant. Failure is not an option. Somebody will step in a vacuum. If both systems crash, and 40 million people are at risk in the basin and the entire population of California is at risk – somebody is going step in, and you will be the tenant of whatever future that they paint for you.

Thank you. [applause]

END OF LECTURE

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BEGIN CONVERSATION

Featured Speaker Pat Mulroy and Jeff Kightlinger, General Manager, Metropolitan Water District, sit down in the armchairs arranged on the other side of the stage.

JEFF KIGHTLINGER:
Thank you, Pat, that was enjoyable.

So I jotted down a few things when you were talking about some of the cooperation – you reminded me of some of the things that I painfully put away. [laughter] I was jotting down some of these things, and it really was interesting if you go back and look at the history in the thirties, we battled for a decade before, finally, the seven states agreed with Herbert Hoover – he was then the Secretary of Commerce – how to divide up the river. California, after that was accomplished in 1922, we went back and argued for six years just how to divide up our share. And the federal government was going: "We aren't going to start the Hoover Dam until you figure it out, California." So it took six years of wrangling just to determine that within California. Most of the '30s, the state's kind of peaceful at that point – building; and then the '40s and '50s, it got kind of ugly again; and then in the '60s, Arizona said let's kick off a huge, decades-long fight in the U.S. Supreme Court; '70s and '80s – very ugly again – mostly with Arizona and California.

And then all of a sudden – we started in 2001 – with the Surplus Guidelines that you mentioned. In 2003, California did its quantification settlement agreement where it quantified the agricultural parties. In 2004, we lined the All-American Canal – Metropolitan and Palo Verde were getting into our first on-the-river voluntary fallowing program. In 2005, the three lower basin states did the first major interstate, inter-national habitat conservation plan – the Lower Colorado River MSCP (Multi-Species Conservation Plan) – for 50 years of environmental coverage on the river. In 2007, the first shortage interim guidelines. In 2012, Minute 319 with Mexico and international transfers and exchanges, bi-national pulse flows for the environment. In 2014, Congress renewed Hoover Dam electrical power through 2067.

PAT MULROY:
I'll be dead. [laughter]

JEFF KIGHTLINGER:
[laughs] In 15 years, we put together more agreements than we had in the past 70 years on the Colorado River. Some of it was necessity driven by the drought, but there's more than that. What would you attribute some of that to, and the sudden turnaround in attitude and approach on how to solve things?

PAT MULROY:
Having the right people in the room. And I think everyone realized that – you were there – we didn't have time to go to court. These things were not going to give us the luxury of a decade-long lawsuit. And being the pragmatist that we all were, it was better to find an agreement that we forged than be the recipient of whatever some judge – who has to look at a map to see where the Colorado River is – comes up with. I think that finally sunk in.

JEFF KIGHTLINGER:
One of the interesting comments you made was – Nevada and its hydrologically uncertain amounts of water it receives – one of the fun anecdotes that I found when I was looking through the original apportionment on the Colorado River, involved the Nevada representative at the time…

PAT MULROY:
Oh yeah, he was drunk under the table. [laughter] He became governor. [laughter]

JEFF KIGHTLINGER:
When they asked how much Nevada thought it needed, he said… "Maybe 300 …maybe 3,000 acre-feet." And then was like: "I'm going to go out on a limb – 30,000." And the reactions of Arizona and California and others were: that's too many decimal points. We were doing everything in hundred thousand increments – let's just round them up to 300,000. Then all of a sudden, here you were around year 2,000, starting to bump up against your 300,000 allotment…

PAT MULROY:
Well we were the city [Las Vegas] that shouldn't be. I mean, we were never supposed to exist. Trust me, people in Reno still believe that with a passion. [laughter] No one ever imagined what Hoover Dam and electrical energy and air conditioning were going to do for southern Nevada. It just took off. And now it is over 2 million people, and it's a very scary reality down there.

JEFF KIGHTLINGER:
One of the things you did that's remarkable -- you created the Southern Nevada Water Authority – first general manager – and you succeeded in getting all the Nevada factions together into one institution to represent Nevada as a whole on the Colorado River. In contrast, California's approach is very individualized…

PAT MULROY:
… That was a very diplomatic way of saying that.

JEFF KIGHTLINGER:
… I did appreciate having my own seat in the discussion. But how did you get the parties to come together in Nevada and work together on the river in that way?

PAT MULROY:
Well, I think it helped that I declared a moratorium. In 1991, we had so over-committed that we said we were not going to issue any more "will serve" letters. If you had a "will-serve" letter, go ahead. But we are not issuing any more "will serve" letters – and until there's resolution, and there's a path forward that allows southern Nevada to pool its resources, and an adequate water supply – the door stays shut. I did it on February 14th and it's still called the Valentine's Day Massacre. [laughter]

JEFF KIGHTLINGER:
[laughing] In 2017, we now actually, for the first time ever, have more than a 50 percent chance of shortage on the Colorado River. Never happened; would be the first time ever.

PAT MULROY
And you completed your bank.

JEFF KIGHTLINGER:
We completed our bank. Now the first shortage, as you correctly pointed out, is a primarily Arizona problem. But how do you see this playing out politically? This is going to be a national issue with these shortages – one state at a time.

PAT MULROY:
I think we are going to find a way to paper over it. I think nobody will ever go back and un-ring that bell. I think it's going to stay just like priority one rights will always stay. Whether they are the actual driver in how water gets divided, I don't think so. I don't think the State of California will allow a crisis to emerge in Phoenix, Tucson, in the whole urban core in Arizona. It is just politically unrealistic. [laughter at Jeff Kightlinger's expression]

JEFF KIGHTLINGER:
I like the vote of confidence in California … [laughter]

PAT MULROY:
… You want to be a national bad guy? [laughter]

JEFF KIGHTLINGER:
We don't even like helping our own neighbors within our own state …

PAT MULROY:
I think the Feds will step in. The Feds will step in.

JEFF KIGHTLINGER:
I think they would have to.

PAT MULROY:
Remember, we did create this lovely role of Watermaster for them.

JEFF KIGHTLINGER:
You mentioned the other states looking at the California Bay-Delta – what are some of the lessons that you think could be applied there? We're going to need to see some resolution there, some peacemaking.

PAT MULROY:
On the Bay-Delta?

JEFF KIGHTLINGER:
Yes.

PAT MULROY: To me, it just seems like a series of missed opportunities. If you had had the tools in place to be able to take advantage as we had been able to with the Colorado River, of wet years, and be able to spread out wherever it's stored in various places – you could have avoided much of the pain and suffering that happened over the course of 2014. I think the conversation would be one of where can we find opportunities instead of where can we erect barriers. When you change the conversation like that, it becomes different. I think just like – I mean, to think that in the worst drought year on record, and the year you had to take everything out of Lake Mead – we also stuck to our agreement that that would be the year we would release a pulse flow from Lake Mead to the Colorado River Delta. Think about that. I mean, there's panic setting in – in every corner. There's panic in Nevada. There's panic in Arizona. You [in California] obviously are having more fun than you can stand. [laughter] And despite the fact that we know that our toes are hanging over the edge of the shortage – a deal was a deal. We had agreed. We had said: Mexico, we will do this for you. It was very important to the country of Mexico. So we released the pulse flow. I think that speaks volumes.

JEFF KIGHTLINGER:
Yes, one of the deals was to allow Metropolitan to store water in Lake Mead, and that was a huge concession from Arizona. And when we got that deal put in place in 2007, we painstakingly, as Metropolitan spent tens to hundreds of millions of dollars building up a half million acre-feet cushion in Lake Mead; and because we had never ever gotten less than 20 percent from the State Water Project, even in the worst drought of record in 1977, we believed that was sort of the low point. Doing the math – that half a million acre-feet should have lasted us a decade or so of really bad years in California. And we pulled it out in about a two-year period. We went down to 5 percent on the State Water Project, and virtually had nothing coming in. So we maximized our pull. We were curious to see how Arizona would react. And they said: a deal is a deal. When we committed to dedicating water for the environment, for a scientific pulse flow, a significant amount of water … we said, "A deal's a deal." I think that speaks to the institutions that we developed over time and the legal framework we have for delivering water that people want and rely on.

PAT MULROY:

And it's a change in mindset. I remember early on when you and I entered into the deal where the water we're conserving in Nevada, we would create a virtual bank in California – we would use it and then we would get it back over time when we needed it. The thought that people were investing in taking their brass out and the immediate beneficiary was California – would never ever, ever have happened before.

JEFF KIGHTLINGER:
No, it's pretty rare.

PAT MULROY:
But the whole is greater than the sum of its parts. It really is. Us having 600,000 acre-feet of water stored in the Arizona groundwater basin – our deal with you this last year on water from Nevada – all of a sudden, all these things you never thought were possible – and look at the breadth of area you have to work with now. I mean, the more diverse your toolbox is, the more likely you are to survive. And when we have to spend money in order to create water in Lake Mead, and it is the collective pocketbooks of everyone in the seven states; the relative hit is de minimis. It's doable. Things you conceive of as being undoable, instantly become possible.

JEFF KIGHTLINGER
So I wanted to open it up to the audience for questions. But I wanted to segue to one thing. You touched on it when I introduced you – you are obviously a woman in a man's field for 20-something years, as the general manager in a very contentious couple of decades; when I presented some award to you a few years back – at an Urban Water Institute or something like that- I mentioned it at work. And I'm the GM of an urban water district and several young women who worked with me said: 'She's the best GM ever, that is so awesome.' [laughter] They had no qualms of saying that, "Well you're fine, Jeff, but ..." [laughter]

PAT MULROY:
It's because I'm a woman. You should have been me walking into Colorado River Water Users in 1990. The room is filled with bald, white men. [Laughter] The mean age is 73. I walk in. My badge says my name, general manager. And this lovely elderly gentleman from Wyoming comes over and taps me on the shoulder, and he says, "Ma'am, the spouses' lounge is down the hall." [laughter] I said, "Thank you, I'll tell my husband." [laughter] Lovely.

And then you guys would hide in the men's room so that you can talk without the women [laughter]; so we said: two can play that game. [laughter]

JEFF KIGHTLINGER:
I don't even know what to say to that, Pat. [laughter] Let's go to the audience for questions.

QUESTIONS FROM THE AUDIENCE

AUDIENCE QUESTION:
I've heard you talk about the idea of importing water from the Mississippi into the Colorado River basin, is that still on the table?

JEFF KIGHTLINGER:
I'll repeat the question: she's asking about the potential for importing water from the Mississippi down into the lower basin of the Colorado River – is that still on the table?

PAT MULROY:
OK, you need to think about it differently. Let me put it to you this way. I don't think we would ever start the conversation describing it as a water supply project for the West. But how many more years of 19th-century flood control management can the Mississippi survive? One man's flood control project is another man's water supply. That's what the future of climate change is – to take advantage of those large years. My friends in New Orleans – they take it now. If you can find, and we have some fabulous engineers, where you could divert that water during those enormous successive blows, provide drought protections to communities along the Mississippi as a result of that and the farms along the Mississippi, you're not taking away their water supply. You're giving them a flood control project, but you're not just throwing it to waste. Right now the Corps of Engineers (and as an aside I still can't figure out why the U.S. Army is in the water management business, I don't think Canada is planning to invade [laughter]) – if the Corps of Engineers right now decides who's going to get flooded and who is not, that can't go on – these floods are getting worse and worse and worse. So why would we not reimagine. We live in a part of the country where we are already interconnected. And we've given ourselves some real robust flexibilities through those interconnections. Why can't we reimagine flood control, where the water is going to land?

AUDIENCE QUESTION:
It sounds like you are saying that California should have more storage. Possibly dams. If you were czar, would you do that in California?

PAT MULROY:
Storage comes in lots of ways … wait, I'm not going to walk in here. Do I have "stupid" tattooed on my forehead? [laughter]

AUDIENCE MEMBER:
Not really. [laughter]

PAT MULROY
Having storage – being underground storage – whatever storage you want to call it – however you want to store it – there are many ways to store it. Yes, you are not going to make it through the dry years without it. None of us are. We put groundwater banks in Arizona, we've got a bank with California. If we could start banking in the upper basin, we'd do it tomorrow. And having that much geology to work with – to see what the maximum opportunities are – there is an enormous flexibility in that.

JEFF KIGHTLINGER:
And one of the observations looking at the California supply side and the Colorado River supply side at Metropolitan – and one of the observations that is so striking – you have the Colorado River with an annual average flow of 15 million acre-feet and the ability to store about 60 million acre-feet, four times the annual flow – we are almost kind of the flip opposite here in

California. We get around 40 million acre-feet on a pretty average basis moving in from Northern California out to the ocean: we can store about 10. We effectively quadrupled the storage for the annual flow on the Colorado River, and we have the opposite situation in California. That leads to California getting into the position of shortage very quickly – within a couple years – a couple of dry years, 2 to 3 drought year cycles, and we're hurting. On the Colorado River, we've been in a non-stop drought since 2000 more or less, 17 years into this drought and we are just now bumping up against shortage. And we're still not there yet. So, obviously storage comes with a price but it is also a very valuable tool for water management.

PAT MULROY:
I think that you can utilize that storage … Mexico stored fallowed 300,000 acre-feet worth of water of ag land before the crisis, and left it in Lake Mead. Lake Mead was 10 feet higher because deliberate, proactive measures were taken.

AUDIENCE QUESTION:
You talk a lot about storage. Are there other conservation efforts? If everyone is bumping up against their limit, are there seven-state discussions about everybody finding ways to conserve and cut down use?

PAT MULROY:
We all have. We were talking about it the other day. Both Southern Californians and Southern Nevada have cut their water use by 40 percent. We've been on this journey. We've taken out enough grass in Southern Nevada to go around the world. Take a swath of sod and wrap it around the world. It is part of the answer. The answer isn't a silver bullet. The days of the silver bullet are over. They are mosaics. A piece of that mosaic is conservation. But that conservation has to happen everywhere in the country – different reasons – it's financial reasons and facility construction reasons on the East Coast, but this country uses more per capita than anyone else in the world; because we could. Because of our changed climate, because we have a growing population in this country, as does the rest of the world, the amount we use per person has to go down. And it can. Technology has gone a long way to make that feasible. I remember when we wrote into the county building code that you have to use low-flush fixtures, low pressure showerheads and faucets and washing machines and dishwashers – well, that's all you can buy anymore. So, it is a mosaic and conservation is the foundation, but it is not a silver bullet. And there is a hardening of supply that you are going to hit. Just creating jobs for millennials will do it. I mean, you – do you know how much water one cell phone battery needs to be made – 1,500 gallons of water to manufacture a single cell phone battery. Every cell phone battery, we're importing water out of China. But as we develop these industries here in the United States, our water use from an industrial standpoint is going to go up and up and up. So finding technologies that will start cutting the need for water use in those sectors as well. It's not just the residential. It's not just the farmer. It's everybody. The pressure is on, to do more with less – grow more food with less water; produce more using less water; and individually, being able to have a quality of life that doesn't require voluminous amounts of water.

JEFF KIGHTLINGER:
One of the intriguing programs that our two agencies did this last year was – between economic downturn and then incredibly lower demands that we have all seen at ~~crossover~~ retail agencies

like at Southern Nevada with a very successful conservation program, but also with a couple of very expensive programs on lowering its intake in Lake Mead – was looking at cutting their cash flow to its conservation programs. It didn't really want to do that, but it had a financial crunch. And her [Pat's] successor, John [Entsminger] approached me and said: "How about Met loan us the money, we'll keep the conservation program and we'll loan you the water that's conserved. And then when it comes time for Met to pay back the water, we'll pay back the money." And that way, we kept the conservation program funded there while we were funding our own conservation program. And we're in a drought, so we're looking for water any place we can find it. And that's the kind of innovative thinking that we've been able to do these last few years.

PAT MULROY:
That never would have happened.

JEFF KIGHTLINGER:
No, it's pretty intriguing.

AUDIENCE QUESTION:
It seems to me that you're implying that our water rights system might be a little bit archaic. So if California were to consider any kind of re-jiggering of our water rights system, what kind of lessons can we learn from the interstate negotiations that happened in the '20s?

PAT MULROY:
Oh, I would not even go there. [laughter] Your grandchildren will be having that conversation, and a lot more opportunities will be missed. You don't need to. Those parties that hold those water rights can enter into any agreements with each other without decimating that water right that person has. And I think that the more we begin to realize that these priority water rights in a changed climate world and a growing population world with increased pressures really isn't going to get us much security that we want. That an agreement with our former adversary or an agreement with someone who has a lesser priority than ourselves really makes us more robust and more resilient. When that realization hits, those parties will enter into agreements. Unraveling the compact – which is Southern Nevada's favorite drum to beat - unraveling the compact, unraveling the water rights system is . . . OK, the brain cells start dying – it's so painful.

JEFF KIGHTLINGER:
On the other hand, when I retire, I'm going to need to be a consultant so … [laughter]

PAT MULROY:
There you go…[laughter]

JEFF KIGHTLINGER:
Your comments about silver bullets – I hear a lot of these comments from the chair of our state water board, Felicia. Felicia talks about silver buckshot because there is no silver bullet. So I want to ask Felicia if she has a comment or question . . . just putting you on the spot, Felicia.

FELICIA MARCUS (CHAIR, CA STATE WATER RESOURCES CONTROL BOARD) (FROM AUDIENCE):
Well, no. This was great. I loved it. I always love everything that Pat says. I think – what do you think the hardest thing was? Was it with your own board? Was it working with difficult personalities? I mean, that consciousness that you have the paper, and the paper is really important, but solving a problem is within one's reach. What made that happen?

PAT MULROY:
You know what made that happen? It was sitting across from each other long enough to where I could argue the position of the other person. I got it. It wasn't a show. It wasn't a lie. It wasn't made up. This wasn't some fairy tale they had concocted. Understanding began to settle in. Really understanding that the need on the other side of the table was as great as my own need.

AUDIENCE QUESTION:
California's in a great place: we have now created a new groundwater regulation [Sustainable Groundwater Management Act of 2014]. I'm sure you've heard about the Act. We have an opportunity, in situations where you're dealing with surface water and groundwater interaction, to somehow merge a groundwater riparian right with a surface water prior appropriative type of right. And as you would imagine, that's probably going to create some conflicts. So I'm asking you, how would you approach merging these two water management approaches together?

PAT MULROY:
Well, you guys have a strange legal system. [laughter] I mean in Nevada, everything is prior appropriation. It doesn't matter whether it's surface or groundwater. So you're asking me a lawyer question, so I'm going to point you to the lawyer who wants to be a consultant. [laughter] There's a good starting place for you.

AUDIENCE QUESTION:
Really what I'm asking you is … you have a knack at this cooperation thing, this collaboration thing. [laughter] So that's where I'm looking for some wisdom.

PAT MULROY:
Let's say you have an overdrafted groundwater basin, and I have a prior appropriative right on a river that is very vulnerable, and it's to go down. Your geology allows for the banking of that surface water in the groundwater basin. I can stop subsidence in your area, and create a storage pool for myself. And you put sideboards on it – how much can be taken out in any given year – just like we have a groundwater banking arrangement in the State of Arizona. Same principle. The opportunity that overdrafted groundwater basins provide is enormous. Not all groundwater basins are the same; some are more porous than others; some don't allow for it. But where it allows for it, or conjunctively using it – we only use our groundwater system now in the summer. It's off. We had to move where we were banking. We take treated Colorado River water in the winter months when our demands are down – this is treated in a treatment plant. Safe Drinking Water Act quality water – and injected into the groundwater basin, and we have stopped subsidence. We have created a financial arrangement with our domestic wells and our community wells. The state engineer is in the process of wanting to shut down all the private pumpers in Southern Nevada that don't have a permanent water right. We said: "If you pay into

this fund, $14 a year – per acre-foot of use – and most domestics are an acre-foot, right – come time when your casing breaks, your wells go down, and the state engineer won't let you fix it – 80 percent of the costs to you to hook up will be paid by this fund." And all you've done is you've joined the partnership, and you're paying $14 a year insurance because you know, as a domestic pumper, that state engineer is going to shut you down. So, who pays the most? We do. We have the most permanent groundwater rights. So our annual bill – what we pay into the fund – is the largest. But it works to manage the overall surface-groundwater system, and protects that individual user, who one day is going to have to shut down his well and may be facing an enormous bill to hook up to the system.

JEFF KIGHTLINGER:
Well, I want to thank you, Pat. [applause]

One quick closing thought is: We actually brought Anne Schneider in to advise Metropolitan when we were involved in some of these Colorado River negotiations. She was not a Colorado River practitioner, but we wanted someone with a fresh set of eyes from all the typical Colorado people, but a really good water lawyer and an esteemed colleague. Anne really got a kick out of advising us on the Colorado River, reading the history of it, and she always said: "Wow, that Pat Mulroy, she's something else. [laughter] She knows how to run Southern Nevada."

PAT MULROY:
Thank you, Jeff. [applause]

JENNIFER BOWLES:
Thank you everyone for coming. Please join us at the cocktail reception at the old Crocker. Thank you Jeff, and thank you Pat, and everyone in the audience. [applause]

END OF LECTURE AND DISCUSSION