COLORADO RIVER DROUGHT CONDITIONS AND RESPONSE MEASURES—PART 1 AND 2

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON WATER, OCEANS, AND WILDLIFE

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTEENTH CONGRESS

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OVERSIGHT HEARING ON COLORADO RIVER DROUGHT CONDITIONS AND RESPONSE MEASURES—PART 1

Friday, October 15, 2021

U.S. House of Representatives

Subcommittee on Water, Oceans, and Wildlife

Committee on Natural Resources

Washington, DC

The Subcommittee met, pursuant to notice, at 2:04 p.m., via Webex, Hon. Jared Huffman [Chairman of the Subcommittee] presiding.

Present: Representatives Huffman, Costa, Soto, Grijalva, Stansbury; Bentz, and González-Colón.

Also present: Representatives Leger Fernández, Susie Lee, and Titus.

Mr. HUFFMAN. Good morning, everyone. The Subcommittee on Water, Oceans, and Wildlife will come to order. We are meeting today to examine Colorado River drought conditions and response measures for the first of two meetings on this important subject.

Under Committee Rule 4(f), any oral opening statements at hearings will be limited to the Chairman and Ranking Minority Member. This will allow us to hear from our witnesses sooner and help keep Members on their schedule.

Therefore, I ask unanimous consent that all other Members' opening statements be made part of the hearing record if they are submitted to the Clerk by 5 p.m. today, or the close of the hearing, whichever comes first.

Hearing no objection, that is so ordered.

I also ask unanimous consent that Representative Teresa Leger Fernández, Representative Susie Lee, and Representative Dina Titus join the hearing to ask questions of the witnesses.

Hearing no objection, that is so ordered.

Without objection, the Chair may also declare a recess, subject to the call of the Chair.

As described in the notice, statements, documents, or motions must be submitted to the electronic repository at the following email address: HNRCdocs@mail.house.gov.

Additionally, please note that, as with our in-person meetings, Members are responsible for their own microphones. Please mute when you're not speaking. Members will be muted by staff only to avoid inadvertent background noise.

Finally, Members or witnesses who are experiencing any technical problems should inform Committee staff immediately.

I will now recognize myself for a brief opening statement.

STATEMENT OF HON. JARED HUFFMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HUFFMAN. Thanks again for joining us for the first of two meetings that we are having on Colorado River drought conditions and response measures.

The Colorado River is often called the hardest working river in the West, and that is because it does so much for so many. The fact that we are meeting to hear testimony from more than 15 witnesses covering 2 separate days really speaks to this very fact.

The Colorado River supplies water to communities across seven western states, serves 40 million people from Colorado to California, and along the way, this river and its tributaries flow through six national parks and monuments. It also supports a multitude of fish and wildlife, nearly 6 million acres of irrigated agriculture, and $1.4 trillion in economic activity every single year.

Unfortunately, unprecedented drought conditions are now creating enormous challenges for this important river and for those who depend on it.

In August, the Bureau of Reclamation made the first-ever shortage declaration in the Lower Colorado River Basin. And that, of course, is due to severe drought and low reservoir conditions, which have triggered reduced water releases from Lake Mead. These are actions that were recently taken in the Upper Basin, as well, to slow declining water levels at Lake Powell.

Water levels at Lake Mead and Lake Powell, the Colorado River's two largest reservoirs, have declined to lows that haven't been seen since those reservoirs were first filled, which, understandably, has drawn a lot of national attention and concern.

After more than two decades of drought with no end in sight, it is clear—to most of us, at least—that climate change is fundamentally altering the Colorado River. It is decreasing the amount of water available from this key river, which was already overallocated.

Climate scientists are telling us to expect hotter, drier conditions, and even less water being available in the upcoming years. In fact, some scientists describe what we are now seeing in the Southwest as a long-term shift in climate called aridification that portends a multi-decade mega-drought.

This is deeply concerning for the tens of millions of people who depend on the Colorado River. It is particularly concerning for communities that already face water insecurity challenges, which have long affected tribal communities more than any other across the Colorado River Basin.

And I should note that there are 30 Tribal Nations across the Colorado River Basin. Under the Winters Doctrine, which was first recognized by the Supreme Court in 1908, these tribes have significant legal rights to enough water from the Colorado River to secure and maintain viable homelands. Yet, tribes have been historically excluded from Colorado River management and decision making.

It is essential, from both the practical and moral perspective, that, moving forward, tribes play a significant role in the management and decision-making process on the Colorado River, and I look forward to more discussion on that need today.

I want to also note that, while we face significant challenges, we also have some effective tools in place to help deal with the worst effects of this drought. This includes the measures included in the Colorado River Drought Contingency Plan, which was authorized through legislation led by our Chairman, Raúl Grijalva, in the last Congress. But still, more action is needed.

So, we look forward to hearing from Federal, State, and Tribal government witnesses today on what more can be done to respond to these unprecedented climate challenges we are seeing across the Colorado River Basin. We will also discuss some of the initiatives being led by members of this Committee, which include investments in near-term drought response, investments in water rights settlements, Salton Sea improvement projects, and investments in drought-proof water recycling projects that are being led by water managers across the Colorado River Basin.

I look forward to hearing more today and next week about the need for future Colorado River management plans to effectively incorporate climate science.

We have a lot of ground to cover, so with that, I would like to now yield and recognize Ranking Member Bentz for his opening remarks.

[The prepared statement of Mr. Huffman follows:]

PREPARED STATEMENT OF THE HON. JARED HUFFMAN, CHAIR, SUBCOMMITTEE ON WATER, OCEANS AND WILDLIFE

Thank you for joining us today for the first of two meetings on "Colorado River drought conditions and response measures."

The Colorado River is often called the hardest working river in the West because it is asked to do so much for so many. The fact that we're meeting to hear testimony from more than 15 witnesses over 2 days speaks to this very fact.

The Colorado River supplies water to communities across seven western states, serving 40 million people from Colorado to California.

Along the way, the river and its tributaries flow through six national parks and monuments. It also supports a multitude of fish and wildlife, nearly six million acres of irrigated agriculture, and $1.4 trillion in economic activity each year.

Unfortunately, unprecedented drought conditions are now creating enormous challenges for this important river and those who depend on it. In August, the Bureau of Reclamation made the first-ever "shortage" declaration in the Lower Colorado River Basin due to severe drought and low reservoir conditions, triggering reduced water releases from Lake Mead. Actions were also recently taken in the Upper Basin to slow declining water levels at Lake Powell.

Water levels at Lake Mead and Lake Powell—the Colorado River's two largest reservoirs—have declined to lows that haven't been seen in decades since the reservoirs were first filled, which has understandably drawn national attention and concern.

After more than two decades of drought with no end in sight, it's clear that climate change is fundamentally altering the Colorado River—decreasing the amount of water available from this key river, which was already overallocated.

Climate scientists are also telling us to expect hotter, drier conditions and even less available water in upcoming years. In fact, some scientists describe what we're seeing now in the Southwest as a long-term shift in climate called "aridification" that portends a multi-decade "megadrought."

This is deeply concerning for the tens of millions who depend on the Colorado River. It's particularly concerning for communities that already face water insecurity challenges, which have long affected tribal communities more than any other across the Colorado River Basin.

I should note that there are 30 Tribal Nations across the Colorado River Basin. Under the Winters doctrine—which was first recognized by the Supreme Court in 1908—these Tribes have significant legal rights to enough water from the Colorado River to secure and maintain viable homelands. And yet, Tribes have been historically excluded from Colorado River management and decision making.

It's essential from both a practical and moral perspective that, moving forward, Tribes play a significant role in the management and decision-making process for the Colorado River. I look forward to more discussion on that need today.

I also want to note that, while we face significant challenges, we also have some effective tools in place to help deal with the worst effects of this drought. This includes the measures included in the Colorado River Drought Contingency Plan, which was authorized through legislation led by Chair Grijalva last Congress. Still, more action is needed.

We look forward to hearing from Federal, state and tribal government witnesses today on what more can be done to respond to the unprecedented climate challenges we're seeing across the Colorado River Basin. We'll also discuss some of the initiatives being led by members of this Committee, which include investments in near-term drought response, investments in water rights settlements, Salton Sea improvement projects, and investments in drought-proof water recycling projects that are being led by water managers across the Colorado River Basin.

I also look forward to hearing more today and next week about the need for future Colorado River management plans to effectively incorporate climate science.

STATEMENT OF THE HON. CLIFF BENTZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. BENTZ. Thank you, Mr. Chair. This is a welcomed Committee hearing on an issue that is of incredible importance, not only to the seven states involved with the Colorado, but all of the western United States.

Of course, as you mentioned, this is the first of a two-part hearing on the consequences of this two-decades-long drought. I am very happy that we are spending that kind of time on this issue. It is certainly that important.

And, of course, as we know and as I mentioned, this drought isn't affecting just the Colorado, it is affecting all of Oregon, California, Washington, and all other western United States. And since our last meeting on drought, which was about 5 months ago, about 5.8 million acres have burned up here in Oregon and California. And project water users in Oregon's Klamath region and large portions of the California Central Valley Project have been given zero allocations of water. And, of course, they are not the only ones.

This absence of water has devastated communities throughout the western United States. Thousands of people are desperately worried right now that yet another year of drought will be the nail in the coffin for many, many, farming, ranching, and, actually, communities across the West.

Meanwhile, in a time of massive supply chain problems throughout our entire economy, the last thing we need is to rely on foreign countries for our food because of more water shortages.

I think, Mr. Chair, that today our discussion is really about choices between a lot of different uses of water. And I am going to be very interested in listening to folks talk about how in the world we are going to make those choices.

So, a little about the history of the Colorado—and I know the folks testifying today know far more about it than I—but if there was ever an illustration on what, I would like to say a microcosm basis, but it is not really true because the Colorado is so big, this situation the Colorado is facing is so reflective of what we are going to be seeing all over the West.

Whatever we come up with today, I think, is going to be a template of some sort for the type of issues we are facing here in Oregon, California, Washington, Nevada, and so forth.

So, I suppose, one thing that is easy to pop over is the incredible value of the Colorado system. And the folks that put it together all those years ago are to be commended. I know there are many who find fault with how the Colorado was developed. I reference, of course, the book, "Science Be Damned," by Eric Kuhn and John Fleck, an interesting book, one that I think Monday morning quarterbacks a lot of things, but, on the other hand, makes some good points about optimism, when it comes to building storage.

On the other hand, without storage, can we imagine what would be happening now in California, Phoenix, and other places benefited by these systems?

Of course, I am a water lawyer. I have spent, literally, hundreds, if not thousands, of hours involved in all types of water negotiation: water litigation, dam re-licensing, never-ending negotiations over impossible circumstances of zero-sum games of allocating water, and also being involved in the Columbia River Treaty negotiations with Canada, and on and on and on.

So, today's hearing is so important and so welcome in many ways. I just wish it wasn't coming before us in such a period of fear that we may not have more water to deal with and, in fact, we will probably have less. I don't anticipate breakthroughs today, but I do expect the continuation of the processes that were referenced, Mr. Chair, the DCPs, the Drought Contingency Plans, and other tools to try to address the impossibility of allocating water between everybody that needs it.

With that, Mr. Chair, I want to thank all the folks that are going to testify today in advance of their testimony. I look forward to a productive conversation.

Thank you, Mr. Chair. I yield back.

Mr. HUFFMAN. Thank you, Ranking Member Bentz.

I understand that the Chair of the Full Natural Resources Committee, Mr. Grijalva, who has been a great leader on these issues, is with us to provide an opening statement.

So, Chairman Grijalva, please, you are recognized for 5 minutes.

STATEMENT OF THE HON. RAÚL M. GRIJALVA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Mr. GRIJALVA. Just a quick comment to thank you, Chairman Huffman, for the hearings. Vital, vital discussion that your committee is not overlooking, and we all appreciate that. And all of us that represent that region, we appreciate that very much.

And I want to just associate myself with your opening comments, Mr. Chairman. I think we need a comprehensive initiative, and that is where we are going to deal with the Colorado River and to deal with the mega-drought. And your point, I think, is really important.

I mentioned the watershed around the Colorado River, so vital to its life, and that needs protection, as well, particularly around the Grand Canyon.

I appreciate this hearing very much. And what we passed in Reconciliation, Mr. Chairman, dealt with additional significant

resources to deal with the question at hand here, it dealt with significant resources to have settlements with Indian Nations regarding water, and to be able to have resources for infrastructure for Tribal Nations to begin to use, and be able to create viable communities themselves.

So, that is where we are at, and I appreciate it, Mr. Chairman, and I yield back.

Mr. HUFFMAN. Thank you, Chair Grijalva.

We will now hear testimony, starting with today's first panel featuring Federal and Tribal government witnesses.

Before introducing our witnesses today, I will remind non-Administration witnesses that they are encouraged to participate in the Witness Diversity Survey created by the Congressional Office of Diversity and Inclusion. Witnesses may refer to their hearing invitation materials for further information on that.

Under our Committee Rules, please limit your oral statements to 5 minutes. Your entire statement will appear in the hearing record, however.

And when you begin speaking, the timer will start counting down. It will turn orange when you have 1 minute left. I do recommend that Members and witnesses who are joining remotely use the grid view in Webex here, so that you can lock the timer on your screen.

After your testimony is complete, please do remember to mute yourself to avoid inadvertent background noise. And I will allow all of our witnesses to testify before we begin questioning.

So, we will first hear testimony from Ms. Tanya Trujillo, Assistant Secretary for Water and Science at the Department of the Interior. The Chair now recognizes Ms. Trujillo to testify for 5 minutes.

[Pause.]

Mr. HUFFMAN. Do we have Assistant Secretary Trujillo?

[Pause.]

Mr. HUFFMAN. Let me just ask our staff if we are having some kind of technical difficulty.

Assistant Secretary Trujillo, I believe you are muted, which you will not be the first offender in that regard. We have all done it. But if you could unmute yourself, we would love to hear from you.

[Pause.]

Mr. HUFFMAN. Thank you for your patience, folks, while we figure out why we don't have audio for the Assistant Secretary.

I will tell you what. While we try to work the——

Ms. TRUJILLO. Mr. Chairman?

Mr. HUFFMAN. Yes, do we have her now?

Ms. TRUJILLO. Mr. Chairman, can you hear me?

Mr. HUFFMAN. Yes, you are recognized for 5 minutes. Take it away.

Ms. TRUJILLO. Thank you for your patience.

STATEMENT OF TANYA TRUJILLO, ASSISTANT SECRETARY FOR WATER AND SCIENCE, DEPARTMENT OF THE INTERIOR, WASHINGTON, DC

Ms. TRUJILLO. Good afternoon. I am Tanya Trujillo, the Assistant Secretary for Water and Science at the Department of the Interior. I am honored to be part of the panel today with some of our tribal partners regarding the ongoing drought conditions in the Colorado River Basin.

And as you noted, it is also significant that the governors' representatives from all seven Basin states will be here today to testify, as well.

The Colorado River binds us together. We have a proven track record over the recent decades of being able to find ways to adapt to the changing conditions we are facing. It will be essential for us to continue to work together to develop additional innovative agreements to address the ongoing challenges.

Climate change is real, and we are seeing the effects of climate change in the Colorado River Basin every day. The effects include the extended drought, extreme temperatures, extensive wildfires, and, in some places, flooding and landslides that are affecting our communities and our environment. Now is the time to take innovative actions to respond to them.

The Department of the Interior is committed to addressing the challenges of climate change in the Colorado River Basin by utilizing science-based, innovative strategies, and working cooperatively with the diverse communities that rely on the river. We are working at Interior with our sister agencies, and with states, tribes, and local entities to respond to the drought throughout the West and in the Basin.

Since January, we have been providing funding to over 220 different projects around the West, and we were able to recently reprogram $100 million to be able to be responsive to the drought conditions we are seeing through various programs that we have available. They include improvements to infrastructure and continued drought contingency planning efforts.

We also received additional funding through the disaster relief bill. We are working to be able to get that funding out to the local and tribal communities as soon as possible. We appreciate Congress' continued support for these important issues.

October 1 marked the first year, the beginning of the new water year across the West, and we are grateful for reports of initial snow in some of the states, in some of the areas, but we know that we are going to be starting out with a deficit. We are starting out with challenging water supply conditions in many of the basins and facing situations that are significantly below average. In the Colorado River Basin, Lake Powell and Lake Mead are currently at historically low levels.

As you noted, on August 16, we announced the operating conditions for next year, and we announced the first-tier shortage in the Lower Basin. We have worked collaboratively in this basin to plan ahead for these conditions, but we know we need to be continuing to do more.

Interior will work to utilize the best available science and technical expertise, and work collaboratively to help inform our

decisions and work with our partners on our collective decision making in the Basin. We will continue to support additional investments and improvements to water infrastructure that include investments in new technology, and always emphasizing the need for continued collaboration on how we can best be able to meet the needs of the communities and allow them to utilize the Federal resources that we have available.

The testimony we will hear today will highlight the challenges that we face in many of our areas around the Colorado River Basin. To address the challenges, we know we will urgently need to build upon the existing tools that we have and to expand upon the work that we have done. That work helps us conserve water, protect the environment, preserve our hydropower resources, and operate our infrastructure efficiently.

The progress that we have made has been accomplished through the strong partnerships that we have with the states, with the tribes, with the water users, and communities throughout the Basin. We look forward to that continued coordination into the future.

Thank you all for recognizing the importance of this issue and for holding the hearing today. I would be happy to answer any questions as a followup. Thank you very much.

[The prepared statement of Ms. Trujillo follows:]

PREPARED STATEMENT OF TANYA TRUJILLO, ASSISTANT SECRETARY FOR WATER AND SCIENCE, U.S. DEPARTMENT OF THE INTERIOR

Chairman Huffman, Ranking Member Bentz, thank you for the opportunity to testify about the drought situation in the western United States. I am Tanya Trujillo, Assistant Secretary for Water and Science at the Department of the Interior (Department). My statement today provides a status update of our responses to the severe drought conditions in the Colorado River Basin.

- First, I will review current reservoir and water storage conditions in key settings across the West.
- I will then describe the coordination taking place within the Federal Government and with our non-Federal partners to respond to the challenging conditions we are facing.

While I will present remarks today on the drought conditions facing the West, I want to reiterate something I and my colleagues across the Administration are focused on every day: climate change is real. We are seeing the impacts of climate change manifested in drought, wildfires, hurricanes, extreme heat, massive storm events and localized flooding. Climate change is impacting Americans across our nation.

2021—OVERVIEW OF CURRENT RESERVOIR CONDITIONS

According to the U.S. Drought Monitor, even now in October, a large majority of the western United States is experiencing above average temperatures and severe or extreme drought conditions. In California and in the Colorado River Basin, certain reservoirs have reached 30-year storage lows. Lake Powell and Lake Mead—the two largest reservoirs in the United States—are currently at historically low levels. Although the Rio Grande and Pecos basins and parts of Arizona received some monsoonal rainfall this summer, the temporary relief has not reversed the more than two-decade drought impacting the region. Collectively, a very challenging water supply situation exists in much of the West.

In the Colorado River Basin, the period from 2000 through 2021 has been the driest 22-year period recorded in more than 100 years of record-keeping. The reservoir system was 95 percent full in 2000, but as of September 28th, Colorado River system reservoirs sit at just 39 percent, the lowest levels since they began to fill. Over the 22-year drought period in the Colorado Basin, combined hydropower generation has declined 13 percent to an annual average of 10.5 million MWh.

Declining storage levels due to ongoing drought have resulted in reduced hydropower generation efficiency and concerns about approaching minimum power pool at Glen Canyon Dam, below which no power can be produced.

On August 16th, the Bureau of Reclamation (Reclamation) issued the August 24 month study: given ongoing historic drought and low runoff conditions in the Colorado River Basin, downstream releases from Glen Canyon Dam and Hoover Dam will be reduced in 2022 due to declining reservoir levels. In the Lower Basin the reductions represent the first "shortage" declaration—demonstrating the severity of the drought and low reservoir conditions. At the same time, under an operational agreement with Mexico, Mexico will incur reduced delivery on the Colorado River in 2022. Again, these recent declarations demonstrate the severity of the drought and the need to continue to work actively with states, Tribes, and stakeholders, and to continue to work in a cooperative fashion with our neighbors and partners in Mexico.

Recent projections by Reclamation and the National Oceanic and Atmospheric Administration (NOAA) have provided further reason to continue our drought relief efforts. In late September, Reclamation released updated 5-year projections for the Colorado River, showing a continued elevated risk of Lake Powell and Lake Mead declining to critically low elevations, including the potential of Lake Powell falling below minimum power pool as early as July 2022. Adding additional concerns, NOAA's Climate Prediction Center recently forecasted an increased likelihood of a La Nina Winter this year and the continuation of high temperatures and below-average precipitation reaching into December 2022.

Many of Reclamation's projects will begin the 2022 water year with below-average carryover water storage. We have had to make difficult choices this year, and together we will have to make more difficult decisions if it continues to remain dry next year.

INTERAGENCY COORDINATION

The Department participates in several points of coordination being established among federal agencies working to optimize federal drought response—including the National Climate Task Force, the Interagency Drought Relief Working Group, the National Drought Resilience Partnership, the Water Subcabinet, and works directly with federal entities including the Western Area Power Administration. Each of these groups provide important avenues for coordination, and collaboration, and encompass both immediate drought relief as well as long-term drought resilience efforts geared at responding to ongoing climate threats.

Through these collaborative agencies, we can marshal existing resources and work in partnership with state, local, and Tribal governments to address the needs of communities suffering from drought-related impacts; identify and disburse immediate financial and technical assistance, and develop longer-term measures to respond to climate change, including building more resilient communities and protecting the natural environment. On September 15th, the Climate Task Force Director sent a letter outlining federal drought relief efforts in response to an August 15th inquiry from 10 western governors.

DROUGHT—SELECTED RESPONSIVE ACTIONS

Across the West, Reclamation has continued working on using the best available science to improve water supply forecasting and operations planning and modeling to help inform decision-making and meet competing demands.

Investments in Drought Response Actions

During 2021, the Department has completed a steady stream of drought-related or water conservation-related funding awards across the West as part of existing programs to help make local communities more resilient or diversify local water supplies, selecting 227 projects to be funded with $73.2 million in WaterSMART funding across the western states. We want to take this opportunity to highlight a few important examples:

- February 2021: Drought Resiliency Projects selected, $15.4 million for 18 projects in 7 western states.
- March 2021: Water and Energy Efficiency Grants selected, $42.4 million for 55 projects in 13 western states.
- March 2021: Cooperative Watershed Management Program—Phase II Grants selected, $2.1 million for 11 projects in 7 western states.
- April 2021: Drought Response Program—Drought Contingency Planning Grants selected, $809,000 for 5 contingency plans in 3 western states.

- June 2021: Basin Study Program—Water Management Options Pilots selected, $219,496 for 2 projects in central Oregon.
- June 2021: Cooperative Watershed Management Program—Phase I Grants selected, $2.6 million for 27 projects in 12 western states.
- July 2021: Water Marketing Strategy Grants selected, $1.14 million for 7 projects in 4 western states.
- August 2021: Small Scale Water Efficiency Grants selected, $5.5 million to 82 water improvement projects in 16 western states.
- September 2021: Applied Science Grants selected, $3.1 million for 20 projects in 11 western states.
- September 2021: FY 2022 Science and Technology Program investments selected, $4.92 in 46 new research projects and $3.4 million to 134 research projects.

In addition to the above-mentioned awards, on August 5th, Reclamation announced three WaterSMART grant opportunities—Drought Resiliency Projects, which closed last week on October 5th, Water and Energy Efficiency Grants and the new Environmental Water Resources Projects, as part of an overall plan to implement amendments to the SECURE Water Act. These programs will help communities throughout the West by increasing water supply sustainability and drought resiliency. Applications for the Water and Energy Efficiency Grants and the new Environmental Water Resources Projects are due November and December, respectively.

Over the course of this past summer, the Department and the U.S. Department of Agriculture (USDA) made several investments to help mitigate effects of the west-wide drought on the ground. Examples include:

- On July 15th, Reclamation executed a cooperative agreement for $15 million in immediate aid to the Klamath Project through the Klamath Project Drought Response Agency (KPDRA), with an additional $3 million in technical assistance to Tribes for ecosystem activities, and funding for groundwater monitoring in the basin. These efforts supplement additional funding provided by Reclamation and other Department bureaus in 2021. On October 4th, an additional $5 million was provided for drought relief to Klamath Project contractors as part of the Department's reprogramming, for a total of $20 million for KPDRA to distribute.
- On July 23rd, the Department provided to Congress notice of its intent to reprogram $100 million into drought-related programs and projects. Reclamation is in the process of allocating that funding to various actions around the West. The purpose of the reprogramming is for both rapid emergency response to address current conditions and drought resilience actions that will result in drought preparedness beyond 2021. This request includes funding for Rapid Response Mitigation ($32,000,000), for Drought Resiliency (over $42,000,000), and more than $25,000,000 for other activities including Wildland Fire Mitigation and Prevention, Native American Affairs, and water recycling projects.
- On August 2nd, USDA announced its investment of $15 million for a new drought pilot to assist agricultural producers impacted by worsening drought conditions to provide relief to impacted California and Oregon producers in the Klamath River Basin. The announcement comes as the Secretary of Agriculture will travel to the State for events focused on drought and wildfire resiliency on Tuesday.
- On September 29th, USDA announced the availability of $500 million to support drought recovery and encourage the adoption of water-smart management practices. From rising temperatures and heat waves, to early snow melt and low rainfall, record-breaking drought has affected producers across the country. This assistance will target these challenges and enable USDA's Farm Production and Conservation agencies to deliver much needed relief and design drought resilience efforts responsive to the magnitude of this crisis.

Responding to Drought in California

Throughout this difficult water year, Reclamation has worked closely with the California Department of Water Resources to accommodate the voluntary transfer of non-project water. These transfers provide important flexibility, particularly in dry years, to allow irrigation districts to adjust to changing conditions. In 2021,

Reclamation has responded to a record-high number of requests for the transfer of nearly 350,000 acre-feet of transfers through state and Federal facilities.

Demonstrating its ability to be flexible, Reclamation adjusted spring-time operations at Shasta Dam to benefit endangered winter-run Chinook salmon. The adjustment involved the bypass of Shasta Dam's powerplant and temperature control device in favor of releasing water from higher, warmer layers of Shasta reservoir through river outlets. The power bypass began on April 18, 2021, and concluded on May 24, preserving approximately 300,000 acre-feet of colder water for later in the summer with no increase in overall release volume.

In California, Reclamation has:

- Deployed facility features to preserve cold water for fish and enhance hatchery capabilities.
- Deployed monitoring programs to collect data, including the Enhanced Delta Smelt Monitoring Program and the Enhanced Acoustic Tagging of Salmon.
- Implemented an emergency pulse flow on Clear Creek to benefit spring-run Chinook salmon.
- Released stored water from New Melones Reservoir for Delta outflow requirements.
- Facilitated groundwater pumping programs in the Upper Sacramento River Valley to meet irrigation demands and preserve storage in the Shasta reservoir.

Building on its long history of working closely with federal, state, and local partners in California, the U.S. Geological Survey (USGS) conducts monitoring, modeling, and assessments that its partners need to address drought challenges. USGS operates a stream gage network of over 500 gages, a "superstation" monitoring network in the Bay-Delta that provides real-time data for Federal and State water projects, and a statewide groundwater well network. USGS also conducts extensive monitoring of land subsidence in the San Joaquin Valley. USGS has developed integrated surface-water/groundwater models to evaluate drought impacts on water availability, use, and quality throughout the State.

This year, USGS is working with the State Climatologist to apply novel modeling tools and a USGS-developed drought metric to quantify impacts of the "disappearing snowpack." USGS is also conducting assessments of ecological drought impacts and of wildfire effects on water resources and aquatic ecosystems in California. These severe impacts of drought clearly affect our wildlands and communities, including vegetation mortality and increased risk of large, high severity wildfire.

Responding to Drought in the Colorado River Basin

Historic drought and low-runoff conditions have impacted the Colorado River Basin since 2000. Most of the flow of the Colorado River originates in the upper portions of the Colorado River Basin in the Rocky Mountains. The Upper Basin experienced an exceptionally dry spring in 2021, with April to July runoff into Lake Powell totaling just 26 percent of average despite near-average snowfall last winter. The water year 2021 unregulated inflow into Lake Powell—the amount that would have flowed to Lake Mead without the benefit of storage behind Glen Canyon Dam—was 33 percent of average. Total Colorado River system storage as of just last week (Sept. 28, 2021) is only 39 percent of capacity, down from 49 percent at this time last year.

Hydropower production efficiency continues to be impacted at both the Glen Canyon Dam and Hoover Dam powerplants as poor hydrology persists throughout the Colorado River Basin. If the reservoirs at Glen Canyon or Hoover Dams (Lake Powell and Lake Mead, respectively) on the Colorado River, drop below the level where power can be generated, it will result in the loss of millions of dollars in revenue that currently are used to fund multiple federal programs, such as endangered species and salinity control programs. One recent response action was taken under the Drought Response Operations Agreement (DROA), an important element of the 2019 Colorado River Drought Contingency Plan Authorization Act. After consultation with—and acknowledgement from—all seven Basin States and other partners, under the emergency provisions of DROA, Reclamation started supplemental water deliveries in July 2021 to Lake Powell from the upper reservoirs of Flaming Gorge, Blue Mesa, and Navajo. Those supplemental deliveries will provide up to an additional 181 thousand acre-feet of water to Lake Powell by the end of the 2021 in order to protect hydropower production and reduce the risk and duration of Lake Powell falling below the target elevation of 3,525 feet.

Recent projections of risk that Lake Powell could decline below this target elevation in 2022 are the subject of ongoing analyses by Reclamation and the Upper Basin States of Colorado, New Mexico, Utah, and Wyoming, and Reclamation is actively working to ensure that Tribes and other partners are informed and engaged as further drought response releases are considered for implementation. Important decisions on the potential need for additional releases will be required in the months ahead. As Reclamation and its partners continue to assess drought response actions, we will continue to use the best available scientific information and continue to coordinate closely with our federal, state, tribal and non-governmental partners, and stakeholders in the Basin.

In 2020, consistent with the Colorado River Drought Contingency Plan Authorization Act, Reclamation conducted outreach meetings with its partners and stakeholders, including the Lower Basin states, water agencies, Tribes, non-governmental organizations, and the U.S. Section of the International Boundary and Water Commission (USIBWC), to provide an update on Reclamation's efforts to create or conserve 100,000 acre-feet or more of system water annually under the Drought Contingency Plan (DCP). Reclamation's strategy is focused on projects that will generate water savings annually over a longer period. We recognize, however, that these longer-term projects will take some time to develop and become operational. Shorter-term projects and agreements that generate system water over the term of the DCP are being explored to help bridge this gap.

In addition, Reclamation has entered into agreements for with the Fort McDowell Yavapai Nation to create system conservation water in 2020, 2021, and 2022, with the Mohave Valley Irrigation and Drainage District to create system conservation water in 2020 and 2021, with the option for a third year in 2022, with the Gila River Indian Community to create system conservation water in 2021, and a funding agreement with Metropolitan Water District, the Central Arizona Water Conservation District, and the Southern Nevada Water Authority for the creation of system conservation water at the Palo Verde Irrigation District from August 2021 through July 2024. The 242 Wellfield Expansion Project and agreements listed above will generate approximately 60,000 to 80,000 acre-feet of system water each year in 2021, 2022, and 2023 toward Reclamation's efforts. Potential future projects or agreements to create or conserve additional system water are being developed, subject to applicable law including availability of appropriations, in coordination with our partners and stakeholders.

The USGS is modernizing its observational capabilities by implementing the Next Generation Water Observing System, or NGWOS. When fully implemented, the NGWOS will provide high-resolution data on streamflow, evapotranspiration, snowpack, soil moisture, water quality, groundwater/surface-water connections, stream velocity distribution, sediment transport, and water use. These data are intended to be coupled with advanced modeling to provide flood and drought forecasts with greater certainty and address a variety of other water-resource questions in each region. Thus far, the USGS has selected three Integrated Water Science basins and NGWOS implementation is ongoing in all three. One of those basins is the Upper Colorado River Basin, where drought is a primary focus.

CONCLUSION

The only way to address these challenges and climate change is to utilize the best available science to develop innovative solutions and to work cooperatively across the landscapes and communities that rely on our western rivers. This Administration is working every day to collaborate with states, Tribes, farmers, and communities impacted by drought and climate change to build and enhance regional resilience by being proactive and fully using the tools we have available. We appreciate Congress' attention to the severity of drought and welcome your input on new tools and approaches to help the communities we all serve. I look forward to our continued work together and to answering your questions.

QUESTIONS SUBMITTED FOR THE RECORD TO TANYA TRUJILLO, ASSISTANT SECRETARY FOR WATER AND SCIENCE, DEPARTMENT OF THE INTERIOR

Questions Submitted by Representative Levin

Question 1. Assistant Secretary Trujillo, as I'm sure you are aware the shutdown of the Paradox Valley Unit has caused salinity concerns for water districts in California that receive Colorado River water. What is the Bureau doing to address this salinity issue?

Answer. The Bureau of Reclamation (Reclamation) has been working to address salinity concerns within the Colorado River Basin through its participation with many partners in the Colorado River Basin Salinity Control Program. According to Reclamation's 2019 Quality of Water Report, as of 2017 Reclamation removes approximately 480,000 tons of salt annually from the Colorado River, not including Paradox Valley. We are also exploring options to expand investment in the Basin-wide program for further salinity control in the Basin.

In regard to the Paradox Valley Unit, on March 4, 2019, operations at the Paradox injection well were suspended to analyze the largest earthquake to date and assess the risk of continued operations. Because the earthquake was near the threshold for causing damage to the surrounding community, Reclamation management decided to evaluate risks before continuing operations. Reclamation is performing analyses to quantitatively evaluate seismic risks associated with continued operation of the Paradox Valley Unit. These analyses will take an in-depth look at the seismic hazard potential and the potential for resulting damage. As the analyses are ongoing however, Reclamation is evaluating the operation of the Paradox Injection Well at a reduced operating capacity. Reclamation is also exploring other options for salinity control within the Paradox Valley.

Question 2. Under what timeline will you be carrying out the actions you highlighted?

Answer. Expanded investment in the Basin-wide salinity control program will continue during fiscal year 2022. The seismic and risk analyses should be completed in 2023. A possible Paradox Injection Well test run is being evaluated for 2022.

Mr. HUFFMAN. Thank you, Assistant Secretary Trujillo. I will now call upon Congresswoman Teresa Leger Fernández to introduce our next witness.

Ms. LEGER FERNÁNDEZ. Thank you so much, Chair Huffman, for giving me this opportunity to participate in this important hearing, and to introduce the next witness.

I am really excited that two constituents from my beautifully diverse 3rd District in New Mexico are testifying today: Tanya Trujillo—thank you very much for your testimony—and Mr. Daryl Vigil.

I have known Daryl Vigil going back decades, from when I served as General Counsel for the Jicarilla Apache Nation. At present, he is the Water Administrator for the Nation. And among many roles, he is also the co-facilitator for the Water and Tribes Initiative in the Colorado River Basin. He is also Chairman of Water is Life Partnership. He is truly a leader for communities seeking long-term water sustainability and equity.

Thank you so much for being here today, Mr. Vigil, we look forward to your testimony.

Mr. HUFFMAN. Thank you, Mr. Vigil, you are recognized for 5 minutes.

STATEMENT OF DARYL VIGIL, JICARILLA APACHE WATER ADMINISTRATOR AND CO-FACILITATOR, WATER & TRIBES INITIATIVE IN THE COLORADO RIVER BASIN, DULCE, NEW MEXICO

Mr. VIGIL. Thank you, Chairman Huffman and Ranking Member Bentz, and other members of the Subcommittee. Thank you for the opportunity to testify about the drought situation in the western United States. And I can't go on any further without acknowledging, of course, my Representative, Teresa Leger, a decades-long friend of the Jicarilla and, of course, my friend, Representative Melanie Stansbury, and also my friend and fellow New Mexican,

Assistant Secretary Trujillo. Thank you so much for the opportunity today. And it is so nice to hear you, and thank you, Teresa, for that acknowledgment. I really appreciate it. And thank you, Chairman Grijalva, for the opening statements, as well.

I am here presenting this to you from lovely Durango, Colorado, at Fort Lewis College, where, as you may or may not know, has an enrollment of over 30 percent of Native American students, so a pretty special place to be at to be able to provide this to you.

I am going to kind of paraphrase my testimony, since I know that it takes 7 minutes to read the whole thing.

But as has been mentioned before, my name is Daryl Vigil, and I am an enrolled member of the Jicarilla Apache Nation. I am also of Jemez and Zia Pueblo descent. My reservation is in north central New Mexico, and extends from the New Mexico-Colorado border, 70 miles south.

My tribe has significant water rights in the Colorado River Basin, and as has been mentioned, I have had the honor of being my water administrator, and thank my President, Edward Velarde, and my Legislative Council for continuing to trust and empower me to be able to speak on behalf of this Nation, in terms of something that is of absolute importance to my tribe, which is our water rights and the spiritual value of our water rights.

And, again, we say this all with the backdrop of understanding that this conversation is absolutely vital and important and considering where we are at in this moment in time, not only with the situation with climate, but the geopolitical kind of conversations that are going on. So, this is not only important to the tribes, but as has been mentioned before, it is important to the entire Basin, the 30 sovereigns in the Basin, and this country as a whole.

I am going to talk a little bit about the past, present, and future role of tribes in the Colorado River Basin, as we understand. My key message is that sovereigns in the Basin—tribes, along with Federal and State governments—need to be at the decision-making table. Tribes have senior water rights to at least 25 percent of the current natural flow of the Colorado River, and have historically been excluded from decision making, or consulted only after decisions have been made. It is my sincere hope that the attention and the action of this Committee represents the beginning of a new chapter in the management of the Colorado River, a chapter in which tribes are treated with the same dignity and respect and responsibility as other sovereigns in the Basin.

And I think it is really important to understand that tribes have lived sustainably in the Basin for a millennium, and continue to do so today despite Mother Nature's challenges, colonization, systemic strategies to terminate, exterminate, and assimilate the Indigenous people of this country. And we have experience, not only hundreds, but thousands of years of sustainable and adaptive living. We understand the importance of honoring the very things that keep us alive, that feed us and quench our thirst.

And it is important to provide just a little bit of context, because as has been stated, we are at a pivotal moment in time. Next year will be the 100th anniversary of the Colorado River Compact, the foundational law of the river. And at that time, it is just important to understand the context of where my tribe was at that time.

In 1887, our reservation was established, after our own kind of trail of tears, and we survived on government rations outside our traditional homeland. And although we were historically nomadic, government tried to make us farmers and ranchers on lands that didn't really support those activities. We didn't establish a governance structure on my reservation until the Indian Reorganization Act in 1934, couldn't vote in elections until 1948, and did not have plumbing in the town of Dulce until the 1960s.

And it is important to note that my Nation settled its water rights claims nearly 100 years after the Colorado River Compact in 1992, during the early years of tribal settlements.

So, as has been mentioned before, there is a lot of conversation about how do we get inclusive of tribes? How do we make tribes part of this process? The current structures do not allow for any of that to happen. Inside my testimony, I definitely line out a way of creating something where we don't have to recreate the wheel, in terms of a model that was created in the Columbia River Basin, that was mentioned a little bit earlier, that looks a lot similar in terms of the components of what could be built in the future.

But given the amount of tribal water rights that the tribes have and the commitment and the number of thousands of years that we have lived here, the current structure doesn't account for that. Absolutely, something new needs to be built, where not only those tribal voices are heard or included in the conversation, but that other voices that haven't been traditionally heard are integrated into that, so we build a future together in the Basin that would be really, really unique, in terms of transforming the Federal-Tribal sovereign relationship.

I really appreciate the time and please, I ask you to take a look at my testimony, because I go into the specifics not only about what the division is that my Nation has, in terms of how we can participate, but also it has links to the work that we have done in the Basin to really build on that collaborative effort so that——

Mr. HUFFMAN. We appreciate that, Mr. Vigil. Thank you so much for sharing that.

Mr. VIGIL. Thank you.

[The prepared statement of Mr. Vigil follows:]

PREPARED STATEMENT OF DARYL VIGIL, WATER ADMINISTRATOR OF THE JICARILLA APACHE NATION AND CO-FACILITATOR OF THE WATER & TRIBES INITIATIVE

Chairman Huffman, Ranking Member Bentz, and other members of the Subcommittee, thank you for the opportunity to testify about the drought situation in the western United States.

My name is Daryl Vigil. I am an enrolled member of the Jicarilla Apache Nation; I am also of Jemez and Zia Pueblo descent. My reservation is in north central New Mexico and extends from the New Mexico/Colorado border 70 miles south. My Tribe has significant water rights in the Colorado River Basin. I have had the honor of being my Tribe's Water Administrator for the last 11 years, and I am grateful that the leadership of the Nation—President Edward Velarde and my Legislative Council—has trusted and empowered me to speak on behalf of the Nation and to co-facilitate a broader tribal/basin dialogue through the Water & Tribes Initiative.

Thank you for your leadership on convening this hearing to address the ongoing drought in the Colorado River basin and how we, collectively, are responding. This is an issue of extreme urgency and vital importance not only to the tribes in the basin, but to the entire basin and this country as a whole.

My remarks speak to the past, present, and future role of tribes in Colorado River governance. My key message is that as sovereigns in the basin, tribes—along with federal and state governments—need to be at the decision-making table. Tribes have

senior water rights to at least 25% of the current natural flow of the Colorado River but have historically been excluded from decision-making or "consulted" only after decisions have been made. It is my sincere hope that the attention and action of this Committee represents the beginning of a new chapter in the management of the Colorado River—a chapter in which tribes are treated with the same dignity, respect, and responsibility as the other sovereigns in the basin.

Past

Tribes have been living sustainably in the Colorado River Basin for a millennium and continue to do so today, despite mother nature's challenges, colonization, and systematic strategies to terminate, exterminate, and assimilate the indigenous people of this country. We have experience and knowledge developed over many hundreds of years of sustainable and adaptive living. We understand the importance of honoring the very things that keep us alive, that feed us and quench our thirst.

The foundational law of the river, the Colorado River Compact was developed in 1922 without tribal participation. At that time, my tribe (reservation established 1887, after our own trail of tears) was surviving on government rations outside our traditional homelands. Although we were historically nomadic (hunter, gatherers) the U.S. Government tried to make us farmers and ranchers on lands that did not support those activities (Chama Valley-White Clan, taken first by the Spanish, Tierra Amarilla Land Grant). We didn't establish a governance structure until 1934 (IRA), couldn't vote until 1948, and did not have plumbing in the town of Dulce until the early 1960s. My Nation settled its water rights claims in 1992 during the early years of tribal water settlements.

Present

Fast forward to today, nearly a hundred years since development of the Colorado River Compact. Tribes continue to be largely left out of the problem-solving and decision-making processes. Tribes were not consulted in developing the 2007 Interim Guidelines, which create the current management framework for the river. They were not consulted in the 2012 Basin Supply Demand Study, nor were they consulted—except after the fact—on the decision to initiate Drought Response Operations this summer. All of these decisions directly impact tribal water rights, tribal communities, and Native people throughout the basin.

Over the past 10 years, individual tribes, along with the Ten Tribes Partnership and the Water & Tribes Initiative, have sought to raise awareness and understanding of the role of tribes in the basin, have forged partnerships with federal and state governments, and have worked with conservation groups and other water users to emphasize how the current structures for management have not honored the spirit of settlement agreements, have not provided access to basic infrastructure for clean drinking water, and have not acknowledged thousands of years of environmental, cultural, traditional, ceremonial, and spiritual tribal values.

Future

As you know, the 2007 Interim Guidelines, the Drought Contingency Plans, and other governing arrangements will expire at the end of 2025. The Biden Administration is expected to launch the formal process to develop a new management framework for the river sometime in the coming months—a framework that must and will directly address the ongoing drought and a much drier future with a lot less water . . . all in the context of the ongoing pandemic.

This is a pivotal moment in history given the current realities of drought and aridification, the opportunity to create a new management framework for the river, and the 100th anniversary of the Colorado River Compact in 2022. It is time to create a new paradigm for governing the use of the Colorado River—one that integrates best available science and indigenous knowledge of the basin. And one that involves tribes as active partners in problem-solving, decision-making, and governance. This new paradigm has been emerging organically over the past decade in the form of many collaborations and partnerships among tribes, states, the federal government, stakeholders, and water users.

Building on this collaborative culture, we need to create something like a Sovereign Governance Team that includes tribes in a process of shared decision-making with the other sovereigns in the basin—state and federal governments. This approach was used successfully in the Columbia River Basin (which encompasses portions of Montana, Idaho, Oregon, and Washington) to prepare for the renegotiation of the Columbia River Treaty between the United States and Canada.

In a report based on over 100 interviews with tribal and other leaders in the Colorado River Basin, many people expressed a belief that a Sovereign Governance Team creates a level playing field among sovereigns. Tribes are treated as co-equals

with states and the federal government, rather than as other "interest groups" or "stakeholders," as in past processes. A Sovereign Governance Team integrates tribes in a meaningful way into planning and problem-solving before decisions are made; and it provides an opportunity for all stakeholders, experts, and the public to be more meaningfully involved in an inclusive, open, and transparent process.

Chairman Huffman and members of the Committee, you can make this happen. We need this type of governance structure to respond to the issues facing the basin. Your leadership to move in this direction would also be a significant expression of fulfilling the federal government's trust responsibility to the 30 tribes in the basin. Without this type of structure, tribes will continue to bear the impacts of the unrealistic expectation that federal and state sovereigns will effectively and responsibly represent tribal water interests along with their own. Tribes themselves, not state and federal officials, are in the best position to advocate for and protect their own tribal interests.

While my tribe is actively working on addressing the impacts of drought, we do so knowing the uncertainty surrounding our participation in the broader planning for the basin. We ask that you formalize a process for tribal participation in a new era policy and partnership, where tribal sovereignty is acknowledged and respected, and where tribes can be effective sovereign partners to create solutions to address the tremendous challenges before us now and in years to come.

Thank you.

More detailed information regarding water-related issues of importance to tribes in the Colorado River Basin can be found at the following locations:

http://www.naturalresourcespolicy.org/projects/water-tribes-colorado-river-basin/

http://naturalresourcespolicy.org/projects/water-tribes-colorado-river-basin/3.20-wti-report-executive-summary-final.pdf

https://www.usbr.gov/lc/region/programs/crbstudy/tws/finalreport.html

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Mr. HUFFMAN. Finally, we will hear from Chairwoman Amelia Flores of the Colorado River Indian Tribes next.

Chairwoman, you are recognized for 5 minutes.

STATEMENT OF AMELIA FLORES, CHAIRWOMAN, COLORADO RIVER INDIAN TRIBES, PARKER, ARIZONA

Ms. FLORES. Good afternoon, Chairman Huffman and Ranking Member Bentz. My name is Amelia Flores. I am the Chairwoman of the Colorado River Indian Tribes. I appreciate the invitation to testify today on behalf of my people about the drought and its impacts on the Colorado River. That is the namesake of our sovereign government.

I also want to thank Chairman Grijalva for his work to get our La Paz lands returned, and his support for not only CRIT, but all Native people and tribal governments.

The Colorado River Indian Reservation is separated by more than 70 miles of the Colorado River running through our lands, located in both California and Arizona. We have the right to divert 719,000 acre-feet, and are currently using over 300,000 acre-feet, the same amount used by the state of Nevada.

Since time immemorial, the river has sustained us. I am here today to tell you that we are committed to helping to support the river that has provided for us, and we have water to offer for this effort.

The Colorado River is suffering not only from drought, but climate change that is forcing all of us to change our relationship with its water. We must use its water more efficiently and ensure that each drop provides maximum benefits so that others are not

cut off entirely. This will require new and improved water delivery infrastructure, especially on tribal reservations, including ours.

We have received funding from the WaterSMART program and USDA programs to make improvements to the Federal irrigation project and our farmlands. But the needs greatly exceed the capacity of these programs and our ability to provide the required 50 percent matching funds. By joining with the state, local, and private sector, with creative partnerships, we have started to make up for the lack of Federal investment in the BIA irrigation project. The Committee's inclusion of $150 million in the Reconciliation proposal to assist tribal governments addressing the drought will greatly help us and other tribes.

We hold the senior water right for the Lower Basin and are the largest single user of the water from the Colorado River in Arizona. Our water right was quantified by the U.S. Supreme Court in the Arizona versus California decision, with the priority date of 1865, and is not likely to be shortened.

Despite the challenges our tribe faces, we are providing help to the rest of the Lower Basin through the Drought Contingency Plan, which was authorized by legislation approved by this Committee.

The Colorado River Indian Tribes are creating more than 150,000 acre-feet of water for Lake Mead as system conservation. This water and our ICS contributions since 2016 have raised the water levels in the lake by more than 3 feet.

In addition, we have been working with the state of Arizona, environmental leaders, and the water users to develop a legislative proposal that will authorize us to lease our water to other users in the state. This is the same right that Congress has authorized for other tribal governments in Arizona and across the West.

Because our water rights were adjudicated by the Supreme Court, Congress has not acted on them, and we lack the authority to lease water because of the prohibitions in the 300-year-old Indian Trade and Intercourse Act. Without the right to lease our water, we can do little to directly assist communities in Arizona or our neighbors on the river, who may face drastic water shortages in the coming years.

We have worked with stakeholders and the state of Arizona for over 5 years to develop the proposed legislation that will provide us the same sovereign rights over our water that other tribal governments have. Our proposed legislation will help make Arizona more water resilient, and will provide our tribe with the financial resources to fund improvements to the irrigation project, so that our water use may become efficient.

Greater efficiency on our reservation means we can do more to help the river. The Colorado River Indian Tribes are committed to working with the United States to support on-river habitat, including providing more water and land for endangered species protection.

Our legislative proposal will also permit us to lease secure water supplies to third parties, including municipalities on the river, and those served by the CAP that are facing shortages. This may reduce the demand for groundwater pumping that is not sustainable in Arizona. Our first priority water right can be diverted directly from the Colorado River with little to no risk of reduction

during shortages, and will limit the need for new or additional water delivery infrastructure.

Leasing our water for off-reservation use does include a cost for us. If you visit our reservation, you will see more than 10,000 acres of our farmland sitting fallow, a reminder that our people have chosen to protect the health of the river.

Our legislative proposal will only allow leasing of water we have consumptively used on the reservation for at least 4 of 5 recent years. This will keep the river and all other water users whole.

Mr. HUFFMAN. Thank you, Chairwoman——

Ms. FLORES. We are simply requesting the right to decide for ourselves how to best use our water, because we do not have this right today.

It has been an honor to be here today, and I thank you for inviting me. I will submit written testimony and am pleased to answer any questions you might have.

Thank you.

[The prepared statement of Ms. Flores follows:]

PREPARED STATEMENT OF AMELIA FLORES, CHAIRWOMAN, COLORADO RIVER INDIAN TRIBES

Good afternoon Chairman Huffman, Ranking Member Bentz. My name is Amelia Flores. I am the chairwoman of the Colorado River Indian Tribes. I appreciate the invitation to testify today about the drought and its impact on the Colorado River that is the namesake of our sovereign government.

Our reservation is separated by more than 70 miles of the Colorado River running through our lands located in both California and Arizona.

Since time immemorial, the River has sustained us. I am here today to tell you that we are committed to helping to support the River that has provided for us.

The Colorado River is suffering not only from drought but climate change that is forcing all of us to change our relationship with its water. We must use its water more efficiently, and ensure that each drop provides maximum benefits so that others are not cut off entirely.

This will require new and improved water delivery infrastructure, especially on tribal reservations including ours. We have received funding from the WaterSMART program and USDA programs to make improvements to the federal irrigation project and our farmlands, but the needs greatly exceed the capacity of these programs and our ability to provide the required fifty percent matching funds.

By joining with the state, local, and private sector with creative partnerships we have started to make up for the lack of federal investment in the BIA irrigation project.

The Committee's inclusion of $150 million in the reconciliation proposal to assist Tribal governments addressing the drought will greatly help us and other tribes.

We hold the senior water right for the Lower Basin and are the largest single user of water from the Colorado river in Arizona. Our water right was quantified by the U.S. Supreme Court in the Arizona versus California decision with a priority date of 1865 and is not likely to be shorted.

But we are not able to use our full water right. Most of our water is delivered through the Colorado River Irrigation Project, a run-down federal irrigation system maintained and operated by the Bureau of Indian Affairs. We lose more than 100 thousand acre-feet of water per year to poor maintenance and poor operations. The Project has not diverted as much as 80 thousand additional acre-feet in a year because of poor water accounting. We know how to prevent this and to put our full water right to productive use for our people and the funding that we need.

Despite the challenges our Tribe faces, we are providing help to the rest of the Lower Basin. through the Drought Contingency Plan, authorized by legislation approved by this committee. The Colorado River Indian Tribes are creating more than 150 thousand acre-feet of water for Lake Mead as system conservation. This water and our ICS contributions since 2016 have raised the water levels in the Lake by more than 3 feet.

In addition, we have been working with the State of Arizona, environmental leaders, and water users to develop a legislative proposal that will authorize us to

lease our water to other users in the state. This is the same right that Congress has authorized for other tribal governments in Arizona and across the west.

Because our water rights were adjudicated by the Supreme Court, Congress has not acted on them and we lack the authority to lease water because of the 300 year old Indian Trade and Intercourse Act. Without the right to lease our water, we can do little to directly assist communities in Arizona who face drastic water shortages in the coming years.

We have worked with stakeholders and the state of Arizona for over five years to develop the proposed legislation that will provide us the same sovereign rights over our water that other tribal governments have. Our proposed legislation will help make Arizona more water-resilient and will provide our tribe with the financial resources to fund improvements to the irrigation project so that our water use may become efficient. Greater efficiency on our reservation means we can do more to help the river. The Colorado River Indian Tribes are committed to working with the United States to support on-river habitat, including providing more water and land for endangered species protection.

Our legislative proposal will also permit us to lease secure water supplies to third parties, including municipalities that are facing shortages. This may reduce the demand for unsustainable groundwater pumping and our first priority water right can be diverted directly from the Colorado River with little to no risk of reduction during shortages limiting the recipients need for new or additional water delivery infrastructure.

Leasing our water for off reservation use includes a cost for us. If you visit our reservation, you will see more than 10 thousand acres of our farmland sitting fallow, a reminder that our people have chosen to protect the health of the river.

Without the additional revenue water leasing may provide, the large volumes of system conservation water we are now providing will become an economic burden we may not be able to afford.

Our legislative proposal will only allow leasing of water we have consumptively used on the reservation for at least four of five recent years. This will keep the river and all other water users whole.

Finally, we are simply requesting the right, to decide for ourselves how best to use our water because we do not have this right today.

Our Tribal Council is committed to maintaining and improving the health of the river and to developing a sustainable tribal economy. Water leasing as we propose can achieve both goals. Our water can also help build a bridge for the basin to get to a future that has the advanced technology for water desalination and reuse.

Thank you for inviting me to testify today. I will submit written testimony and am pleased to answer any questions you might have.

Mr. HUFFMAN. I appreciate that, Chairwoman Flores. Let me remind members of the Committee that Rule 3(d) imposes a 5-minute limit on questions. We will now turn to Member questions, and I will recognize Members, starting with myself.

And Chair Flores, I would like to begin with you, please. Thanks again for joining us. I appreciated the conversation about how your tribe is committed to providing the Colorado River the same support it has provided us, in your words, for so long.

And then you continued by talking about how your tribe will support water uses through leases that strengthen the health of the Colorado River. So, I have no doubt about your commitment here, and I appreciate your comments. But I do want to follow up on that subject, and just ask about NEPA, the National Environmental Policy Act, one of our important environmental protections in Federal law, which spotlights the environmental impacts of any proposed actions and develops alternatives that can be chosen to avoid or limit harmful environmental impacts and unintended consequences.

So, I just want to ask, as you develop and refine your legislation on water leasing, will you support the preservation of the NEPA process and other environmental protections in a manner similar

to what I understand has been done with other tribal water leases in Arizona and elsewhere?

Ms. FLORES. Thank you for your question, Chairman Huffman. Yes, we will follow all the requirements that other tribes have been imposed with.

Mr. HUFFMAN. OK, thank you for that. And I want to also ask you about the math problem that we have on the Colorado River.

As you know, we have legal entitlements that add up to 17.5 million acre-feet of water every year. And with global warming and a more realistic, more modern assessment of the hydrology of the Basin, we may only be able to deliver something much less than that. I am hearing maybe 12.3 million acre-feet.

So, given our math problem, I want to ask how you view the idea of prioritizing system conservation and future water leases and prioritizing other actions that can help us reduce overall consumption and address this systemic shortage.

Ms. FLORES. Would you repeat that question again?

Mr. HUFFMAN. Sure.

Ms. FLORES. It was a long question.

Mr. HUFFMAN. I won't repeat the whole thing. You know that we have an imbalance, in terms of the entitlements that far exceed what we now understand the hydrology of the Basin will provide. So, I just want to ask how you view the idea of prioritizing conservation in future water leases and also actions that can help us reduce overall consumption.

Ms. FLORES. OK. Thank you for the question. Our proposed legislation only permits us to lease water that we have been using already on our reservation. So, we are required to reduce consumptive use to make water available in a lease.

Mr. HUFFMAN. Thank you. In the time I have left, I just have a couple of quick questions for Assistant Secretary Trujillo and Mr. Vigil.

I want to start with large-scale water recycling. We are seeing some, I think, very promising collaboration in that regard. This is drought-proof water supply, of course, that we have historically done on a smaller scale. But with these larger-scale projects, we can actually provide supply for millions of people. So, I want to ask you where that fits into our planning and our future on the Colorado River Basin.

Ms. TRUJILLO. OK, thank you. We have a system for unmuting.

Mr. HUFFMAN. Yes, we are making progress.

Ms. TRUJILLO. Water recycling is a very important component of our portfolio, and the new authorization proposed in the infrastructure package will be very helpful. I think it does represent a good opportunity to continue that collaboration that we have seen among the states, to continue the partnering between the Federal Government and the local entities who are doing so much on the ground. And we are going to have to do conservation in every state, going forward, to help continue to address the conditions that we see.

Thank you for thinking proactively about that issue.

Mr. HUFFMAN. Thank you. And in the limited time I have left, could you just speak quickly about Salton Sea restoration? Why is this important, not just in California, but for other Basin states?

Ms. TRUJILLO. Yes, thank you for recognizing the importance of the Salton Sea. I formerly lived and worked in California and dealt with issues at the Sea firsthand. I met as recently as yesterday with representatives from the Imperial Irrigation District, and stability at the Salton Sea helps create stability with respect to the interactions within California, which also helps create stability with the other states and with our government.

It was great to see support from the Representatives in Arizona recently for additional Salton Sea funding and support, and I know the Upper Basin states have similarly, in the past, reached out and supported those efforts, as well. So, I think there is a recognition of the importance in a very broad context.

Mr. HUFFMAN. Thank you very much.

Ranking Member Bentz, I see you back on the screen. Are you ready to go?

Mr. BENTZ. I am ready to go.

Mr. HUFFMAN. Excellent, you are recognized.

Mr. BENTZ. Thank you, Mr. Chair.

Madam Assistant Secretary, the situation—I know you are familiar with it—in the Klamath has led this year to a choice between in-stream interests, on the one hand, and farmers on the other. And the farmers lost.

Here on the Colorado, we can see the same situation approaching, and I think it has only been through incredible amounts of hard work by the folks in that Basin to avoid such a stark choice.

But let's assume the worst, and I hate to do so, but let's assume the worst. And when it comes to the future of—there are endangered species on the Colorado. Tell us, if you will, what you think the outcome would be if it came down to the four endangered species on the Colorado, on the one hand, and the outer stream water users, on the other?

Tell me, will the same thing happen on the Colorado that has happened on the Klamath?

Ms. TRUJILLO. It can be—thank you for that question. And, as you noted, we have had tremendous challenges in the Klamath Basin. I know we have been in close coordination with your office, and I know how important the issues are to you. And I think you know we have been working very, very hard to try to balance several competing demands for insufficient water supplies. We saw the worst drought ever this past year, and it was a horrible situation to be in.

The Colorado River Basin can be a good model for continued coordination, including with respect to these kinds of endangered species challenges that exist. There are three different recovery programs in the Basin that have a wide range of support from the water users, from the environmental communities, from the tribes, from our Federal team, as well. So, we have a strong record to be building from in the Basin. And I think it is a good model that we can use in other contexts, as well.

I appreciate being part of these conversations.

Mr. BENTZ. Thank you, Madam Secretary, and I just want to say thank you for the work that the Bureau has done in trying to help in an extraordinarily difficult situation.

What I am really trying to call out, though, is the very high probability that we are going to see this happen again and again as we look into this very, very water-short future. So, what I am hoping that we will be able to do is address the Endangered Species Act in a way—I think you kind of alluded to it when you said people are working together to try to figure out how to make these things work.

The kind of all-or-nothing zero-sum game that we see in the Klamath, though, when it comes to water, I don't think is the proper future. I think the proper future is one where we figure out a way of trying to make sure everybody gets something in these situations, as opposed to cutting everybody off, as did happen in the Klamath.

And the reason I bring this up is because people are suffering so greatly from this. I mean, the damage, even notwithstanding your excellent efforts in trying to help people out. So, I am just saying that is why I welcome this conversation today, because I see the same thing coming on the Colorado that we had to deal with in the Klamath this year. And I am just so wishing that we don't have to deal with it again. Forgive me for going on like this, but it is such an important thing to the people in my area, and not only my area, but the Central Valley Project of California.

So, having said that, I am going to shift it over to Chairwoman Flores for a second.

You mentioned, Chairwoman, that the Colorado River Indian Tribes have worked with stakeholders and the state of Arizona for over 5 years to develop the proposed legislation, your testimony highlights. What, in your opinion, are the major barriers to actually having the content of that bill happen?

Ms. FLORES. The major barriers for our legislation bill is just to get everybody on the same page, and we have done that. We have been, over the past 5 years, having meetings, and having a voice. And not having a voice was one of the barriers.

So, now we do have a voice, and stakeholders and other entities are recognizing us, and they see our water and our first priority water rights, and they see that we have been participating in the pilot programs of fallowing our lands, and we have been committed and have held our end of the bargain by keeping the water in Lake Mead with a pilot program, and also with the DCP.

We were welcomed to join in and be a part of the solution, and not a hindrance in saving the river. And, again, the river has always taken care of us. We need to take care of this river. And I think that there are many other barriers, but that was one of the main barriers that we recognized, our water allocations were not recognized in seeing all the shortages.

So, we have something to offer. Thank you.

Mr. BENTZ. Thank you for that.

And Mr. Chair, sadly, I didn't have my clock on. Do I have time left for another question?

Mr. HUFFMAN. Well, you are a minute 18 into the red, so——

Mr. BENTZ. So, the answer is no.

Mr. HUFFMAN. Unfortunately, I have to say no, but we can come back.

Mr. BENTZ. Thank you.

Mr. HUFFMAN. Thank you, Ranking Member Bentz, for your comments, and thanks for bringing up the dire conditions in the Klamath Basin, which we both represent.

I know that the gentleman is aware that everyone in the Basin, and every interest has been suffering, and the downstream communities I represent and the species that you alluded to are also getting hammered. There are no big winners in this drought condition, so I did want to make that point.

And the Chair will now recognize Mr. Costa for 5 minutes.

Mr. COSTA. Thank you very much, Mr. Chairman, for holding this important hearing, and not only today, but next week.

As you know, I have historically been involved in this from my days in the State Legislature, as Chairman of the Ag and Water Committee. And I think that water, the precious water resource that we all depend upon, is going to be one of the most pressing challenges we face in the 21st century with climate change, not only for western states, but for our entire country and the world. It ultimately will determine whether or not we are amicably able to live and support an increased population, not only in our country, but around the world.

Let me remind, and I think most of you know, that part of the challenge here as it relates to the Colorado River, a river that was litigated for decades when the final allocation was resolved with the law of the river, it allocated 7.5 million acre-feet of water to Upper Basin states, and 7.5 million acre-feet to Lower Basin states. It includes Arizona, California, and Nevada. In addition, 1.5 million acre-feet to Mexico.

It was determined back then, in the 1960s, in historical data, that the average yield was about 16.4 million acre-feet per year. But the fact of the matter is that that was over-allocated. We know that today. It is estimated that water flows over the last two decades have continued to decline, averaging 12.4 million acre-feet. So, we have oversubscribed the river, and that is part of the challenge here.

And the Native Americans and the Nation states that are represented here clearly have an important requirement that they be afforded their water rights, as well. And we have folks that have determined that they have rights to the river that have yet to be resolved, and that is on top of what has already been determined to be allocated.

So, we have more demand. And guess what? Since the 1960s, all the Southwestern states, Upper Basin states, the Lower Basin states, they are growing, and more demands on that water, whether we are talking about New Mexico, Arizona, Nevada, California, Colorado. So, how we deal with this conundrum with climate change is, really, the issue at hand.

I have long sought—and I want to ask my questions toward Ms. Trujillo—we have to use all the water tools in our water toolbox.

In California, we get water from a number of different sources. But one of the primary sources is the Colorado River Basin. Ms. Trujillo, how does Federal investment in our water infrastructure, including improving conveyance, help California and the entire western states become more resilient to climate change impacts on our water supplies?

Ms. TRUJILLO. Thank you, Congressman. The muting comes from your guys, so we have figured it out. Thank you.

Mr. COSTA. As long as the Chairman gives me the 10 seconds that you were muted.

Ms. TRUJILLO. That is a deal.

Mr. HUFFMAN. We have been pretty generous today, Jim.

Ms. TRUJILLO. Thank you, Representative Costa, for your leadership on these issues. From the Federal perspective, the investments absolutely make a difference, with respect to the water supplies. But there is a strong connection between the stability that we are seeking to achieve in the Colorado River Basin and the other sources of supply for California. That is a clear recognition that exists.

Our infrastructure proposals include investments in modernizing the aging infrastructure that we have, and developing more water recycling and more innovative technologies to more efficiently use water, and in basic investments in conservation throughout the Basin.

Mr. COSTA. And I am a big supporter of that. I only have about 45 seconds left. I know you have your Interagency Drought Relief Working Group and your National Drought Resilience Partnership as part of the water subcabinet meeting.

And, we in California, with our multiple sources, are looking at ways, and are working with the Chairman to better reinforce our own conveyance of facilities and provide ability to reduce the amount of evaporation through the use of solar power and other means. Because, to the degree we can use these conservation tools, not only to improve our species, but improve water for our farms and our farm communities with these extreme drought conditions.

We will talk more about the money, but I think in the next hearing I would like to know how you are going to, through this various water subcabinet effort, allocate these funds, and how we can work with you so all of the different states that are impacted by the Colorado River, including California, can participate in the allocation of these funds, because they are desperately needed during the extreme droughts.

And I want to thank the Full Committee Chairman and the Subcommittee Chairman. During the Reconciliation period we were able to add another $500 million for drought relief purposes, and this is all important as we kind of work through this.

Mr. HUFFMAN. I thank the gentleman, and I am now told that Representative González-Colón will go next.

Representative González-Colón, you are recognized.

Miss GONZÁLEZ-COLÓN. Thank you, Chairman, for allowing me. I have been hearing the witnesses.

And first of all, I want to say thank you to all of them for bringing this issue. And even when I am part of the eastern part of the Caribbean, knowing what is happening in other parts of the states is important. I mean, all of us have our problems, and I think the witnesses have illustrated things that can be achieved by working together. So, in that sense I want to say thank you.

But I want to yield my time to Ranking Member Bentz.

Mr. BENTZ. Thank you so much, Representative González-Colón, for that yield, and I will make sure that I only utilize 2½ minutes,

so I give my overage back to the Chair. But a question back to Secretary Trujillo for just a moment.

Many of the Basin states noted the need for continued improvements to system modeling tools. What is Reclamation doing in that regard? Are you working on design of better tools to try to tell us what we can anticipate, and what we are going to do, should further shortfalls occur?

Ms. TRUJILLO. Thank you, Representative Bentz. We absolutely are continuing to work to develop the best available information that we can utilize for our own decision making, but also to have available for the communities and the water managers around the West, including in the Colorado River Basin.

We work closely with our other Federal agencies at NOAA, the Weather Service, and the forecast center to be able to have alignment in the information we are providing. We have excellent technical staff at Reclamation, who strive to communicate very effectively with the affected folks that are working on these issues.

Mr. BENTZ. Thank you for that. And with that, Mr. Chair, I am going to yield back. And I hope now we are even, and I will stick within my 5 minutes the next time around. And thanks again to Congresswoman González-Colón for the yield.

Mr. HUFFMAN. I thank the gentleman. Order is restored, and that is much appreciated.

I believe Mr. Soto is next on our side, so the gentleman from Florida is recognized.

Mr. SOTO. Thank you so much, Mr. Chairman, coming to you from Florida, what is generally rich in water country, although our aquifer definitely has some stresses on it. We are very proud of the $8.3 billion that is in the Build Back Better Act to help with Western water issues.

And Chairman, I noticed that you needed a little extra time, so I wanted to yield to you, if you would so want it, the remainder of my time.

Mr. HUFFMAN. I wish you would yield some of your water to California. But——

Mr. SOTO. Whenever you want to fund that cross-nation pipeline of water from the East to West Coast, we have more than enough, more than we want. But that is for another day.

Mr. HUFFMAN. Mr. Soto, there are people who still talk about that kind of thing. I don't think it is ever going to be feasible, but I appreciate the thought.

No, I do not have further questions in this round, so I appreciate——

Mr. SOTO. Then I yield to Mr. Costa the remainder of my time, Mr. Chair.

Mr. HUFFMAN. Mr. Costa, you are recognized.

Mr. COSTA. Thank you very much, Representative Soto, for that opportunity, and Mr. Chairman, as well.

Ms. Trujillo, I would like to get back to the area we were discussing earlier. In the fiscal appropriations for 2022, we have water-related resources at $1.7 billion plus, and that not only deals with the President's request, but additional funding from Fiscal Year 2021. The total, I guess, comes to $1.95 billion, when you add the numbers up.

And then the Bipartisan Infrastructure Bill would add to that another $5.35 billion, $1.1 for water storage, $3.2 for an aging infrastructure account, which I hope we can use some of those funds to deal with the challenges we have in California, and repair projects that are identified under Reclamation's Assessment Management Report.

And then for local communities, I mean, we have so many communities, whether they are Native American communities or small rural communities, whose drinking water doesn't meet with state or federal standards.

How quickly do you think we are going to get that money out?

And, of course, that doesn't mention the Reconciliation monies that I spoke of earlier, and I don't know how much that is going to be, depending upon what happens with Reconciliation, obviously. But what is the strategy that the Bureau has for dealing with getting these monies out as quickly as possible, where it is most needed?

Ms. TRUJILLO. Thank you very much for the support from Congress for these important issues.

The short answer is that they are building upon our existing programs, so we have a very efficient way of getting the additional funding out to the communities. We are building upon the programs that we have. We have backlogs. We have additional requests for funding that we can easily cycle into, and I think that was working in coordination by design for how some of this came together on purpose.

Mr. COSTA. Well, part of that—and the Bureau, obviously, has its challenges, to be sure—but when we worked on the settlement agreement on the San Joaquin River, as an example, we allowed under that legislation that was signed into law the ability for the Bureau to work with local water districts under the thought that they might be able to facilitate the implementation of funding in a more expedited fashion, and the Bureau could, given the more cumbersome process you deal with.

Have you looked at different ways in which you can deal with local agencies to facilitate expediting these funds?

Ms. TRUJILLO. We are always looking for that, for ways to be more efficient. I think, since January, we have already figured out how to allocate funding to over 220 different districts throughout the West.

Mr. COSTA. And I think that Native American groups, as well, right?

Ms. TRUJILLO. Yes. Absolutely, absolutely. We have expanded our tribal technical support programs and have prioritized the ability to efficiently work with them, in coordination with our other partners here at Interior, the Bureau of Indian Affairs, the Fish and Wildlife Service. Yes, we are trying to be as efficient as possible with these programs.

Mr. COSTA. Well, my time has almost expired. I don't know if we can do it in next week's hearing or not, but I think it would be helpful for the Subcommittee and the Full Committee, frankly, to get an idea of what is realistic to be expected, in terms of what has already been allocated in the next fiscal year that can be actually

moved out, and in the next several years. So, that would be helpful, I think, for all of us.

Ms. TRUJILLO. Absolutely.

Mr. HUFFMAN. The gentleman's time has expired.

Ms. TRUJILLO. Thank you.

Mr. HUFFMAN. The Chair now recognizes Ms. Stansbury from New Mexico for 5 minutes.

Ms. STANSBURY. Thank you, Mr. Chairman. Thank you for convening today's important hearing, and thank you to all of our witnesses for joining us today.

I am especially proud to see so many New Mexicans here. As I often say, New Mexico's top exports are green chile and our water experts, of which we have many here today. So, it is so great to have you all here today.

As we know in New Mexico, el agua es la vida, and it is part and parcel of our cultures and ways of life, our economy, and the future of our state.

Assistant Secretary Trujillo, we are so proud to have you serving in this role and representing New Mexico.

And, Mr. Vigil, we are so grateful for your leadership at Jicarilla and on the Ten Tribes Partnership. And, of course, we are joined by our state engineer, who is here today, Mr. D'Antonio.

As a fellow New Mexico water nerd, I am excited to have you all here today to talk about the Colorado River and our other crucial watersheds in the West.

As we all know, our rivers and communities have been gripped across the West by a drought this year. But our communities are no strangers to water scarcity, as our tribes and pueblos have lived on these lands since time immemorial, and our acequia and land grant communities have shared waters across many, many generations.

But it is clear that what we are seeing today is part of a much larger trend of a changing climate. As temperatures are getting hotter, our snowpack is declining, and we are seeing fundamental changes in our hydrologic systems. And nowhere is this more visible than in New Mexico, where our communities have faced historic drought conditions this year, at the same time that our state has had the largest number of disaster declarations due to flooding and wildfires this year. So, it is clear, climate change is here, and it is threatening the ability of our communities to bring water to our fields, to meet the needs of our tribes and pueblos, our acequias, our farmers and ranchers, and our rivers, which depend on these life-giving waters.

While the Colorado River is being strained by these changes, we also are seeing historic partnerships in the Basin, led by many of the panelists who are joining us here today, that are helping to bring transformational change to the management of this system. And these partnerships are crucial, not only to the communities in the Colorado River, but to the Rio Grande Basin that flows through my district, which depends on water transfers from the Colorado to meet the needs of our communities and our endangered species.

As we look to the future and managing these river systems in a time of climate change, we need to continue to leverage these collaborative partnerships to invest in the best monitoring science and

technology that we can, to invest in modernizing our infrastructure and operational requirements, and ensure that our communities have a seat at the table, and are helping to direct the decisions that are made about those water systems.

And I believe our job, as lawmakers, is to make sure that we are putting into place all of the changes that are necessary to empower our communities by passing transformational water policies; working to protect our tribes and pueblos' trust and treaty responsibilities and water rights; investing in our water management agencies; investing in resilient infrastructure, as we are doing in the Build Back Better Act and Bipartisan Infrastructure Act; investing in our water science and data and technology; and protecting those rivers. That is our charge, as public servants and caretakers of these sacred waters.

With that, Mr. Chairman, I would like to use a little bit of my remaining time to ask Assistant Secretary Trujillo.

You have worked across the West, and the Colorado, the Rio Grande, and many of our rivers for many, many years. Can you please share with us what you think Congress can do to help lift up the best of these collaborative watershed efforts, and what we can do to best support your work?

Ms. TRUJILLO. Thank you, Representative Stansbury. And it makes me homesick to see you and Representative Fernández there, in Santa Fe, or in New Mexico.

I think the work that Congress is doing through the bipartisan infrastructure package is a great example of how that helps us do exactly what you mentioned in your remarks, where it allows us to improve our infrastructure, it allows us to do more recycling, to do more water planning, and drought contingency planning efforts, and support the existing programs that we have.

And I think the underlying emphasis on sound science is exactly the way that we want to continue to be doing business in the Colorado River Basin and in the West by context, as well.

Ms. STANSBURY. Thank you so much.

And I see, Mr. Chairman, I am out of time. But if you will indulge me, I just want to say I am really grateful also that we have Mr. Vigil here today, who is such an incredible resource on how we bring and make sure that our tribes have a seat at the table, as we are directing and protecting our water rights for our tribes and our communities moving forward.

So, we are grateful to have you here today, as well. Thanks very much.

Mr. HUFFMAN. Thank you, Representative Stansbury. We are going to continue this New Mexico thread by recognizing Congresswoman Leger Fernández for the next 5 minutes.

Ms. LEGER FERNÁNDEZ. Thank you, Chairman Huffman. Are you getting an echo, or am I all right?

Mr. HUFFMAN. I love the sound of your voice, but we are hearing it twice.

Ms. LEGER FERNÁNDEZ. Let me try to fix that.

[Pause.]

Ms. LEGER FERNÁNDEZ. OK, is this better?

Mr. HUFFMAN. Yes, the audio sounds pretty clear. Go ahead.

Ms. LEGER FERNÁNDEZ. OK, great. Sorry about that.

[Audio malfunction.]

Ms. LEGER FERNÁNDEZ. Agua es vida, water is life. Earlier this year I did an Ague es Vida Tour in my beautiful district, where I heard from the Rio Chama Acequia Association, local farmers, the Carson National Forest, Taos Pueblo, and many more. And at each stop, local leaders told me about the impact that declining water supplies and the climate crisis has on their communities.

And something that resonated, as Mr. Vigil pointed out, the importance of people, of tribes being talked to before things happen. The acequia users immediately below the dam, which receives water from the Colorado, noted that they were never consulted when the dam was being planned and constructed. They noted how the dam's operation negatively impacts their irrigation canals and structures, but they just weren't part of the conversation.

Mr. Vigil, in your testimony you talked about an idea. You named it the sovereign governance team, and that you thought it was very important that this be created when crafting future Colorado River agreements. Can you give us a really short synopsis of what a sovereign government's governance team looks like?

What should it look like, this consultation?

[Pause.]

Ms. LEGER FERNÁNDEZ. Did I go mute again?

Mr. VIGIL. It wasn't you, Representative, it was me, I am sorry. Thank you so much for the question, and thank you for the acknowledgment.

And yes, it is really important to understand, Representative, that right now there is no formal institutionalized inclusion of the 30 tribal sovereigns into the policy-making process, as it exists. So, we have to rely on either our State sovereign or the Federal sovereign to represent our tribal water interests.

And we have really built the foundation of understanding, I think, particularly in the Colorado River Basin, in terms of the absolute need for tribes to be at that sovereign table with the Federal Government and the State sovereign to make policy for the future of the Colorado River, because the current policy isn't inclusive of that formally. And no matter how much you want to engage in the conversation of inclusion, the structure doesn't allow for that right now.

So, when we are talking about drought and drought response, yes, we can be a part of that conversation, and it is in our DNA about how to live sustainably and how to practice adaptive management in and through our culture. But for us to be able to participate meaningfully, as we should, there needs to be a structure for engagement, and there is not one that exists now.

So, why not use the template of something that was already created and seems to have worked, to a large extent, in terms of creating a table for sovereigns to engage? And this will do a whole number of things, in terms of forwarding policy in the Colorado River, where we need to start thinking about a culture and behaviors of dealing with less of a resource, and how we are going to equitably apportion that resource, as has already been stated.

Ms. LEGER FERNÁNDEZ. Thank you so very much. I wanted to get two quick questions in for our other Nuevo Mexicana.

As you know, the Navajo Gallup Water Supply Project runs through my congressional district. It helps the Jicarilla Apache Nation, Navajo City, Gallup, and other surrounding communities. And I am going to put this together with also other pipelines, because what we have is, those pipelines, finishing them has been delayed and we don't have the authorized spending level that is needed. We no longer have enough money.

So, I wanted to ask you if you and the Bureau would be committed to work with me and the Jicarilla Apache Nation, the Navajo Nation, and Gallup on amendments to the Project's authorization, so we can take advantage—not take advantage, but we can make sure that we recognize the true costs.

And, also, we are going to have to make sure there are additional groundwater wells to supply communities until the project is complete. So, I am hoping you will be open to working with us on getting that done.

Ms. TRUJILLO. Thank you, Representative Fernández. That project is near and dear to my heart, and I have been working on it very closely for over 15 years, and will be very happy to make sure your staff and yourself are aware of all of the progress we have been making.

And we have been working very closely with folks there in the region, at the Navajo Nation, and in the local communities to think creatively about how to make sure we can complete the effective components of the program. And we will be happy to work on technical support with your office and with others to make sure that we can make any adjustments that may be needed.

But I was happy to participate in the groundbreaking ceremony for the Cutter Lateral, and then I am looking forward to being able to participate in the blessing ceremony, because that portion of the pipeline has been completed. The managers did a great job of that construction, and it is currently providing water to the communities who did not have it available, previously. And it is a great example of the commitment from the Bureau of Reclamation and Department of the Interior of meeting the tribal needs in our various communities and in our home state of New Mexico.

Mr. HUFFMAN. Thank you, Ms. Trujillo. The gentlelady's time has expired.

The Chair now recognizes the Chairman of the Full Committee, Representative Grijalva from Arizona.

Mr. GRIJALVA. First of all, I thank Chair Flores for her comments and her kind remarks. They are very much appreciated. And as the Chairwoman knows, all of us are very much aware in Arizona of the significant contribution the tribe made to accomplish that portion of the Drought Contingency Plan. So, many thank yous.

Let me follow up on something that Chairman Huffman was asking. The comments you hear about, if you throw out NEPA, you throw out endangered species, you throw out other environmental protections, air quality, water quality, that the drought will be resolved. That is not true. That is not even a false choice. It is just not true. I ask this because I think it is very important about utilization and usage, going forward.

And as you and the council put together the leasing proposal, is the lease going to prioritize water releases that help deal with the

deficit that we have in the Colorado River? Is that the primary focus of it, if I may ask?

It is your prerogative to put in there what you want, Madam Chair, and I acknowledge that and respect that. But my question is, is that something that is a consideration?

[Pause.]

Mr. HUFFMAN. Do we have the Chairwoman?

Ms. FLORES. Thank you for the question, Chairman Grijalva.

We want our sovereignty protected to use our water as we decide. Right now we don't have that authority to use the water, and we are seeking to lease our water. We can only use our water on our lands, our farmlands.

But our tribal members decided in a referendum that they do not want to make multi-generational commitments of our water for new development. We are finally free from the long-term BIA land leases and do not want our water to be committed in the same way.

We are committed to saving the river and helping our neighbors and overall environment. So, we want the authority to decide again for ourselves how to use our water, which is the same authority other tribes in Arizona have, and we have water to do so.

Mr. GRIJALVA. And I respect that, trust me, I respect that. But in this process, this legislative process, I am asking a question that I think is inevitable, and I think that is further discussions that Chairman Huffman and I can have with your leadership and yourself, Madam Chair. Again, thank you for what you are doing for Arizona, and thank you very much for your kind comments. I appreciate it.

Ms. FLORES. Thank you.

Mr. GRIJALVA. Mr. Vigil, 12 tribes in the Colorado River Basin still have unresolved water rights claims. And we need that resolution to quantify the water rights for the tribes, not only for themselves, but, I think, for the whole Basin. Talk about that. That is more of a statement than a question, but what I mean is, that is pretty obvious. Those have to be closed.

[Pause.]

Mr. GRIJALVA. Mr. Vigil?

[Pause.]

Mr. HUFFMAN. Mr. Vigil, you are muted.

Mr. VIGIL. I am very sorry. Yes. Incredibly good question, in terms of the tribes in the Basin who don't have quantified, or haven't settled their water rights yet.

In terms of the structural deficit that is going on, the supply demand imbalance, and it becomes a real part of the conversation, because where is that water going to come from in that particular climate? Because that tribe absolutely has a right to that water, and it has a right to water for domestic uses, even paramount to just a settlement.

So, it becomes really important that for certainty in the Basin, we start to recognize not only those tribal rights that are quantified, but those that are unquantified, because those have to be included into the conversation.

Mr. GRIJALVA. Right. Thank you. Certainty, I think, is the key word that you used, and this is critical to that certainty for the Basin.

If I may, Mr. Huffman, one question for Mr. Vigil.

We have heard from the Tribal Nations today about being at the table, and it is absolutely correct. With 25 percent of the resource, they have to be at the table, not only proportionally, but with equity. But in the past the table has been dominated by users whose interests are more on the business/commercial side.

And not only the integration of tribes, but how we create a balance in the future drought management plans after 2026, how are we going to create that balance?

Mr. VIGIL. Yes. First you have to acknowledge——

Mr. GRIJALVA. This is for Ms. Trujillo, Mr. Vigil.

Mr. VIGIL. Oh, I am sorry.

Mr. HUFFMAN. Ms. Trujillo?

Ms. TRUJILLO. Thank you, Mr. Chairman and Mr. Vigil, as well.

Mr. Chairman, we at Interior recognize the importance of involvement of our tribes, and have been working very closely and through several forums, some of them that Mr. Vigil is involved with, like the Water and Tribes Initiative and the Ten Tribes Partnership.

We also have a technical discussion going on with regular conversations throughout the Basin with our tribes. And then, in Arizona, the intertribal forum allows us multiple opportunities for interactions.

And we think, going forward, we are going to have to be as inclusive as possible in all of the seven states, with respect to the State Representatives, the local communities, the non-profit organizations, the very, very broad group of interested people who are depending on the Colorado River and will need to be part of our discussions, going forward.

Mr. GRIJALVA. Thank you. When this was created, the interests of the West were different. This is a different West, and there are many different constituencies and voices that need to be heard in the development of those plans.

Thank you, Mr. Huffman, thanks to——

Mr. HUFFMAN. Thank you, Mr. Chairman.

Mr. GRIJALVA. I yield back.

Mr. HUFFMAN. Thank you. And I know that, as Mr. Vigil was attempting to chime in, he was going to remind us that he had suggested the Columbia River Basin as a potential model as an answer, I am sure, to your question. I appreciate his testimony and everyone in our panel of Federal and tribal witnesses.

We are going to move on now to a second panel. I would like to remind the second panel witnesses to please mute yourself when you are not speaking. Of course, the flip side of that is please unmute yourself when we need you to speak. We are continually reminded of that side of it, as well.

But I will allow the witnesses to all finish their testimony before we bring it back to Members for questions.

I will now introduce our second panel. Today, we have the governors representing all of the seven states of the Colorado River Basin with us to present testimony—or the governors' representatives, rather. We won't have all seven governors themselves, but we will have representatives from all seven of those governors.

And we will hear first from Mr. Thomas Buschatzke, Director of the Arizona Department of Water Resources. The Chair now recognizes Mr. Buschatzke for 5 minutes.

[Pause.]

Mr. HUFFMAN. And you are muted, Mr. Buschatzke.

[Pause.]

Mr. HUFFMAN. OK, we are going to try to fix the audio. Let's give this just a moment.

We could have Mr. Peter Nelson from the Colorado River Board of California ready on deck, if we can't get the audio fixed for Mr. Buschatzke.

Mr. BUSCHATZKE. Chairman Huffman, can you hear me now?

Mr. HUFFMAN. There you go. We have you loud and clear.

STATEMENT OF TOM BUSCHATZKE, DIRECTOR, ARIZONA DEPARTMENT OF WATER RESOURCES, PHOENIX, ARIZONA

Mr. BUSCHATZKE. Thank you for providing me an opportunity to testify today on behalf of the state of Arizona. I have also submitted written testimony.

A 20-year drought and climate change have had devastating impacts on the Colorado River. In 2022, Arizona will lose 18 percent of its total Colorado River entitlement. Impacts to agriculture, tribes, and municipal water users will result. But Arizonans have come together to provide financial resources and wet water to partially mitigate those impacts.

The likelihood of future deeper cuts is high, and in 2023, Arizona may lose an additional 80,000 acre-feet. And mitigation for those reductions is unlikely. In August, projections of Lake Mead levels triggered a consultation provision in the Lower Basin Drought Contingency Plan. The robust actions we have taken to date are not enough. Arizona, Nevada, and California have been meeting, and are looking to do more.

Additional actions to protect Lake Mead fall into two categories: mandatory cuts or additional conservation. Arizona's goal is conservation, and not greater cuts. Tribal and non-tribal partnerships will achieve that goal.

Over the last two decades we have learned valuable lessons for managing the Colorado River, and they include:

(1) be vigilant in monitoring the hydrology of projected reservoir elevations. We must have data and modeling products produced by the Bureau of Reclamation, who possess the best available science.

(2) achieve outcomes to equitably share the benefits and risks attendant to the Colorado River system.

(3) adhere to an ethic of collaboration among the states, Mexico, the United States, tribes, and other stakeholders.

(4) recognize that we are connected, from Wyoming to the Sea of Cortez.

(5) incentivize actions that conserve water in Lake Mead.

(6) resources from the United States and its agencies must be tools in the toolbox.

And (7) continue state participation in formal discussions with Mexico.

As I mentioned, Arizona tribes are key stakeholders in Colorado River management. A healthy river is critical to tribal water rights

settlements. Arizona has 11 of its 22 tribes with rights yet to be determined in whole or in part.

Uncertainty attached to climate change impacts on the flow of the river, and to the post-2026 operating criteria, further complicates the completion of settlements. But it is important to the state that those tribal claims be settled.

In conclusion, drought and climate change are presenting challenges that are likely to increase over time. Proper planning, management, robust conservation, and collaboration across political jurisdictions and among stakeholders create the greatest likelihood for success today and in the future.

I thank you again, and I stand ready to answer questions.

[The prepared statement of Mr. Buschatzke follows:]

PREPARED STATEMENT OF THOMAS BUSCHATZKE, DIRECTOR, ARIZONA DEPARTMENT OF WATER RESOURCES

INTRODUCTION

My name is Tom Buschatzke and I am the Director of the Arizona Department of Water Resources. Thank you for providing me an opportunity to present testimony on behalf of the State of Arizona as the subcommittee examines the status and management of drought in the Colorado River Basin.

BACKGROUND

In 1980, Arizona took a major step forward in water management when it adopted the Groundwater Management Act, a groundbreaking set of laws to manage our finite groundwater supplies and incentivize conjunctive use of surface water and groundwater. The Act was a hard-fought compromise between agriculture, industry, mining interests and municipalities. The Act imposes stringent water management regulations in the areas of the state designated as Active Management Areas, or "AMAs." Within AMAs, municipal, industrial, and agricultural groundwater users are subject to mandatory water conservation requirements. Agricultural acreage is capped, with no new agricultural land allowed to be put into production after 1980. Turf acreage is limited on new golf courses and so is the amount of water they can use. New housing developments are required to show that they have a 100-year renewable water supply before they can be built. Outside of AMAs, community water systems, i.e., municipal providers, are required to have conservation and drought management plans in place and agricultural acreage is capped in areas designated as Irrigation Non-Expansion Areas.

The overarching policy goal of the Act is to reduce reliance on finite groundwater supplies and preserve those supplies for use when drought has reduced the availability of surface water supplies. These aggressive water management actions have resulted in a reduction in Arizona's water use over the same time period that the State's population and economic output have increased. One example of the Act's success is that Arizona's dependence on groundwater has decreased from 53% in 1980 to 41% as of 2019.

Building Upon the Original Groundwater Management Act

The 1980 Groundwater Management Act has been improved over time as new programs and tools were identified. In 1986, the Arizona Legislature established the Underground Water Storage and Recovery program to allow persons with surplus supplies of water to store that water underground and recover it for use at a later time. In 1994, the Legislature enacted the Underground Water Storage, Savings, and Replenishment Act, which further refined the underground storage program.

There are several mechanisms used to accomplish the storage requirements and certify the creation of "long-term storage credits" that can be accessed in the future. One way to earn long-term storage credits is to put Colorado River water or reclaimed water into facilities constructed for the purpose of allowing the water to infiltrate into the underlying aquifer. Long-term storage credits can also be earned by supplying a substitute surface or reclaimed water supply to a farmer who would otherwise pump groundwater for irrigation. The groundwater left in the ground by that farmer creates long-term storage credits that can be recovered later by the entity supplying the surface or reclaimed water supply to the farmer. This method

for creating long-term storage credits leverages existing infrastructure: the canals, laterals and wells already being used by the farmer.

Another commonly used method to create long-term storage credits is to utilize existing dry streambeds. Water is delivered into those streambeds and infiltrates into the groundwater aquifer. Infiltration rates can be enhanced by the construction of basins or berms. A less frequently used fourth mechanism is to put surface water or effluent directly into the aquifer through injection wells.

Protections are in place to ensure that the addition of water to the aquifer through this program does not harm the aquifer's water quality and that rising water levels do not damage existing structures extending below land surface.

The underground storage program serves multiple objectives by integrating sustainable water supply management and drought protection. Water users in Arizona have taken advantage of this program to store water underground to protect against reductions in surface water supplies due to drought. Long-term storage credits can be used to demonstrate renewable water supplies to meet the 100-year requirement for residential growth. Long-term storage credits are fungible and can be sold from one water user to another, thus creating a market mechanism to help manage water supplies in Arizona.

The State recognized the value of the underground storage program when it created the Arizona Water Banking Authority in 1996. This state agency is charged with storing water underground to backfill shortages of Colorado River water for municipal, industrial and tribal entities that have their water delivered to them through the Central Arizona Project and for certain municipal and industrial Colorado River water users who have contracts directly with the Secretary of the Interior. To date the Water Banking Authority has stored about 4.3 million acre-feet for these purposes. The Water Banking Authority is also authorized to engage in interstate banking of Colorado River water with California and Nevada. To date, the Water Banking Authority has stored 601,000 acre-feet for Nevada. Arizona previously stored water for California, but California has since recovered that water.

Current Issues of Concern: Drought and Climate Change

Arizona has been under an emergency drought declaration since 1999. The Governor of Arizona makes that declaration annually pursuant to a recommendation from the Governor's Drought Interagency Coordinating Group. The declaration relates to local conditions "on the ground" in Arizona as well as drought impacts to water supplies.

The past two decades of on-going drought in the western United States, and in particular the Colorado River Basin, is challenging the seven Colorado River Basin States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, as well as the Republic of Mexico, to meet the needs of the 40 million people and millions of acres of farmland that rely on the River.

The volume of water in Lake Mead has been declining since the Lake was last full in 2000. The cause of the decline is over-allocation of the River and drought-induced reductions in the annual average flow of the River. More importantly, many scientists believe that it is climate change, not drought, that is the root cause of declining flows in the Colorado River system. To illustrate that point, we have seen several years in which runoff is significantly lower than snowpack. For example, in water year 2021, snowpack in the Colorado River Basin peaked at 89% of normal, while runoff was only 33% of normal. This phenomenon is likely the result of the hotter and drier conditions caused by climate change. This trend is one that water managers must take into account as we plan for the future of the Colorado River.

Natural flows in the Colorado River have decreased from the long-term average of 14.8 million acre-feet per year to an average of 13.3 million acre-feet per year over the last 30 years. Future flows of the Colorado River are predicted to be even less.

Actions and Creative tools to manage the Colorado River

Water managers in the Colorado River Basin have been cognizant of the risks to the water supplies provided by the River for decades and have taken numerous actions to address these risks. In 2007, the Secretary of the Interior adopted the Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead, commonly referred to as "the Guidelines." The Guidelines require reductions in Colorado River water use by Nevada and Arizona triggered at specified elevations in Lake Mead. Those reductions were intended to slow projected declines in Lake Mead elevations and to reduce the probability of the Lake falling below critical elevations to single digits. The Guidelines also work to balance the contents of Lake Powell and Lake Mead, thus protecting key elevations in both reservoirs. New tools to incentivize conserva-

tion in Lake Mead were also developed in those Guidelines. One important tool is "Intentionally Created Surplus" or "ICS," which allows a water user to conserve water that has been historically used and effectively store it in Lake Mead for use at a later date. That tool has been very successful in bolstering water levels at Lake Mead.

After the Guidelines took effect, water managers representing the Basin States began working with the Department of the Interior and the International Boundary and Water Commission ("IBWC") to develop a framework for cooperative efforts between the United States and Mexico in managing the Colorado River. Recognizing the need to include the Basin States in binational discussions regarding the Colorado River, the IBWC adopted Minute No. 317 to the 1944 Mexican Water Treaty to allow for participation by the Basin States. In 2012, in coordination with the Department of the Interior and the Basin States, through the adoption of Minute No. 319 to the 1944 Mexican Water Treaty, Mexico signed on both to the benefits inherent in the Guidelines, such as conserving water for later use, and to voluntary reductions equitable to those mandated by the Guidelines.

In 2013, the Colorado River Basin States concluded that the Guidelines were not robust enough to protect Lake Mead and the Colorado River System. The States embarked on a process to identify and prescribe additional actions to protect the River. Those discussions culminated in the Secretary of the Interior adopting the Upper Basin and Lower Basin Drought Contingency Plans ("DCP") in May 2019.

The Lower Basin DCP requires additional contributions to Lake Mead by Nevada, Arizona and California at targeted elevations. Through Minute No. 323 to the 1944 Mexican Water Treaty, Mexico also agreed to participate in the actions contained in the Lower Basin DCP. The Guidelines and the DCP agreements are in place through 2026. Table 1 shows the volumes of reductions and contributions by participant at each elevation under the combined requirements of the Guidelines and the Lower Basin DCP.

Table 1. 2007 Interim Guidelines Shortage Reductions and Incremental DCP Contributions

Lake Mead Elevation	AZ 2007	AZ DCP	AZ TOTAL	NV 2007	NV DCP	NV TOTAL	CA 2007	CA DCP	CA TOTAL	BOR DCP	MX Min 323	MX BWSCP	MX Total	TOTAL
≤1090 >1075	0	192K	192K	0	8K	8K	0	0	0	100k	0	41k	41k	341k
≤1075>1050	320K	192K	512K	13K	8K	21K	0	0	0	100k	50k	30k	80k	713k
≤1050>1045	400K	192K	592K	17K	8K	25K	0	0	0	100k	70k	34k	104k	821k
≤1045>1040	400K	240K	640K	17K	10K	27K	0	200K	200K	100k	70k	76k	146k	1,113k
≤1040>1035	400K	240K	640K	17K	10K	27K	0	250K	250K	100k	70k	84k	154k	1,171k
≤1035>1030	400K	240K	640K	17K	10K	27K	0	300K	300K	100k	70k	92k	162k	1,229k
≤1030>1025	400K	240K	640K	17K	10K	27K	0	350K	350K	100k	70k	101k	171k	1,288k
≤1025	480K	240K	720K	20K	10K	30K	0	350K	350K	100k	125k	150k	275k	1,475k

Two other key components of the Lower Basin DCP are expanding ICS flexibility as an incentive to conserve water in Lake Mead and establishing an adaptive management provision if projections show a continued decline in the Lake Mead levels.

While the DCP was under negotiation, in light of the need for immediate action, water managers developed another mechanism to protect Lake Mead, beyond the creation of ICS. Water users can reduce their historical use and leave that water in Lake Mead as part of the contents of the River system. Unlike ICS, the conserved

water is not recoverable by the entity that created it. That water is referred to as "system conservation." The Bureau of Reclamation has played a crucial role in agreements to compensate those who create system conservation by verifying the reduction in consumptive use.

Table 2 illustrates the efforts of water users in the Lower Basin States and Mexico to preserve the elevation of Lake Mead through ICS and system conservation. The Bureau of Reclamation has shown that since 2014, the collective conservation efforts in the Lower Basin have increased the elevation of Lake Mead by approximately 50 feet. When the Central Arizona Water Conservation District's ("CAWCD") voluntary forbearance of excess Central Arizona Project ("CAP") water and the additional contributions agreed to in the DCP are included, Arizona's contributions by themselves have increased the elevation of Lake Mead by approximately 23 feet, two-thirds of which was for overall system benefit and not for ICS.

Table 2. Water Conservation in Lake Mead since 2014

Arizona	**1.44 maf***
Intentionally Created Storage	498 kaf**
System Conservation	305 kaf
DCP Contributions	133[a] kaf
Other conservation activities	507[b] kaf
Lower Basin	**3.89 maf**
Lower Basin Intentionally Created Storage	2.72[c] maf
System Conservation	376 kaf
DCP Contributions	133[d] kaf
Other conservation activities	664[e] kaf
Lower Basin and Mexico	**4.05 maf**
Mexico's Water Reserve	157 kaf
Lower Basin Intentionally Created Storage	2.72[c] maf
System Conservation	376 kaf
DCP Contributions	133[d] kaf
Other conservation activities	664[e] kaf

*maf = million acre-feet

**kaf = thousand acre-feet

[a] As system water; remaining 2020 contribution of 49 kaf included in ICS balance.

[b] Includes voluntary contributions.

[c] Only includes conservation that has contributed to elevation gain in Lake Mead; total ICS accumulation through 2020 as reported in the 2020 Water Accounting Report is 2.84 maf.

[d] As system water; remaining 2020 contributions of 57 kaf included in ICS balance.

[e] Includes voluntary contributions and other unused water.

Impacts of Colorado River reductions to Arizona and mitigation efforts

In 2022, Tier 1 of the Guidelines will be in effect, requiring additional DCP reductions. Nevada will leave 21,000 acre-feet in Lake Mead; Mexico will leave 80,000 acre-feet in Lake Mead; and Arizona will leave 512,000 acre-feet in Lake Mead. These are significant reductions for our water users.

Arizona has a 2.8 million acre-foot per year apportionment of Lower Basin Colorado River water. When full supplies are available, about 1.5 to 1.6 million acre-feet of this water is used by Tribes, agriculture, cities, water companies and industries in central and southern Arizona through the CAP. The remainder of Arizona's apportionment is used by Tribes, agriculture, cities, water companies and industries along the mainstem of the Colorado River in western Arizona.

Pursuant to established priorities, virtually all the reductions to Arizona in 2022 will be applied to CAP supplies. Water deliveries to the Arizona Water Banking Authority for water banking (underground storage for future recovery), agricultural users, two tribal communities, 12 cities and towns, two private water companies, a community facilities district, the Central Arizona Groundwater Replenishment District and a handful of industrial users within the CAP system will be reduced.

To address these cuts, Arizona has a DCP implementation plan to partially mitigate the impacts. The reductions to tribal communities and municipal and industrial users will be fully mitigated with substitute water supplies or financial compensation. The reductions to agricultural users will be partially mitigated with substitute

water supplies and money for infrastructure and efficiency improvements. Water banking will not be mitigated.

The Arizona DCP Implementation Plan is a monument to collaboration and creativity. Funding sources came from the State, CAWCD and non-governmental organizations. A DCP Steering Committee composed of bipartisan State legislative leaders and representatives of the State executive branch, tribes, water users, interest groups, agricultural districts, counties, and the Bureau of Reclamation hammered out the plan over an 8-month time frame. A package of state legislation was passed on January 31, 2019 to effectuate the implementation plan and to authorize the Director of the Arizona Department of Water Resources to sign the Basin States' DCP Agreements. A total of 22 separate agreements were negotiated and executed to deliver the DCP and the Arizona Implementation Plan.

The Seven Basin States' DCP Agreements and the Arizona Implementation Plan continue a long-standing philosophy regarding drought preparedness and water management: continuously develop and improve the legal framework, policy prescriptions, institutions and infrastructure needed to create certainty so that reliable and secure water resources are the pillar upon which the State builds its economy, grows its population and maintains a superior quality of life for its citizens. That philosophy includes partnering with the federal government, neighboring states and Mexico. At the same time, Arizona has always maintained an ethos of taking actions within the State to better manage its water supplies and to be prepared for and to address the impacts of drought-induced water supply reductions.

Flexibility in managing water supplies and adaptation to drought conditions are part of Arizona's history and will continue to be a key management strategy now and in the future.

Additional Actions and Next Steps on the Colorado River

In August 2021, Bureau of Reclamation projections activated the Lower Basin DCP adaptive management provision, commonly referred to as the elevation 1030' consultation provision. This provision requires Arizona, California, Nevada and the Department of the Interior to "consult and determine what additional measures will be taken to protect against the potential for Lake Mead to decline below elevation 1,020 feet."[1] The three states have been meeting to discuss additional actions to meet that requirement and to identify and resolve the many issues that may attach to those actions. Additional actions could fall into two categories: (1) additional mandatory reductions in use, or (2) additional voluntary conservation of water in Lake Mead through ICS or system conservation. At this time, the states are focusing on the latter category.

The 1030' consultation process allows the affected states and their water users to determine how best to manage Lake Mead and the Colorado River system. In the alternative, the Secretary of the Interior or a court could impose actions upon us. The latter is an outcome that potentially dictates winners and losers and is not the preferred path of Arizona.

The expiration of the Guidelines and the DCP in 2026 also points to the need to address the operating parameters after 2026. While those parameters are expected to be developed through an administrative process, including environmental compliance under the National Environmental Policy Act and concluding in a record of decision, the Basin States agreed in 2007 to consult on the post-2026 water management framework. The States have embarked on that path and reached out to tribal communities and Non-Governmental Organizations as part of that process earlier this year. That process will likely continue in parallel with the 1030' consultation. From Arizona's perspective, the near-term 1030' consultation is more pressing and a higher priority.

CREATING RESILIENCY TO DROUGHT

Reuse of Reclaimed Water

Arizona's history also includes a strong commitment to recycling and reuse of reclaimed water. Arizona was reusing substantial volumes of reclaimed water long before reuse became a common practice. The poster child for reuse in Arizona is the Palo Verde Nuclear Generating Station in the Phoenix metropolitan area, the only nuclear power plant in the world to use reclaimed wastewater for cooling. Since 1973, the Palo Verde Nuclear Generating Station has held a contract for reclaimed water. Palo Verde currently contracts for 80,000 acre-feet per year and uses 72,000 acre-feet per year of treated municipal wastewater from the 91st Ave Wastewater Treatment Plant, which also serves five cities in the region. Palo Verde produces

[1] Lower Basin Drought Contingency Operations, Section V.B.2.

up to 4,200 megawatts of power and serves about four million people in four western states. Technological advances and improved management practices have increased water use efficiency by the cooling towers and substantially reduced water use since the startup of the plant in 1986.

Most of Arizona's municipal wastewater is reclaimed and put to beneficial uses, including indirect potable reuse, agricultural and landscape irrigation, riparian restoration and other environmental uses.

Augmenting Arizona Water Supplies

In 2021, the Arizona Legislature created a Drought Mitigation Fund and a board to administer it. The fund is designed to explore opportunities to augment Arizona's water supplies with new water from outside the State.

One potential project is being explored as part of the implementation of Minute No. 323 to the 1944 Mexico Water Treaty: binational desalination opportunities in the Sea of Cortez. Those discussions are on-going.

Through the Governor's Water Augmentation, Innovation and Conservation Council, in-state desalination opportunities, additional reuse of recycled water, enhanced artificial recharge and other opportunities are also being explored.

Maximizing the use of existing infrastructure

Arizona is leveraging existing infrastructure to develop and deploy additional water resources. The Central Arizona Project canal runs from the Colorado River through central Arizona and into southern Arizona in the Tucson area, a total of about 336 miles. The canal is used to deliver approximately 1.5 million acre-feet of water from the Colorado River each year. There is capacity in the canal to move other types of water as well. For example, certain groundwater aquifers outside of central Arizona have been statutorily designated to allow transfer of the groundwater to central Arizona. The CAP canal can be used to transport that water pursuant to the February 2017 System Use Agreement between the CAWCD (the operator of the canal) and the Bureau of Reclamation. The System Use Agreement ensures that the legal framework governing the use of the canal is honored, while taking advantage of the flexibility to move water inherent in the canal's design and operation.

The System Use Agreement also allows the canal to be used for the transportation of long-term storage credits, i.e., water stored underground. That water will be recovered to backfill Colorado River shortage reductions for both non-tribal and tribal entities. The canal can also be used to effectuate the marketing of long-term storage credits.

The System Use Agreement also enables new water management tools. The Cities of Tucson and Phoenix entered into a landmark exchange agreement in 2014. Phoenix is sending some of its Colorado River water through the CAP canal to Tucson where it is stored underground. When Phoenix needs the water, Tucson's CAP water will be delivered to Phoenix through the CAP canal, and Tucson will use its wells to recover Phoenix's stored water. That exchange leverages the use of the CAP canal and Tucson's wells, creating cost savings, flexibility and drought resiliency for both cities. Completion of that agreement was a major accomplishment for Arizona.

Forest and Watershed Health

Unhealthy and overgrown forests on National Forest Service lands are fuel for large catastrophic wildfires that affect the health of the Salt River, Verde River and East Clear Creek watersheds in Arizona. Large-scale, high-severity wildfires make average precipitation events extremely destructive; accelerating flood flows and toxic runoff, eroding soils, depositing sediment into water storage reservoirs, and ultimately causing hundreds of millions of dollars in increased treatment costs and reduced water storage capacity. Reservoirs filling up with sediment and ash is a significant concern considering that the Greater Phoenix area is a desert environment that relies on long-term water storage to provide water to millions of people.

Re-establishing healthy forests, through forest restoration, is critical to maintaining and protecting the health of Arizona's water supply. Restoring Arizona forests to a more natural condition through thinning provides a multitude of benefits including:

- Protecting communities, property and lives from wildfires.
- Preventing large-scale, high-severity fires that emit air pollutants and carbon.
- Protecting sustainable and reliable water supplies, water infrastructure, long-term water storage, and preventing against degraded water quality.

- Increasing forest resiliency to natural wildfire, insects, disease, and the effects of climate change.
- Sequestering additional carbon.
- Protecting endangered and threatened species and their habitat.
- Protecting recreation, tourism, and economic opportunities.

On average, approximately 12,000–15,000 acres of thinning occurs every year. The goal is to thin to 50,000 acres per year over the next 20 years. The State of Arizona has increased its efforts in forest restoration through the Healthy Forest Initiative and partnerships. There is a significant need to increase the pace and scale of restoration to protect Arizona's water supplies.

CONCLUSION

Arizona and the other western states face serious challenges as we grapple with drought and the anticipated hotter and drier future attendant to climate change. Meeting those challenges requires vigilance in monitoring the hydrologic conditions, watershed health and reservoir contents to create programs and implement actions that not only respond to those conditions but reduce the likelihood that more onerous water supply reductions will occur.

Arizona has a history of meeting challenges both on its own and in concert with other water users in the Colorado River Basin and Mexico. Arizona recognizes that it cannot be successful solely on its own, particularly given the challenges we face today. Collaboration with the Basin States and Mexico is the only realistic pathway to achieve success. Likewise, the water users, Tribes and other stakeholders throughout the Basin must be engaged and provide input into actions to protect the Colorado River System. Arizona has embraced that philosophy in the creation of the DCP, the 1030' consultation and post-2026 discussions.

Partnering with the Department of the Interior and the Bureau of Reclamation is also a crucial factor in managing the current conditions of the Colorado River and will be key in managing our future. Reclamation's data and modeling capabilities represent the best available science in providing a baseline for hydrologic conditions and projections to inform decision-making for future actions. Interior and Reclamation have other key resources that can deployed to enhance the sustainability of the Colorado River System.

Moving forward, transparency and inclusiveness are imperative. Arizona benefited by following those tenets in the creation of its DCP Implementation Plan that set the stage for approval of the Seven Basin States' DCP Agreements. Arizona is following those tenets as it continues its internal discussion and as it works with the Basin States, Mexico, the United States and stakeholders on the Colorado River.

QUESTIONS SUBMITTED FOR THE RECORD TO THOMAS BUSCHATZKE, DIRECTOR, ARIZONA DEPARTMENT OF WATER RESOURCES

Thank you, and the members of the Subcommittee on Water, Oceans, and Wildlife, for the opportunity to testify before the Subcommittee, as well as the Subcommittee's efforts to explore solutions to the continuing hydrologic decline on the Colorado River. It is only through sharing information and collaborating on innovative ideas that we can develop long-term certainty for this crucial water supply in the West.

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. We remain committed to resolving the outstanding claims to water of Native American tribes. However, reaching settlement of Tribal reserved water

rights is a complex, years-long process that involves numerous parties and may include settlement of both Colorado River and non-Colorado River water supplies. While any settlement or other resolution of claims to Colorado River water must take into account the River's operating rules and available supply, those claims should be resolved in a process separate from the development of the overall River operations.

The 1922 Colorado River Compact apportions 16 million acre-feet per year of water between the Upper and Lower Colorado River Basins. At the time, Compact negotiators believed as much as 20 million acre-feet could be available throughout the entire Colorado River System each year, and over 17 million acre-feet per year in the River's mainstream. Even so, they recognized that the highly variable river would not yield a reliable supply every year. At the time annual river flows sometimes fell below 10 million acre-feet. As such, the negotiators anticipated and provided for years of drought and low river flows. The Compact gave the certainty needed to construct Hoover Dam and other storage reservoirs, providing both flood control protection and water supply security for over 85 years. That water security has enabled the economic prosperity envisioned by the Compact negotiators a century ago.

The Law of the River (court decisions and decrees, a Treaty, compacts, regulations, federal statutes, and numerous agreements that govern Colorado River operations) following the 1922 Compact reflects an understanding that the Colorado River provides less water than was thought to be available in 1922. Apportionments to individual Upper Basin States made in 1948 are by percentages of available water, not set volumes. In the U.S. Supreme Court's 1964 decree in *Arizona v. California* (376 U.S. 340), the Court anticipated shortages to the Lower Basin States' mainstream apportionments. Additions to the Law of the River made in this century also reflect a keen understanding that collaboration and flexibility are crucial to ensure that the Colorado River can continue to serve the existing and growing demands on this critical water supply.

Although the 1922 Compact negotiators anticipated drought, and those who followed recognized a smaller supply, they could hardly anticipate what we are experiencing now. Even so, the Compact provides the foundation for all that has followed and must remain. We must also take into account every resulting right, obligation, and benefit which finds its source in that bargain. Ultimately, we must develop tools to use less water within that framework, either through voluntary or mandatory conservation.

Our challenge now is not reallocating water. Our challenge is to collaborate to address the increasing hydrologic risks by developing additional innovative, and proactive measures, including either voluntary or mandatory conservation, that fit within the existing structure to address the challenges we face today and going forward, including when there is insufficient water to fully satisfy the existing apportionments of the Colorado River System.

In the past two decades, the United States, Mexico, the seven Colorado River Basin States, Native American tribes, water users, non-governmental organizations and other stakeholders have demonstrated the ability to collaborate to create and implement such innovative and proactive solutions, incorporating the ability to adapt to changing conditions, and to do so within the framework of the Law of the River as it exists today.

Mr. HUFFMAN. Thank you, Mr. Buschatzke.

We will now go to Peter Nelson, he is the California Chairman of the Colorado River Board.

STATEMENT OF PETER NELSON, CHAIRMAN, COLORADO RIVER BOARD OF CALIFORNIA, GLENDALE, CALIFORNIA

Mr. NELSON. Good afternoon. My name is Peter Nelson, and I am the Chairman of the Colorado River Board of California and California's Colorado River Commissioner.

I would like to thank the Subcommittee on Water, Oceans, and Wildlife, Chairman Huffman, Ranking Member Bentz, Chairman Grijalva, and the other members of the Committee for holding this hearing at a time of historic drought.

Regardless of why the climate has changed, the record is clear: less than average precipitation is resulting in measurable runoff, aridification, causing lake levels to plummet, putting 40 million Americans at risk, environmental havoc, and food production peril.

The Colorado River Board of California represents the collective interest of Colorado River water users in our state. We protect the rights and interests of California's water and hydropower resources. We provide peer-to-peer relationships in collaborative, interstate discussions with the other six Basin states, the Federal Government, tribes, and Mexico.

California is also experiencing drought with equal, if not greater, severity. Allocations for the State Water Project contractors in 2021 are just 5 percent. The Department of Water Resources is signaling contractors to expect an initial zero percent allocation, needing a snowpack of 140 percent just to get a normal runoff. For the first time ever, Orville Dam is now unable to produce power, due to low reservoir levels. Pre-1914 water rights holders were issued orders to stop diversions.

On the brighter side, California has stepped up in 2003 with the Quantification Settlement Agreement to reduce Colorado River uses by 800,000 acre-feet annually, and included mitigation measures for the Salton Sea. We achieved and exceeded conservation through the 2007 shortage criteria and 2019 Drought Contingency Plan. So, Metropolitan has 1.3 million acre-feet of storage in Lake Mead, adding 14 feet of elevation.

Imperial Irrigation District, Coachella Valley Water District, and Palos Verdes have a successful fallowing program, with partners in Arizona, Nevada, and the Bureau of Reclamation.

Additionally, Metropolitan Nevada, Arizona, and Reclamation are currently collaborating on a large-scale recycling project in the Los Angeles Basin. This has the potential to create 150,000 acre-foot annually of water for the region, reducing demand on the Colorado River.

Naturally, with the largest share of California's river use, a target will be the Imperial Irrigation District. Imperial has already participated in the largest ag-to-urban transfer in the country through the Quantification Settlement Agreement. Any additional water conservation programs will need to, of course, have their concurrence, and need to address the Salton Sea mitigation.

California is collaborating with our sister states in the Basin, Native American tribes who need access to clean and reliable water and to be part of the process, Federal agencies, and colleagues in Mexico in developing the next set of Colorado River System operating guidelines to be put in place in 2026. We are responding with all hands on deck to the reconsultation requirements under the DCP 1030 elevation trigger, in collaboration with these partners.

We urge the Committee to support and provide funding for partnerships involving large-scale regional recycling projects, system conservation programs, Salton Sea mitigation, and water quality improvements, including addressing salt reductions from the Paradox Valley unit. It will only be through collaboration and cooperation among all of us stakeholders in the Basin that we will have any chance of meeting these challenges, and we will need the United States to be involved in these efforts.

Thank you for the opportunity to provide this statement, and I look forward to addressing any questions you may have.

[The prepared statement of Mr. Nelson follows:]

PREPARED STATEMENT OF PETER NELSON, CHAIRMAN, COLORADO RIVER BOARD OF CALIFORNIA

INTRODUCTION

My name is Peter Nelson, and I am the Chairman of the Colorado River Board of California (Board). The Board is the California state agency established in 1937 by the Legislature and is charged with safeguarding and protecting the rights and interests of the State, its agencies, and citizens in the water and hydropower resources of the seven-state Colorado River System. The Board is comprised of ten-members, including representatives from the Coachella Valley Water District, Imperial Irrigation District, Los Angeles Department of Water and Power, The Metropolitan Water District of Southern California, Palo Verde Irrigation District, San Diego County Water Authority, representatives from the California Departments of Fish and Wildlife and Water Resources, and two at-large public members. In my role as Chairman of the Board, I serve as California's Colorado River Commissioner in discussions with my counterparts in the other six Colorado River Basin States and representatives of the Federal Government. Thank you for providing me with the opportunity to provide this testimony regarding the impacts and challenges of the ongoing drought in the Colorado River Basin to the Subcommittee.

THE CHALLENGES OF THE "MILLENNIUM DROUGHT"

The Colorado River Basin is experiencing its worst drought in over 100 years of record-keeping, and one of the worst droughts in the past 1,200 years. The period from 2000 through 2021, characterized as the "Millennium Drought", is projected to be the driest 22-year period on record with an average annual natural flow at Lee Ferry of 12.4 million acre-feet (MAF), which is 84% of the long-term average of 14.7 MAF based on the historical period 1906–2021.

Provisional indications are that Water-Year (WY) 2021 resulted in a winter snowpack of about 89% of average but yielded a runoff and inflow into Lake Powell of about 30% of average. This disparity between snowpack and runoff is directly attributed to hotter than normal temperatures in the Basin and extremely dry soil moisture conditions. Currently, the observed unregulated inflow into Lake Powell was 3.52 MAF, or about 33% of average (10.8 MAF over the period 1981–2010). WY-2021 will end up being the third driest year on record (WY-2002 was the driest, followed by 1977). Finally, Water Years 2020 and 2021 are the driest two consecutive years in the historical record (1906–2020).

As of October 7, 2021, Lake Powell has just under 7.3 MAF in storage, or about 30% of capacity. Lake Mead storage is just over 9.0 MAF, or just under 34% of capacity at an elevation of about 1,068 feet. Total System reservoir storage is about 23 MAF (38% of capacity) but has lost nearly 6.5 MAF since this same time last year.

The U.S. Bureau of Reclamation's (Reclamation) August 2021 24-Month Study Report projections for Basinwide water supply conditions was released on August 16th and was used to define operations at both Lakes Powell and Mead for development of the 2022 Annual Operating Plan (AOP) for the Colorado River Reservoir System. Based upon the August 2021 24-Month Study Report, and pursuant to the tier determination criteria in the 2007 Interim Guidelines, it is projected that the annual release from Lake Powell through Glen Canyon Dam in WY-2022 will be reduced to 7.48 MAF (only the second time since 2007 that there will have been a 7.48 MAF release from GCD), and the current projection is that the annual release in WY-2023 could be as low as 7.0 MAF.

The calendar year (CY) 2022 Lake Mead operations are projected to be conducted under a "Level 1 shortage condition", as the August 2021 projection is that Lake Mead will be below elevation 1,075 feet on January 1, 2022. This will be the first time that a formal "shortage condition" has been declared by the Secretary of the Interior; and pursuant to the 2007 Interim Guidelines, 2017 U.S./MX Minute 323, and the 2019 Drought Contingency Plan (DCP), this first-tier shortage condition results in a combined total 0.613 MAF of reductions to Arizona, Nevada, and Mexico during CY-2022. Due to its senior water rights, California does not take any reductions under the Interim Guidelines and does not begin to make DCP contributions to Lake Mead storage until Mead reaches or goes below elevation 1,045 feet.

The August 2021 24-Month Study Report also contains a "minimum probable" (10th%ile) projection that Lake Mead's elevation could reach or decline below elevation 1,030 feet in July 2023. Pursuant to Section V.B.2. of Exhibit 1 to the 2019 Lower Basin DCP, this projection requires a consultation among the Lower Basin States and the Secretary of the Interior to determine if "additional measures" are warranted to bolster storage in Lake Mead and protect the reservoir from reaching or declining below 1,020 feet a critical elevation for water supply (i.e., about 5.5 MAF of live capacity). The Lower Basin States have initiated a technical analysis and evaluation process to identify potential measures that could be developed and implemented to protect Mead elevation 1,020 feet.

Over the past several decades, the Basin has experienced a noticeable shift to hotter, drier conditions, which are straining an already overallocated system. For instance, when comparing 2011–2020 to 1971–1980: (1) precipitation decreased by 0.3%; (2) temperature increased by 2.4 degrees F (1.3 degrees C); (3) natural flow decreased by 8.5%, or 1.2 MAFY; (4) run-off efficiency decreased by 8.4%; and (5) Lower Basin intervening side-inflows decreased by 21.7%, from an average of 0.914 MAFY to 0.716 MAFY. While direct causality of increasing temperatures and reduced water supply in the Basin may not always be clear, the implications of the available climate-change science and data can no longer be ignored.

Within the State of California, WY-2021 has ended up being the second-driest year (1977 being the driest) and follows WY-2020 which was the fifth-driest year on record. The dry conditions in California resulted in a drawdown of reservoir storage to 60% of average at the end of WY-2021. Allocations to California's State Water Project (SWP) contractors in 2020 were 20% of Table A allocations; and declined to 5% in 2021; and the Department of Water Resources has indicated that the initial allocation will be 0% for 2022 and will not increase until sufficient precipitation falls in the Northern Sierra Nevada. Finally, as of mid-summer 2021, 50 of California's 58 counties were under a drought emergency proclamation and following the Governor's call to reduce statewide water use by 15%, MWD issued a water supply alert urging its service area to meet the Governor's water reduction target.

As this Subcommittee is aware, the wildfires of 2020 were catastrophic for California. Over 4.2 million acres were burned in the worst year ever. The impacts on watersheds in California will likely be felt for years to come. The 2021 summer/fall wildfire season in California is shaping up to be nearly as severe. For the first time in the state's history, two large fires have burned from the west side of the Sierras to the east side. As bad as the recent impacts of the drought have been in the Colorado River Basin, they have been equally bad in California.

Finally, in July 2021, the U.S. Department of Commerce's National Oceanographic and Atmospheric Administration (NOAA) Climate Prediction Center reported a "La Nina Watch". The tropical Pacific Ocean is currently in a neutral climate state, but NOAA experts see the potential for La Nina conditions to emerge this fall and winter, with a 70–80% chance of La Nina conditions from November 2021 through January 2022. La Nina conditions across southern California tend to be drier than average, but exhibit a less clear signal for northern California.

COLLABORATIVE PROBLEM SOLVING AND WATER CONSERVATION

California was one of the first states in the Basin to begin extensively developing the use of Colorado River water supplies in the 1870s in the Palo Verde Valley, and by 1920 there were nearly 500,000 acres being cultivated in the Imperial Valley. California was the primary advocate for the federal development of the Lower Colorado River system to provide reservoir storage for flood control and water supply reliability purposes and for a canal that would convey water to the Imperial Valley. These needs were met by the Congress with the passage of the 1928 Boulder Canyon Project Act (45 Stat. 1057) which authorized the construction of what became known as Hoover Dam, Lake Mead, and the Imperial Dam and All-American Canal.

By the late-1980s and into the early-2000s, California's lawful use of mainstream Colorado River water supplies was averaging about 5.2 million acre-feet per year (MAFY). Beginning in early-1990s, California's Colorado River water users began taking meaningful steps to reduce its annual demands to its basic mainstream apportionment of 4.4 MAFY and diversify the available water supply portfolio pursuant to "California's Colorado River Water Use Plan" developed by the Colorado River Board and its member agencies. These activities resulted in the 2003 Quantification Settlement Agreement (QSA), the Nation's largest ag-to-urban water conservation and transfer program, and initiated mitigation efforts for impacts to the Salton Sea.

With the 2003 QSA in place, the Imperial Irrigation District (IID) typically conserves about 0.500 MAFY and has cumulatively conserved about 6.2 MAF since 2003. The Coachella Valley Water District (CVWD) has banked over 4.0 MAF in its groundwater basins since the 1970s. The San Diego County Water Authority has invested heavily in the conserved water transfer agreement with IID, the cornerstone of the QSA, as well as the lining of the All-American and Coachella Canals and made other investments that have increased storage and expanded local supplies including the nation's largest desalination plant and $1.5 billion Emergency & Carryover Storage Project. The Metropolitan Water District of Southern California (MWD) has developed over 6.0 MAF of storage capacity since the 1980s, a 15-fold increase in storage capacity. Two-thirds of this storage is outside of MWD's service area, and contained in the Colorado River Basin, Central Valley, and with other State Water Project (SWP) contractors. MWD also maintains a long-term cooperative water conservation program with the Palo Verde Irrigation District. As of January 1, 2020, MWD had 3.5 MAF stored (some on behalf of IID and Nevada), its largest amount to date.

The 2001 Interim Surplus Guidelines were intended to help California ratchet down its average annual mainstream water use from 5.2 MAFY to its basic apportionment of 4.4 MAFY, but the onset of the Millennium Drought in 2000 essentially resulted in an immediate cutback to California's basic mainstream apportionment of 4.4 MAFY.

Following the implementation of the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (2007 interim guidelines), over the period 2008–2020, California has created and stored approximately 2.0 MAF of "Intentionally Created Surplus" (ICS) supplies in Lake Mead. Collective efforts between the Lower Basin States and Mexico have resulted in about 4.0 MAF of conserved water supplies (equivalent to about 51 feet of elevation) being retained in Lake Mead.

California utilized the LB DCP's provisions for increased storage opportunities and MWD and IID stored approximately 0.340 MAF total in Lake Mead in 2020. By the end of CY-2021, California is projected to have nearly 1.3 MAF of ICS stored in Lake Mead (equivalent to about 14 feet of elevation in Mead). This could not have occurred without the additional ICS exhibits approved in the Lower Basin DCP and California's aggressive use of its collaborative water conservation programs among its Colorado River water users.

For CY-2021, with the 5% State Water Project 2021 Allocation, MWD projected a water supply/demand gap of just under 0.650 MAF. Water supplies to meet the shortfall were withdrawn from MWD's dry-year storage reserves and the purchase of "north of Delta" water transfers. Initially, MWD had planned to meet some of that supply gap from water stored in Lake Mead, but as its service area demands dropped it altered operations so that California will not withdraw and stored water from Lake Mead this year.

California Governor Newsom's Administration has prioritized water management as crucial to the State's economic, ecological, and social well-being. In July 2019, the Newsom Administration finalized a Water Resilience Portfolio that charts state actions to equip California to cope with more extreme droughts and floods and rising temperatures while addressing declining fish populations, overreliance on groundwater supplies, and a lack of safe drinking water in many communities, as well as other challenges. The actions of the Resilience Portfolio are intended to maintain and diversify water supplies, protect, and enhance natural systems, build connections within and across watersheds, and bolster preparedness for natural disasters. Water resilience is also prioritized in the State's budget, and over the next three years the budget will invest nearly $5 billion in projects, personnel, and local financial assistance to help the State's diverse regions safeguard clean, reliable water supplies even in the face of average warmer temperatures that can exacerbate drought and flooding.

Collaboration and cooperation have been the primary tools utilized by the Basin states—especially the Lower Basin states—and Mexico over the past two decades, beginning with the interim surplus guidelines in 2001, followed by the Lower Colorado River Multi-Species Conservation Program in 2005, the 2007 interim shortage guidelines, and a series of important binational agreements between the U.S. and Mexico, culminating in Mexico's Binational Water Scarcity Contingency Plan in Minute No. 323 executed in 2017. This Mexican contingency plan was intended to be both comparable and complimentary to the domestic DCP agreements executed by the Upper and Lower Basin states in 2019.

Under the authorizations provided by the federal SECURE Water Act of 2009 (P.L. 111–11), Reclamation, the seven Basin states, and numerous stakeholders across the Basin participated in the development of the Colorado River Basin Study

report which was finalized in 2012. This important science-based report evaluated various scenarios associated with water uses and water supply conditions in the Basin through 2060. The report identified a range of water supply/demand imbalances going forward; and defined a "vulnerable condition" as the long-term average annual natural flow at Lee Ferry of 13.8 MAFY, and an 8-year period of flows less than 11.2 MAFY. In a related vein, Reclamation initiated a similar study effort focusing on the long-term Colorado River water resource needs among Native American Tribes in the Basin. The 2018 Basinwide Tribal Water Study report identified between 2.8–3.4 MAFY of quantified/unquantified consumptive use and diversion water rights among the 29 federally recognized Native American Tribes in the Basin. Finally, hydrologic and water supply information provided in both the 2012 Colorado River Basin Study and 2018 Tribal Water Study Reports was supplemented with significant climate-change related scientific data and analyses in the 2020 Colorado River Basin "State-of-the-Science" report.

In the context of Colorado River management, the value of adaptive management cannot be overstated. With the initiation of the Millennium Drought in the early 2000s, the surplus guidelines morphed into the 2007 interim shortage guidelines which, along with and additional conservation actions implemented by the Lower Basin States, stabilized the reservoir system at about 50% of capacity for more than a decade. However, new information available from climate scientists demonstrated that future droughts could be more severe than was previously understood, resulting in an increased risk of reaching critical reservation elevations. This new information resulted in the Basin states, Reclamation, and Mexico initiating efforts that resulted in both the 2017 binational Lake Mead protection plan with Mexico in Minute No. 323 and the 2019 Basin States DCPs both of which were intended to further protect critical elevations in both Lakes Powell and Mead while continuing to meet the water supply needs in the states and in Mexico. The back-to-back poor hydrologic conditions of 2020 and 2021 demonstrated that increased risk and have significantly reduced levels in both Lakes Powell and Mead resulting in implementation of further DCP actions and evaluation of potential additional measures to protect critical elevations in both reservoirs.

FEDERAL SUPPORT NEEDED TO HELP ADDRESS HISTORICALLY LOW RESERVOIR SYSTEM STORAGE CONDITIONS

California believes that going forward it will be imperative to continue to closely coordinate and collaborate with not only the other six Basin states, water users in the Basin, Mexico, but most importantly with the federal agencies with management authorities and responsibilities in the Colorado River Basin. As the next set of long-term operational guidelines are developed for implementation beginning in 2026 (post-2026 guidelines), the following are some of the challenges that must be addressed:

1. Continued Incentivization of Water Conservation, System Augmentation, and Water Supply Storage Opportunities—There must be an emphasis on continuing to incentivize the conservation and storage of water supplies in both the Upper and Lower Basins and Mexico. The federal/non-federal partnership should continue to diligently identify realistic and feasible System augmentation opportunities (e.g., weather modification and desalination, etc.), both within the United States and in collaboration with Mexico. Under decreasing water supply conditions, the Lower Basin states and Mexico will require increased water supply management flexibility, and operational and water supply reliability and certainty.
2. Colorado River Water Quality Improvement Enhancements—With the continued decline of water supply storage in the reservoir system and reduced flows in the mainstream and tributaries, it will become critically important to ensure the long-term viability of the water quality improvements provided by the Colorado River Basin Salinity Control Program authorized in the 1974 Colorado River Basin Salinity Control Act (P.L. 93–320, as amended), including developing a long-term solution associated with the Paradox Valley Salinity Control Unit. Going forward, it will also be important to address aspects of Title I of the Act in the context of maintaining adequate water quality associated with the annual delivery of Colorado River water to Mexico pursuant to the 1944 U.S./Mexico Water Treaty. The collaborative and cooperative partnership with Mexico regarding conservation, storage, salinity management, and management of environmental resources will be important to these efforts.

3. Native American Tribal Collaboration and Partnership Opportunities—The 2018 Basinwide Tribal Water Study identified between 2.8–3.4 MAFY of consumptive use and/or diversion rights collectively among the Tribes in the Basin, and a need for reliable safe drinking water supplies on some reservations highlights the need for close coordination and collaboration among the U.S., Tribes, and the Basin states. The Arizona DCP process provides a potential template for identifying opportunities, value, and benefits for Tribal participation in water conservation and storage programs and should be an important element as the seven States begin development of the post-2026 guidelines framework.
4. Maintenance of Colorado River Basin Environmental Compliance Programs—Given the severity of the Millennium Drought and System operational complexities, meeting new environmental compliance obligations associated with the post-2026 guidelines may prove challenging and may require additional analysis and evaluation pursuant to the National Environmental Policy Act, as well as permits under the Endangered Species Act. The Basin States will be seeking to collaborate with the various federal agencies in evaluating the need for bolstering existing environmental compliance programs like the Glen Canyon Dam Adaptive Management Program, Salton Sea management, and the Lower Colorado River Multi-Species Conservation Program.
5. Partnership & Collaboration in Large-Scale, Longer-Term Efforts—With more than 20+ years of managing the Colorado River System under severe and sustained drought conditions, it has become abundantly clear that collaboration and cooperation among the seven Basin states, water users, scientists, nongovernmental organizations, Native American Tribes, Mexico, and agencies of the U.S. Federal Government will be necessary if we are to successfully meet long-term water supply needs for 40 million residents and over five million acres of irrigated agriculture. California believes that it will be very important for the Federal Government to commit not only fiscal resources but to also direct the inter-departmental and inter-agency coordination that will be needed to begin to address the increasing impacts of climate change in the Basin, as well as the rest of the Nation. This federal/non-federal partnership must be swiftly developed and dedicated to landscape-level forest and rangeland management and watershed rehabilitation which can provide benefits leading to improved water supply conditions and improved environmental conditions for species and habitats.
6. Utilization of Adaptive Management—To the extent possible, the post-2026 guidelines must address significant variability and uncertainty in basinwide water supply and hydrologic conditions going forward (i.e., both extremely dry and wet periods). It is anticipated that the identification and consideration of inflection points for critical resources (i.e., "sign-posting") that can trigger adaptive decision-making and management will be important.
7. Collection, Management, and Utilization of "Best Available Science"—It will be important to evaluate updated water use data, new scientific data, new research, utilize hindcasting, review actual operating experiences (e.g., Reclamation's final 7.D. Review Report, etc.), and continue to improve precipitation and water supply forecasting techniques. Fully consider future climate projections and identify potential future hydrologies in evaluating potential alternative management/operational strategies.

CONCLUSIONS

California, its sister-states in the Colorado River Basin, and the Republic of Mexico, continue to face significant challenges in addressing the impacts of the Millennium Drought and the increasing effects of warming brought on by climate change. This will require stepped-up coordination and cooperation among the water users and all relevant state and federal agencies in the context of monitoring, forecasting, planning, decision-making and adaptive management, and implementation of operations, programs, and activities that can provide the states and water users with some measure of certainty and reliability associated with meeting critical water supply needs.

California has a long history of meeting challenges associated with management of the state's water resources portfolio; and since the mid-1990s in the Colorado River Basin, this has been accomplished through collaborative and innovative partnerships within and among its Colorado River water users as well among the other six Basin states and Mexico. Continuing this collaborative partnership among stakeholders across the Basin and in conjunction with the federal agencies will become

increasingly more important as the Basin's water supply conditions are further impacted by the Millennium Drought and the inherent uncertainties associated with climate change.

In closing, California believes that the Congress, this Administration, as well as future administrations will be essential in providing not only direction and fiscal resources in support of drought mitigation relief and water conservation programs, but also in committing the significant agency expertise that resides with the departments of the Interior, Agriculture, and Commerce, as well as the U.S. Environmental Protection Agency to working closely with the seven Basin States. Going forward, California remains committed to its continued collaboration and cooperation with all of the Basin's water users, tribes, federal agencies, and Mexico in meeting the challenges and immediate needs during the ongoing drought as well as working together to identify and implement science-based sustainable water resources management activities and programs and develop an adaptable operational paradigm for the post-2026 Colorado River System guidelines.

QUESTIONS SUBMITTED FOR THE RECORD TO PETER NELSON, COLORADO RIVER COMMISSIONER, STATE OF CALIFORNIA

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. While the 1922 Colorado River Compact may have laid out a scheme for the apportionment and beneficial consumptive use of up to 17.5 million acre-feet of water supplies from the Colorado River System annually, the hydrologic and water supply conditions over the past 20+ years indicate that that volume of annual water supply likely can no longer be considered certain and/or reliable. Furthermore, the great uncertainty associated with the future impacts of warming and climate change that scientists have linked to anthropogenic greenhouse gas emissions require the seven Colorado River Basin States and all of the stakeholders reliant upon these important water supplies to incorporate best science and adaptive management in developing and implementing the next set of Colorado River System operational guidelines and implementing the full range of water management, facility operations, and conservation tools available.

Collaboration, coordination, and cooperation across all of the stakeholders in the Colorado River Basin in the United States and Mexico continue to be the most important and effective tools in the toolbox. The Basin States and stakeholders have significant expertise in meeting challenges using collaborative and consensus-based processes. Relatively recent examples of collaborative problem-solving in the Colorado River Basin includes development of California's Colorado River Water Use Plan that resulted in the 2003 Quantification Settlement Agreement, the 2001 Interim Surplus Guidelines, the 2005 Lower Colorado River Multi-Species Conservation Program, the 2007 Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead, Mexico's 2017 Binational Water Scarcity Contingency Plan in Minute No. 323, and the 2019 Drought Continency Plans for the Upper and Lower Colorado River Basins.

Planning for shortfalls in water supply, whether due to variable annual hydrology or climate-change induced, are now a primary element in responsible water supply management planning and decision-making and will continue to be going forward. With respect to tribal allocations, several of the Native American tribes in the Lower Colorado River Basin have settled and quantified water rights through the 2006 Consolidated Decree in *Arizona v. California* (547 U.S. 150). Other tribes in the Basin have water rights specified in settlement agreements, and others are in ongoing water rights settlement negotiations with the Department of the Interior and individual states.

In conclusion, water managers across the Colorado River Basin in the United States and Mexico must continue to act in coordination and collaboration in

developing effective strategies and programs for managing these important water supplies, taking into account recent climate science, reducing risks, and providing water users across the Basin with appropriate measures of certainty and reliability. The primary challenge that the Basin's stakeholders face today is to collaborate to address increasing hydrologic and water supply condition risks due to climate change. These risks can be reduced by developing additional innovative and proactive measures that can address the water supply challenges we face today and going forward, including when there are insufficient water supplies to fully satisfy the existing apportionments made under the 1922 Compact and other elements of the Law of the River.

Questions Submitted by Representative Levin

Question 1. Mr. Nelson, I've heard from constituent water agencies who are concerned by the salinity issues caused by the shutdown of the Paradox Valley Unit. Have you heard similar concerns among your members? How do you see this issue impacting the water quality in the system?

Answer. The Colorado River Board of California (Board) and its member agencies are very familiar with concerns expressed by California users of Colorado River water supplies regarding the continued seismic-safety shutdown of the Paradox Valley Unit (PVU), and I share these concerns. The PVU is the largest project of the Colorado River Basin Salinity Control Program. The U.S. Bureau of Reclamation (Reclamation) estimates that when fully operational, the PVU prevents nearly 100,000 tons of salt from entering the Colorado River annually. According to Reclamation, a fully operational PVU represents 7% of the salinity control in the Colorado River when measured at the Imperial Dam diversion structure located about 26 river miles upstream from Morelos Dam, which serves as the primary Mexican diversion point at Northerly International Boundary.

The shutdown of the PVU has direct water quality, water supply, and economic impacts to water users in the Lower Basin. Reclamation estimates that the loss of PVU salinity control could result in a nearly 10 mg/L increase in salinity at Imperial Dam with an associated economic impact of approximately $25 million annually. Today, the Colorado River is experiencing critically dry conditions that short-term forecasts suggest will increase salinity in Lake Mead due to lower inflows of fresh water. Increasing salinity in the water supply for California impacts the effectiveness of water recycling plants and requires farmers to apply additional water to fields to leach salts from soils. It could take over a decade to regain the level of salt control (i.e., 100,000 tons of annual control) afforded by the PVU due to the time needed to ramp up replacement control projects if PVU is to remain inoperative over the long-term. All of these factors are magnified given the current critically dry conditions and further highlight the need to implement additional drought response activities in the Colorado River Basin, such as those currently being proposed by California, Arizona, and Nevada.

The State of California, through the Board and its member agencies, continues to collaborate closely with the other six Basin States and Reclamation through the Colorado River Basin Salinity Control Forum to identify options to restart or replace annual salinity control lost with the current shutdown of the PVU. Additionally, pursuant to Section 303(c)(1) of the 1972 Clean Water Act (P.L. 92-500) and the 1974 Colorado River Basin Salinity Control Act (P.L. 93-320), the seven Basin States and Reclamation are responsible for continuing effective salinity control measures in the Colorado River Basin to meet water quality standards and ensure that water supplies of sufficient quality continue to be available for use in the United States and Mexico. The Board and its member agencies appreciate your attention to the challenge of continuing to improve the water quality of the Colorado in the face of the potential loss of the Paradox Valley Salinity Control Unit.

Mr. HUFFMAN. Thank you, Mr. Nelson.

The Committee will now hear from Mr. John Entsminger, the General Manager of the Southern Nevada Water Authority.

Mr. Entsminger, you are recognized for 5 minutes.

STATEMENT OF JOHN ENTSMINGER, GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY, LAS VEGAS, NEVADA

Mr. ENTSMINGER. Thank you, Chairman Huffman, Ranking Member Bentz, Representative Napolitano, and members of the Subcommittee. Thank you for the invitation today. My name is John Entsminger, and I serve as General Manager of the Southern Nevada Water Authority.

It is not news to this Subcommittee that the unprecedented hydrologic conditions on the Colorado River have left both Lakes Powell and Mead at critically low elevations. The math problem we face is simple. If we rely upon the promises of the 1920s and the 1940s, there are legal entitlements to 17.5 million acre-feet of water each year. Annual use today is approximately 14 million acre-feet. And over the last 20 years, the river has given us an average of 12.3 million acre-feet.

Despite fervent warnings from the scientific community that in the face of climate change we must plan for a future with even less than 12.3 million acre-feet, there is not yet anything approaching consensus within the river community as to how dry of a future we should plan for. And while this panel was asked to talk about drought, there is more and more evidence on the ground that what the Colorado River is actually facing is not drought, but aridification and a permanent transition to a drier future.

If we are to build upon the river's many successes over the last 25 years, we must confront the magnitude of the challenge in front of us and quickly reach agreement on what future scenarios we are willing to plan for.

But defining the problem is only the first step. We must develop additional supplies, pursue aggressive conservation, and make investments in technologies and tools that show promise in helping us achieve both. The agricultural and municipal sectors must work together. And to that end, research is underway to test the effectiveness of drip irrigated alfalfa projects in Arizona. But the learning is slow, and the pace of engagement between urban and agricultural water users must be accelerated.

As we work on our long-term goals, we must also recognize that the only near-term management strategy for protecting critical Lake Mead elevations is reducing use. Southern Nevada has invested billions of dollars in water conservation and infrastructure. But Nevada represents a mere 1.8 percent of the river's allocated flows. Continued efficiency must become a commonplace philosophy throughout the Basin.

We must also develop additional supplies. Metropolitan's Regional Reuse Project represents a long-term supply option for the Lower Basin, and we continue to urge the passage of the Large Scale Water Recycling Project Investment Act. Cooperative regional projects of this kind represent the best hope for adding new supplies into the Lower Basin.

Our progress toward sustainable solutions depends on partnership and well-coordinated action. But the river community is at a crossroads. We have a simple, but difficult decision to make: Do we double down on the promises of the last century, and fight about water that simply isn't there, or do we roll up our sleeves and deal with the climate realities of this century?

Thank you for the opportunity to testify. I will be happy to answer any questions.

[The prepared statement of Mr. Entsminger follows:]

PREPARED STATEMENT OF JOHN J. ENTSMINGER, GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY

Chairman Huffman, Ranking Member Bentz, Representative Napolitano and members of the Subcommittee, thank you for the invitation to speak today about Colorado River drought conditions. My name is John Entsminger and I serve as General Manager of the Southern Nevada Water Authority and as the lead representative for the state of Nevada regarding Colorado River issues.

The Seven Basin States and the Federal Government enacted the Interim Guidelines in the early 2000s as Colorado River drought conditions began to materialize. As conditions worsened, we worked to identify and implement additional actions. From new policies and collaborative agreements to joint investments in new technology, we continue to maintain a singular goal: to keep more water in the system and avoid the potential for water and power supply disruptions.

Nevada and Arizona made our first Drought Contingency Plan (DCP) water contributions in 2020. The Lower Basin states will make additional contributions in 2021. And, next year—with Lake Mead water levels projected to decline below elevation 1,075—we will take our first ever shortage reductions. These and other actions have helped to reduce Lake Mead water level declines by more than 50 feet. Gratefully, Congress has appropriated federal funding for DCP-related project activities. In addition, there is $300 million for DCP activities included in the Infrastructure Investment and Jobs Act, which is currently under consideration by Congress.

Despite these efforts, Lake Mead water levels continue to decline. Preliminary observed unregulated inflow to Lake Powell was 33 percent of normal last year, the second worst year on record. Day-by-day and year-by-year we inch closer to critical elevations. According to the Bureau's latest modeling, we could be sitting in a third-tier shortage by 2025. This means the Lower Basin will be taking its deepest defined cuts under existing agreements, totaling 1.1 million acre-feet of water per year from U.S. users and an additional 0.275 acre-feet from Mexico. Barring multiple successive years of normal or near normal hydrology, which is unlikely, conditions will continue to deteriorate. Like you, we have come to recognize that currently required reductions are not a long-term solution—they are simply one of many steps needed to avert risk for a few more years.

The math problem we face is quite simple. If we rely on the promises of the 1920s and 1940s, there are legal entitlements to use 17.5 million acre-feet of water each year. Today, use is approximately 14.0 million acre-feet per year. Over the last 20 years, the river has given us an average of 12.3 million acre-feet per year. Despite the fervent warnings from internationally renowned scientists like Jonathan Overpeck and Brad Udall that urge us to plan for a future with even less than 12.3 million acre-feet, the river community is far from consensus about how dry of a future to plan for. And, while this panel was asked to talk about drought, on-the-ground evidence suggests the Colorado River basin is not experiencing drought but aridification—a *permanent* transition to a drier future. If we are to build upon the river's many successes over the last 25 years, we must confront the magnitude of the challenge in front of us and quickly reach agreement on what future scenario we're willing to plan for.

Defining the problem is only the first step. We must develop additional supplies, pursue aggressive conservation, and make investments in technologies and tools that show promise helping us do both. It is well known that agriculture uses approximately 80 percent of the river's flow. The remaining goes to municipal users. As we have learned from supply chain disruptions over the last 18 months, agricultural and urban sectors must work together to reduce water use while also ensuring both food security and the health and safety of our urban populations. To this end, several municipalities embarked on a new collaboration just this fall to research irrigation technology that can decrease consumptives uses while maintaining crop productivity. In Arizona, drip irrigated alfalfa projects are currently being tested. But the learning is slow and calculated, and the pace of engagement between urban and agricultural water users must be accelerated if we are to tackle the daunting challenge of updating the guidelines and agreements for future river operations.

As we work on our long-term goals, we must also recognize that additional water use reductions over and above the 2007 shortage and DCP contributions are necessary. The drought contingency plans envisioned taking additional actions to

protect a Lake Mead elevation of 1,030 feet, an elevation that Reclamation projects could be reached before the end of 2023. As that likelihood becomes ever more probable, the only near-term management strategy is reducing use. As I've previously shared, we have invested billions of dollars in water conservation and infrastructure. And, each week, we review analysis of additional programs and water savings opportunities. But Nevada represents a mere 1.8 percent of the water allocated on the river. You could evacuate Las Vegas tomorrow and the river's math problem would not be improved in any meaningful way. Our best hope is that continual water efficiency becomes a commonplace philosophy throughout the west.

As you know, Southern Nevada is unique when it comes to reuse and recycling. We collect and treat nearly every drop of Colorado River water used indoors and return that water to Lake Mead for return-flow credits. This extends the availability of our overall supplies by more than 75 percent.

At least locally, there is little more we can do to extend our reuse potential. That is why we began working with the Metropolitan Water District of Southern California (Metropolitan) to explore participation in their Regional Recycled Water Advanced Purification Center project. The project represents a long-term supply option for our community. To this end, we continue to urge passage of the Large Scale Water Recycling Project Investment Act, which authorizes a new grant program for projects that provide substantial water supply and other benefits to drought-stricken regions. The Infrastructure Investment and Jobs Act includes this important bill and provides $450 million for a large scale water recycling and reuse program. The House Natural Resources Committee proposed an additional $100 million for large scale water recycling projects as part of the Build Back Better Act. This funding is critically needed to help project stakeholders offset the costs to their communities for critical water infrastructure and help ensure the project can be completed when needed—which, frankly, is soon.

Our progress toward sustainable solutions depends on partnership and well-coordinated action by all. This necessitates using realistic views of future hydrologic risk and meaningful participation by a broader suite of water users. This river community is at a crossroads and has a simple but difficult decision to make: do we double down on the promises of last century and fight about water that simply isn't there or do we roll up our sleeves and deal with the climate realities of this century?

I'll be happy to answer any questions you might have. Thank you.

QUESTIONS SUBMITTED FOR THE RECORD TO JOHN J. ENTSMINGER, GENERAL MANAGER, SOUTHERN NEVADA WATER AUTHORITY

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. Within the borders of the State of Nevada there are no outstanding Native American tribal claims to Colorado River water. However, we support the resolution of outstanding claims in other states.

The math is not complex. We draw water every day from a system where uses exceed inflows despite the fact that a majority of states in both the Upper and Lower Basins are currently using less than their full legal entitlements. Therefore, any process to bring the system into balance must include agreement on how to match uses with available supply.

Any new or expanded use of Colorado River will add to the overall supply and demand imbalance unless accompanied by a commensurate reduction of an existing use within the basin.

The only way we can capitalize on the successes of past river cooperation is to confront the realities of climate change with transparency and candor. My sincere hope is that in doing so we can continue to demonstrate that the flexibility and

management solutions for the water supply of 40 million people can be found within our existing laws and compacts—through collaboration and not litigation.

Mr. HUFFMAN. Thank you, Mr. Entsminger. Up next is Ms. Rebecca Mitchell, the Director of the Colorado Water Conservation Board.

Ms. Mitchell, you are recognized for 5 minutes.

STATEMENT OF REBECCA MITCHELL, DIRECTOR, COLORADO WATER CONSERVATION BOARD, DENVER, COLORADO

Ms. MITCHELL. Thank you, Chairman Huffman and members of the Subcommittee. Thank you for the opportunity to testify today. I am Becky Mitchell, Director of the Colorado Water Conservation Board. As Director of our state's water policy agency and Colorado's negotiator on the Colorado River, I want to share my insights on the impacts of drought in Colorado, an Upper Basin state, and the factors that impact our relative water supply security, from an interstate perspective.

The entire Colorado Basin has been impacted by drought, but those impacts have been felt differently in the Upper Basin and Lower Basin because of where Lakes Mead and Powell sit. Both of these large reservoirs are above Lower Basin water uses and below Upper Basin uses. Having these large reservoirs above them has meant the Lower Basin has had some certainty in their water deliveries. In fact, the Lower Basin states have never faced shortages to their deliveries from Lake Mead, and will not until 2022.

In contrast, in the Upper Basin we have taken shortages nearly every year for over 20 years. Without that large reservoir upstream, we are reliant on current runoff from snowpack. It is for this reason that the Upper Basin uses are variable. When snowpack is abundant, water is available for use. But when the snow is thin, water is not there, and our water users go without: a perfect example of the impacts of climate change.

Colorado has suffered from consecutive years of low stream flows. Perpetual dry soil conditions have increased absorption of snowmelt and reduced spring runoff. This year has been especially difficult: 90 percent of the state is currently experiencing drought.

An example of the difficult situations that Coloradans are dealing with: a major storage project in southwestern Colorado received only one-tenth of its water allocation this year, and due to the compounding years of shortages, people across the state are considering heartbreaking decisions like selling multi-generational family farms. These decisions have significant psychological, sociological, and economic impacts to the communities.

The water shortages facing southwest Colorado the last 2 years fell heavily on the Ute Mountain Ute Tribe, whose economy and communities depend on revenue generated from crop production.

On top of these impacts of drought, releases made from Blue Mesa Reservoir recently also impacted the local recreational economy. These releases were made by the Bureau of Reclamation, pursuant to the imminent need provision of the Drought Response Operations Agreement, part of the 2019 Drought Contingency Plan. There were also releases from New Mexico and Wyoming.

The dry soil conditions and warmer temperatures have also left our forests more vulnerable to fire. The summer of 2020 brought record-breaking fires, including three of the largest wildfires in Colorado's history. In total, over 650,000 acres were burned, and hundreds of homes were destroyed. We are still dealing with the aftermath of those fires, including catastrophic mudslides. With little vegetation to hold the soil in place and prevent erosion, heavy rainstorms brought roughly 65,000 tons of mud and debris down the slopes, closing Interstate 70 for 17 straight days.

It is important for me, as Commissioner of the Headwaters State, to make sure everyone whose work impacts the Colorado River understands the challenges that Coloradans face, particularly as we implement the 2019 Drought Contingency Plans and consider the negotiation of the post-2026 operations of the major reservoirs.

As we look forward to those negotiations, one critical element will be meaningful engagement with the Tribal Nations in the Colorado Basin. Speaking as Colorado's Commissioner, I talk to the representatives of the Southern Ute and the Ute Mountain Ute Tribes regularly, sovereign to sovereign. I am proud to say Colorado has water rights settlements with both of those tribes, but we must understand that each tribe is different, with different needs, values, histories, and relationships. Negotiators in each state should take the time to sit down with each tribe in their state to understand their unique positions and needs.

It will also be important to recognize that since not everything can be addressed through these operational guidelines, we must also support initiatives that recognize the urgent need to ensure tribes have access to clean drinking water.

In addition to supporting initiatives providing funding for infrastructure to access clean drinking water for tribes, Colorado also supports ongoing efforts to fully fund implementation of the Drought Contingency Plan, investments in agricultural sustainability and efficiency, and recovery programs in the Upper Basin, including through House Resolution 5001.

My discussions with folks across the state of Colorado, including tribal representatives, stakeholders, NGOs, and all types of water users, have helped me develop some principles that will remain in the forefront of my mind through the upcoming negotiations. I believe all of those here today can stand behind two of those goals.

First, we must continue the spirit of interstate collaboration and cooperation that has defined the work in the Basin for 100 years.

Second, we must provide water supply security and certainty for all in the Lower Basin, the Upper Basin, and the 40 million people who rely on this critical resource.

We are committed to being a part of the solution that works for all of the Colorado River Basin. Thank you, and I will be available for questions.

[The prepared statement of Ms. Mitchell follows:]

PREPARED STATEMENT OF REBECCA MITCHELL, DIRECTOR,
COLORADO WATER CONSERVATION BOARD, AND COLORADO COMMISSIONER,
UPPER COLORADO RIVER COMMISSION

For the last 100 years, the Colorado River Basin States have relied on the certainty provided by the Colorado River Compact to develop water supplies for 40 million people, 5.5 million acres of farmland, and water for our national public lands, all of which drives a $1.4 trillion economy annually. Colorado remains fully committed to working with the Basin States and Department of the Interior to address the challenges in the Colorado River Basin in a collaborative and adaptive manner, while also remaining committed to the principles outlined in the 1922 Colorado River Compact.

The Basin States negotiated the 1922 Colorado River Compact to: (a) provide for greater certainty and security for all states who rely on the water; (b) eliminate pressures to race to develop uses; (c) allow Upper Basin States to develop supplies at their own pace and safeguard water for future uses; (d) allow the states to determine how the water would be divided and apportioned amongst themselves in perpetuity; (e) maintain state autonomy; and (f) promote interstate comity and remove causes of present and future controversies.

In addition to the 1922 Compact, other agreements, decrees, treaties, and other legal documents govern the allocation and use of Colorado River water. These agreements have largely been intended to provide security for the basin's water users through changing conditions brought on by climate change and extended drought. Two such agreements are the 2007 Guidelines and the 2019 Drought Contingency Plan. Both of these agreements are interim in nature and expire in 2026. The Basin States now have opportunities to learn from how the Guidelines and DCPs have operated in practice, particularly through very dry hydrology. This information will help inform what comes next.

Currently, there are significant ongoing planning and implementation efforts underway, all taking place against a backdrop of critically low reservoir elevations, a 21-year millennium drought that is ongoing, and the challenges of a warming climate that will further stress the basin. In this context, it is important to understand the significant differences between the operations and systems in the Lower Basin States (Arizona, California, and Nevada) and the Upper Basin States (Colorado, New Mexico, Utah, and Wyoming).

Lakes Mead and Powell both sit above all Lower Basin water uses and below the Upper Basin uses. Having these large reservoirs above them has meant that the Lower Basin States have had certainty and security in their water deliveries. In fact, the Lower Basin States have never had to face shortages to their deliveries from Lake Mead, and will not until 2022. Importantly, Lake Powell and Lake Mead operations are linked by the 2007 Guidelines. The amount of water taken out of Lake Mead directly impacts the amount of water that is released from Lake Powell.

In contrast, water users in the Upper Basin States have taken shortages nearly every year for over 20 years. Without a large reservoir upstream, Upper Basin water users are reliant upon current runoff from snowpack and water users are only able to use water from that snowpack in that particular year. This means Upper Basin water users frequently do not received the full amount of water to which they are legally entitled. It is for this reason that Upper Basin uses are variable. When snowpack is abundant, water is available and water users put it to beneficial use. When the snow is thin, water is not there and they have to go without.

Colorado has suffered from consecutive years of low stream flows. Perpetual dry soil conditions have increased absorption of snowmelt and reduced spring runoff. This year has been especially difficult: 90% of the state is currently experiencing drought.

Multiple years of shortages have resulted in many Coloradans facing heartbreaking decisions. A major storage project in southwestern Colorado received only one-tenth of its water allocation this year. Agricultural producers across the state are considering selling generations-old family farms. These types of decisions have significant economic, sociologic, and psychological impacts across the entire state. The water shortages facing the Southwest part of Colorado the last two years fell heavily on the Ute Mountain Ute Tribe, whose economy and communities depend largely on revenue generated from successful crop production.

On top of the impacts due to drought, Coloradans have also been impacted by releases recently made from Blue Mesa Reservoir. These releases were made as part of a larger effort by the Bureau of Reclamation pursuant to the imminent need provision of the Drought Response Operations Agreement, part of the 2019 Drought Contingency Plan. With the goal of protecting critical elevations at Lake Powell, Reclamation is in the process of releasing a total of 181,000 acre-feet from reservoirs

in Colorado, New Mexico, and Wyoming. The releases forced the marina and other businesses near Blue Mesa reservoir to close six weeks earlier than planned, resulting in lost jobs and a 25% loss in annual revenue. As the states work with Reclamation to develop a plan for potential future reservoir releases, creating a plan for recovery of this water will be important.

The dry soil conditions and warmer temperatures have also left our forests more vulnerable to fire. The summer of 2020 brought record breaking fires to Colorado, including three of the largest wildfires in Colorado's history. In total, over 650,000 acres were burned and hundreds of homes were destroyed. We are grateful that the 2021 fire season has not been as severe, but we are continuing to deal with the aftermath of last year's fires, including catastrophic mudslides along Interstate 70 through Glenwood Canyon. The mudslides were a result of the Grizzly Creek Fire in 2020 that left a 32,000 acre burn scar on steep canyon walls. With little vegetation to hold the soil in place and prevent erosion, heavy rainstorms brought roughly 65,000 tons of mud and debris down the slopes closing the highway for 17 straight days.

It is important for me, as Commissioner of the headwaters state, to make sure that everyone whose work impacts the Colorado River understand the challenges Coloradans face, particularly as the 2019 Drought Contingency Plans are being implemented and the Basin States look forward to the negotiation of the post-2026 operations of the major reservoirs.

As we look forward to those negotiations, one critical element will be meaningful engagement with the Tribal Nations in the Colorado River Basin. As Colorado's Commissioner, I talk to representatives of the Southern Ute and Ute Mountain Ute Tribes regularly on a sovereign-to-sovereign basis. Colorado has water rights settlements with both of these tribes. But it is imperative to understand that each tribe is different—with different needs, histories, and relationships. It will be important that the negotiators in each state take the time to sit down with each tribe in their state to fully understand their unique positions and needs. It will also be important to recognize that since not everything can be addressed through the operational guidelines, we must also support initiatives that address the urgent need to ensure tribes have access to clean drinking water.

In addition to initiatives that provide funding for infrastructure that is critical to access to clean drinking water for Tribal Nations, Colorado also supports ongoing efforts to fully fund the recovery programs in the Upper Basin, Drought Contingency Plan implementation, and more general investments in agricultural viability and sustainability.

As we look forward to the next chapter of Colorado River management, it is imperative that the Basin States continue in the spirit of collaboration and cooperation that has defined the work in this basin for 100 years. We must also provide water supply security and certainty for all—the Lower Basin, the Upper Basin, and for all of the 40 million people who rely on this critical resource.

QUESTIONS SUBMITTED FOR THE RECORD TO REBECCA MITCHELL, DIRECTOR, COLORADO WATER CONSERVATION BOARD AND COLORADO COMMISSIONER, UPPER COLORADO RIVER COMMISSION

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. For almost a century, the Colorado River Basin States have relied on the certainty provided by the Colorado River Compact to develop water supplies for 40 million people, 5.5 million acres of farmland, and water for our national public lands.

The 1922 Colorado River Compact is the first interstate water compact negotiated in the United States and it has served as the foundation for the management of the Colorado River for the last 100 years. In 1922, the Upper Basin (Wyoming, Utah,

Colorado, and New Mexico) became very concerned about the rapid growth in the Lower Basin (California, Nevada, Arizona) and mounting pressure from the federal government that was claiming all the undeveloped and excess waters in the Western States.

To balance these competing interests, the States negotiated the Compact to: (a) provide for greater certainty and security for all states who rely on the water; (b) eliminate pressures to race to develop uses; (c) allow Upper Basin States to develop supplies at their own pace and safeguard water for future uses; (d) allow the states to determine how the water would be divided and apportioned amongst themselves in perpetuity (e) maintain state autonomy as opposed to federal control; and (f) promote interstate comity and remove causes of present and future controversies.

The Colorado River Compact apportions the Colorado River with the Upper and Lower Basins each allocated the exclusive beneficial consumptive use of 7.5 million acre-feet per year. The Lower Basin also received the right to develop an additional 1 million acre-feet to account for its tributaries, for an aggregate of 16 million acre feet of water between the Upper and Lower Colorado River Basins. The Upper Basin States are obligated to not cause the flow of water at Lee Ferry to be depleted below an aggregate of 75 million-acre feet for any period of 10 consecutive years. It also recognized an allocation to Mexico which, under the 1944 Treaty, was set at 1.5 million acre-feet per year to be satisfied first from waters that are surplus over and above the aggregate. The Colorado River Compact is the basis for a second compact, and the federal laws, court decrees and agreements authorized since, and the culture of collaboration it forged remains a unique and critical asset in the region.

The 1948 Upper Colorado River Basin Compact accommodates variable water supplies in the Upper Basin by apportioning water to each state by percentages of available water apportioned under the Colorado River Compact, instead of fixed amounts. *Arizona v. California* (376 U.S. 340), addressed expected shortages to the Lower Basin States' apportionments and for Tribal reserved water rights to be included in the apportionment of the states where reservations are located. Colorado has a settlement in place with the Southern Ute and Ute Mountain Ute Tribes and the Tribes' water uses are included as part of Colorado's allocation.

Our use of water in Colorado, and the other Upper Basin States, is naturally limited by hydrology. Our biggest reservoir is the snowpack. We cannot control its operation and on account of a changing climate, we have less natural snowpack today than 20 years ago. This year has been particularly difficult.

For example, over the course of this summer, conditions across western Colorado deteriorated significantly. The Ute Mountain Ute Farm and Ranch Enterprise, owned by the Ute Mountain Ute Tribe, one of the area's largest water users, wasn't able to produce crops without their water allotment and had to lay off 50 percent of their staff, who are mostly members of the Ute Mountain Ute Tribe. The farm used only 8 of their 110 fields.

Because of our increasingly limited supply over the last 20 years, the Upper Basin consumes much less water than it is apportioned under the Compact—notably, about 3 million acre-feet less every year. This does not mean that the Upper Basin does not need or cannot use more water. When it is available, it is diverted and used.

Lower Basin water users get their water supplies from releases of water from Lakes Powell and Mead. In contrast to the Upper Basin's variable supply from natural snowpack, these reservoirs provide a secure and reliable source of supply. Due to how the system operates, the Lower Basin has benefited from above normal releases. This has directly contributed to the declining levels in Lakes Mead and Powell.

In considering how to best manage the Colorado River in the face of a warmer and drier future, our task now is not to reapportion the water, but to work together to find flexibilities within the existing framework to equitably share shortages between the Upper and Lower Basins.

Mr. HUFFMAN. Thank you, Ms. Mitchell. We will now hear from Mr. John D'Antonio, the State Engineer for the state of New Mexico.

Mr. D'Antonio, you are recognized.

[Audio malfunction.]

Mr. HUFFMAN. We are not getting audio from you, unfortunately, Mr. D'Antonio. And I don't think you are muted. Let's try again.

Mr. D'ANTONIO. Can you hear me?

Mr. HUFFMAN. It is pretty faint. Can you try to give us a little test here?

Mr. D'ANTONIO. Can you hear me now?

Mr. HUFFMAN. Let's keep working on that. Can we come back to you, Mr. D'Antonio?

I think, if we can, we should jump ahead to Mr. Gene Shawcroft, General Manager of the Central Utah Water Conservancy District, and then we will come back to Mr. D'Antonio when we can get a little better volume level for him.

So, Mr. Shawcroft, if you are with us, you are recognized.

STATEMENT OF GENE SHAWCROFT, GENERAL MANAGER, CENTRAL UTAH WATER CONSERVANCY DISTRICT, OREM, UTAH

Mr. SHAWCROFT. Good afternoon to all. Thank you for conducting this hearing. Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee, my name is Gene Shawcroft, and I serve as Utah's Upper Colorado River Commissioner and General Manager for the Central Utah Water Conservancy District. The district is the state sponsor of the Central Utah Project and is also the largest diverter of Colorado River Water in Utah.

The Colorado River provides over one-third of Utah's water supply and is fundamental to its prosperity. With such reliance on the river, the unprecedented drought in mainstem reservoir storage and river flows is alarming.

On March 17, Governor Cox declared a state of emergency, due to drought conditions, and urged all Utahns to use less water. The effectiveness of Utah's statewide drought response is promising. Over this time last year, we have reached reductions as high as 32 percent.

As General Manager, I have also overseen the implementation of the largest water conservation program of Colorado River water in Utah. Section 207 of the Central Utah Project Completion Act statutorily requires us to conserve up to 80,000 acre-feet annually by 2033. We are conserving nearly 140,000 acre-feet, 50 percent more than our statutory requirement.

Additional work must be done. Nowhere is this more important than in the Colorado River Basin. We know that extreme conditions like this year will become more frequent, further straining a river system that is reaching a breaking point.

The Upper Basin Drought Contingency Plan includes a commitment by the Upper Division states to evaluate the feasibility of a temporary, voluntary, and compensated demand management program to reduce consumptive use.

In addition, the Drought Response Operating Agreement is also being actively implemented in the Upper Basin. This agreement governs the release of storage water upstream of Lake Powell, once operational adjustments have been considered at Lake Powell. Releases from these upper reservoirs are underway as we speak, as has been mentioned.

Also, as Ms. Mitchell mentioned, the Upper Basin has routinely taken shortages, which are measured by the significant reductions in water that is available for use by our system. Like others, we face challenges in supplying water to a state with explosive growth, even as the supply diminishes. Overcoming these challenges is a tall order we must tackle together, with the inclusion of all Colorado River stakeholders.

Utah is committed to the development and use of new technology to aid in forecasting and measurement of diversions, use, and depletions.

One particularly important platform using remote sensing for measurement of depletions is OpenET. Continued congressional support of such work, especially as it shifts from the research to application arena, is necessary. Further use of such tools will allow for consistent determination of depletions across all Colorado River Basin states. Congressional support for rural water infrastructure investment, conservation programs, outreach, education, and additional research is also critical.

I grew up on a small farm in Colorado. As a boy, my favorite day was the day the snowmelt began, and water was turned into the canals. Watering the canals meant we could eat, buy things, and live comfortably. I learned early on that water is finite, shared, and a common resource.

When it comes to the Colorado River, the most effective solutions for the future must be collaborative. Each of the Basin states is bound together by a common goal, which is to utilize this precious water resource in a responsible way that honors governing law, and allows us to meet the needs and priorities of our communities.

Thank you again for the opportunity to share this information, and I would be happy to answer questions. Thank you.

[The prepared statement of Mr. Shawcroft follows:]

PREPARED STATEMENT OF GENE SHAWCROFT, UTAH COMMISSIONER, UPPER COLORADO RIVER COMMISSION (UCRC) AND GENERAL MANAGER, CENTRAL UTAH WATER CONSERVANCY DISTRICT

Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee, thank you for giving me the opportunity to testify today. My name is Gene Shawcroft. In January 2021, Governor Spencer Cox appointed me as Utah's Upper Colorado River Commissioner and Basin State Representative. I also serve as the Chair of Utah's newly formed Colorado River Authority of Utah. This new Authority was formed by Utah's State Legislature in response to the need we saw to expand and focus additional resources on improved Colorado River water management in Utah. Governor Cox appointed me to this position, in part because since 2010, I have served as the General Manager of the Central Utah Water Conservancy District. The District is the state sponsor of the Central Utah Project (CUP) which oversees the construction, operation, maintenance, and management of the project facilities. The District is also the largest single diverter of Colorado River water in Utah. Our project delivers water for agriculture, municipal and industrial water users in eight counties from the border of Colorado stretching west to the two largest counties along the Wasatch Front which includes the Salt Lake City metropolitan area.

The Colorado River provides over one third of Utah's water supply and is fundamental to its economy, growth, and prosperity. With such reliance on the river, the precipitous, and unprecedented drop in mainstem reservoir storage and river flows that has occurred since 2000, and particularly over the last year, is alarming. On March 17, 2021, Governor Spencer Cox declared a state of emergency due to drought conditions and urged all Utahns to save water. In response, Utah increased efforts with a long existing statewide "Slow-the-Flow" campaign that includes significant increases in incentive programs for water efficiency programs and projects.

Utah is committed to use funding from the American Rescue Plan Act of 2021, including nearly $100 million, toward improving water management to reduce consumption.

The effectiveness of Utah's state-wide drought response is promising, including significant reductions by districts, municipalities and other water purveyors reaching as high as a 32% reduction of use over this time last year. While gains have been made additional work must be done. Nowhere is this more important than in the Colorado River Basin where temperature and precipitation trends corroborate the message that we have heard for years: extreme conditions, like we experienced this year, will become more frequent further straining a system that is nearing a breaking point. Urgent action is needed now to avoid catastrophic failures in the system.

In anticipation of such a situation, the State of Utah, along with our sister states, signed onto the 2019 Drought Contingency Plans (DCP). The Upper Basin plan includes a commitment by the Upper Division States to evaluate the feasibility of a temporary, voluntary, and compensated demand management program to reduce consumptive water use within the Colorado River basin. Utah has begun to evaluate the feasibility of such a program within our state by investigating the applicability of demand management on a measurable scale within Utah. The western water law doctrine of prior appropriation coupled with State laws governing water rights complicates our ability to protect conserved water in the Upper Basin for system benefits. Further, we need to develop better tools to monitor variable hydrologic conditions and improve our current water use measurement infrastructure.

The second element of the Upper Basin DCP—the Drought Response Operating Agreement (DROA) is also being actively implemented in the Upper Basin. The DROA provides for actions by the Federal Government, in conjunction with Upper Basin States, when Lake Powell elevation projections reach a certain threshold. This agreement governs the release of storage water from Colorado River Storage Project Act Initial Units upstream of Lake Powell, once operational adjustments at Lake Powell have been considered. Since early 2021, we began holding routine monitoring meetings, and by late spring, conditions had deteriorated such that the second trigger had been actuated requiring an action plan be developed and implemented. Utah has been an active participant throughout the process, and remains committed to working with our sister states, and the Bureau of Reclamation in completing the Drought Response Operating Plan by the end of 2021, for implementation thereafter. However, the process of developing the Drought Response Operating Plan has made it clear that its use as a drought response tool is extremely limited, and may only be effective under unique, short-term circumstances. We need a more comprehensive, long-term response if we are going to get through this difficult challenge.

Utah and the other Upper Division States have watched our available water supplies dwindle as the prolonged drought has continued. North facing mountains used to store snow through late summer keeping our mountain streams flowing year-round. Today the mountains are bare and many streams flow at a trickle. Like the Lower Basin in 2022, the Upper Basin has routinely taken shortages, however these "cuts" in water supply are not measured by reducing diversions from reservoirs. Rather, Upper Basin shortages are measured by the significant reductions in water that is available for use by the system.

As General Manager of the Central Utah Water Conservancy District (District), I have overseen the implementation of the largest water conservation program of Colorado River water in the state. Section 207 of the Central Utah Project Completion Act (CUPCA—Public Law 102-575), required statutory "Water Management Improvements" to conserve up to 80,100 acre-feet annually by 2033. The District has aggressively pursued dozens of water efficiency projects and today we conserve nearly 140,000 acre-feet per year, 50% more than our statutory requirement. This has been achieved at a combined local and federal cost of nearly $230 million in both agricultural and municipal projects. This 140,000 acre feet of conserved water annually is 30,000 acre-feet more than the District's total trans-basin diversion from the Colorado River of 101,900 acre-feet per year. Without this conservation effort over the past 30 years, Utah would be severely handicapped. The District has pivoted its attention to development of a 100 percent locally funded water efficiency measured including low water use landscapes, turf removal, flip your strip, and other water conservation incentive programs.

We recognize that moving forward in the Colorado River basin progress will only be achieved by working together with the other basin states, Federal Government, Colorado River Tribes, and other stakeholders. Not unlike others in the basin, we face challenges in supplying water to a state with explosive growth, even as the supply diminishes. Overcoming these challenges is a tall order we must tackle together.

Utah needs to work with all water users and stakeholders, including tribes to find new and innovative ways to conserve water. Not unlike California and Arizona, a significant amount of Utah's Colorado river water is used in agriculture. We can learn from our Lower Basin colleagues to find ways to improve efficiencies within the important agriculture industry without undermining our agricultural heritage through buy-and-dry scenarios. There are no simple solutions to these challenges, but we live in a time when technological advancements in modeling, measurement and water application make it possible to optimize the use of our shared water resources. Three considerations important to drought mitigation planning in the Colorado River Basin include:

1. **Continued improvements to system modeling tools used to inform operations and planning, and consensus in application of these tools by basin states and the Federal Government.** The Bureau of Reclamation has developed modeling tools that are fundamental to Colorado River management. These tools have served the basin well, but as aridification stresses the system, more is being asked of them. Increased investment by the Federal Government including staffing will be necessary to support, improve, and modify these tools to meet a new set of demands, including accounting for shortages in the Upper Basin, Drought Response Operations under the Drought Contingency Plans, drought mitigation measures through reductions in consumptive use, and the evaluation of curtailment implementation in the Upper Basin.
2. **Acquisition and implementation of new technology.** Effective management of water resources has its roots in measurement throughout the life cycle of a drop of water. Utah supports and is committed to the development and use of new technology to aid in forecasting and measurement of diversions, use, and depletions. One particularly important platform using remote sensing for measurement of depletions is OpenET. This will allow for evaluation of water use as frequently as satellite imagery is available and will be a valuable tool for water managers and water end users in managing water resources. I appreciate Chairman Huffman (D-Calf), Congresswoman Susie Lee (D-NV) and Congressman Chris Stewart (R-Utah) for their leadership by introducing the Open Access Evapotranspiration Data Act in the House of Representatives. This bill establishes a program under the Department of the Interior (DOI) that uses publicly available data from satellites and weather stations to provide estimates of evapotranspiration (ET), a critical measure of the water that is consumed and removed from a water system. This allows water managers, farmers, ranchers, and other decision makers to be able to access consistent and accurate data as we make decisions about water resource management. Continued support of such work, especially as it shifts from the research to application arena is necessary. Further, use of such tools will allow for consistent determination of depletions across all the Colorado River Basin States, which is necessary where management of the river is a function of the measurement of consumptive uses.
3. **Increased investment in Agricultural Water Efficiency programs for Upper Colorado River Basin states for drought mitigation.** Recognizing roughly 80 percent of Utah's water is applied to agricultural uses, the state legislature created Utah's Agricultural Water Optimization Task Force in 2018. It has identified further opportunities for making Agricultural water use more efficient, and apply to Agricultural water use broadly, including varying methods of application and quantity, testing crops of varying drought tolerance, and evaluating the impacts of fallowing. Implementation of these optimization measures at a meaningful scale will require additional research and Federal funding. Congressional support for rural water infrastructure investment, conservation programs, outreach, education, and research is critical.

Utah is rapidly updating its statewide Colorado River Drought Mitigation Plan and is already investing in new drought mitigation measures. We hope to apply lessons learned from our successes and failures as we move forward. These measures are critical to our future success as we build on a history of significant water efficiency efforts within the state of Utah.

I grew up on a farm in South Central Colorado. As a boy, when other kids my age would describe the most exciting day of the year as Christmas, I would say my favorite day was the day the snowmelt began, and water was turned into the canals. Water in the canals meant we could eat, buy things, and live comfortably. It also meant we had to work hard to achieve these things. I learned early on that water

is a finite, shared and common resource. When it comes to the Colorado River, we can be encouraged by the bridges that have been built to deliver us to where we are today. The most effective solutions for the future must be collaborative. As we work to enhance the tools to understand the long-term hydrology and conserve the availability of Colorado River water, each of the Basin States are bound together by a common goal, which is to utilize this precious water resource in a responsible way that honors governing law and allows us to meet the needs and priorities of our communities.

QUESTIONS SUBMITTED FOR THE RECORD TO GENE SHAWCROFT, PE, UTAH BASIN STATES REPRESENTATIVE AND UTAH UPPER COLORADO RIVER COMMISSIONER

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. On behalf of the state of Utah, I appreciate the opportunity to respond to Representative Jim Costa's question following the October 15, 2021, Subcommittee Oversight Hearing on "Colorado River Drought Conditions and Response Measures—Day One." Representative Costa has requested a response to the following question, in relevant part: "How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?"

The 1922 Colorado River Compact and the 1948 Upper Colorado River Basin Compact, the two seminal components of the Law of the River, are designed to function under varying hydrologic conditions—in times of high and low flows. Under the 1922 Compact, the Upper Division States' non-depletion obligation is based upon a rolling average of 75 million acre-feet of water over a consecutive 10-year period, an acknowledgment that in any given decade some years may yield more flows and other years less. Similarly, the 1948 Compact makes allocations to the Upper Division based on percentage shares of available supply, rather than on an absolute quantity of water.

The Colorado River Basin States, together with our federal partners, are committed to finding collaborative solutions in consultation with key stakeholders on the river, including Tribes, to address the rapidly declining hydrology both in the near term and as we approach 2026, when the current operational criteria governing the river expire. Like the Law of the River itself, our goal is to develop new criteria that will allow the States and water users to adapt to wider fluctuations in hydrology going forward.

Once again, thank you for the opportunity to testify at the hearing and to provide the foregoing response.

Mr. HUFFMAN. Thank you, Mr. Shawcroft. Let's go back to Mr. D'Antonio, and see if we can hear him now.

Mr. D'ANTONIO. Can you hear me, Mr. Chairman?

Mr. HUFFMAN. Mr. D'Antonio, I don't know what to say. We are just not able to hear you.

So, unfortunately, while we can keep trying to work on that, we are going to have to have your written testimony suffice for the time being. And if we can troubleshoot the audio, I am sure we would like to include you in the questioning.

But given that problem, we will now hear from Mr. Pat Tyrrell from Wyoming, Commissioner to the Upper Colorado River Commission.

STATEMENT OF PATRICK TYRRELL, WYOMING COMMISSIONER TO THE UPPER COLORADO RIVER COMMISSION, STATE OF WYOMING

Mr. TYRRELL. Thank you, Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee. Am I being heard?

Mr. HUFFMAN. Yes, you sound great. Thanks for checking.

Mr. TYRRELL. Thank you, with Mr. D'Antonio's problem, I thought I would check.

I am Patrick Tyrrell, Wyoming's Commissioner to the Upper Colorado River Commission, and Wyoming's Governor's representative on the Colorado River. Thank you for providing the opportunity to present testimony today on behalf of the state of Wyoming.

You have heard much already today about conditions at Lake Mead and Lake Powell. The drought impacts are not limited to the major system reservoirs. Water users in Wyoming, like other Upper Basin states, continue to experience significant water shortages, due to the extremely dry conditions.

We, in Wyoming, as in other places, rely on snowmelt and whatever runoff is available on the rivers and streets. When the water supply is not sufficient to supply all water rights, only the earliest and most senior water rights get satisfied.

Therefore, like our other Upper Basin states, our users have routinely also suffered shortages, even though Wyoming has developed less than two-thirds of its compact apportionment under a full supply.

During drought years, Wyoming water use is reduced by more than 20 percent, compared to years when water is more plentiful. These shortages get little attention, and require no Federal declaration, but they happen nevertheless, and carry with them attendant economic impacts.

Collaboration will continue to be the key in responding to drought. Since before 2000, the Basin states, Reclamation, Mexico, Basin tribal leaders, NGOs, water users, and others have collaborated to implement unprecedented, innovative, and proactive measures. As the challenges increase, that collaboration must not only continue, but improve.

We intend to continue that coordination as we develop post-2026 reservoir operating rules. However, post-2026 guidelines cannot address all of the numerous issues and impacts caused by this drought. Many can only be addressed by other response measures.

The Upper Basin will continue to implement the 2019 Drought Contingency Plan, the principal goal of which was to assure continued compliance with the 1922 Compact.

Further, releasing storage from upstream Federal reservoirs, as you just heard about from Mr. Shawcroft, is only a first line of defense to protect critical elevations at Lake Powell. Existing storage is finite and cannot protect that lake under many of the dry scenarios now being projected. If such a program is even feasible in addition, any Upper Basin demand management program still

faces difficult challenges to be resolved before it can be developed and implemented.

More is needed to help ensure the Basin drought resilience. The most immediate needs include ensuring the Federal commitments under the DCP can be met, securing access to clean water for tribal communities, and securing authorization and long-term funding for species recovery programs.

There is a real need to focus on a broad range of investments and opportunities, including water storage infrastructure, advancing large scale augmentation, facilitating system conservation, promoting watershed health, promoting forest restoration and management, improving Ag operations, incentivizing municipal conservation, and improving water supply forecast.

The effects of this historic drought extend from the headwaters in Colorado and Wyoming through each Upper and Lower Basin state and into Mexico. Drought response measures must equally stretch across the entirety of the Basin. Success will require development and implementation across Federal agencies, in cooperation and partnership with the Basin states, the tribes, other water users, NGOs, and other stakeholders.

Wyoming is ready and willing to engage in that collaborative effort necessary to build and sustain water resiliency throughout the Basin, and to provide more information on the types of investments and opportunities most likely to help ensure the Colorado River Basin continues to support a thriving economy and a healthy environment.

Thank you for the opportunity to testify here today. I will remain and be happy to answer any questions you or the Committee may have.

[The prepared statement of Mr. Tyrrell follows:]

PREPARED STATEMENT OF PATRICK TYRRELL, P.E.,
WYOMING'S COMMISSIONER TO THE UPPER COLORADO RIVER COMMISSION
AND WYOMING'S GOVERNOR'S REPRESENTATIVE TO THE COLORADO RIVER

Chairman Huffman, Ranking Member Bentz, and Members of the Subcommittee, my name is Patrick Tyrrell. I am Wyoming's Commissioner to the Upper Colorado River Commission and Wyoming's Governor's representative regarding the Colorado River. Thank you for providing me the opportunity to present testimony on behalf of the State of Wyoming about Colorado River Drought Conditions and Response Measures.

Colorado River Drought Conditions

The ongoing drought in the Colorado River Basin is well known and well documented. The Basin is experiencing its worst drought in over 100 years of record-keeping, and one of the worst in the past 1,200 years. The period from 2000 through 2021 is the driest 22-year period on record with natural flow in the Upper Colorado River Basin at 84% of the long-term average of 14.68 million acre-feet (MAF) based on the period from 1906 to 2021. Water Year 2021 was the second driest in the historical record, with the unregulated inflow into Lake Powell being about 33% of average.

Lake Mead is experiencing historically low storage. On August 16th, the Bureau of Reclamation (Reclamation) issued its August 24 month study. Due in part to ongoing historic drought and low runoff conditions in the Colorado River Basin, releases from Lake Mead will be reduced in 2022 representing the first "shortage" declaration in the Lower Basin. The declaration will require the following water reductions and contributions: Nevada will leave 21,000 acre-feet in Lake Mead (7% of the state's annual apportionment); Arizona will leave 512,000 acre-feet in Lake Mead (18% of the state's annual apportionment); and Mexico will leave 80,000 acre-

feet in Lake Mead (5% of the country's annual allotment). Despite robust conservation activities in the Lower Basin since 2014 which have increased the elevation of Lake Mead by an estimated 50 feet, recent projections predict an almost certainty that shortages in the Lower Basin will continue over the next several years, and it's likely that even greater water reductions and contributions will occur by 2024.

At Lake Powell, Reclamation's projections indicate the potential of falling below the minimum power pool elevation as early as July 2022 should extremely dry hydrology continue into next year. Beyond 2022, the chance Lake Powell could fall below minimum power pool ranges from about 25% to 35%. There is an almost 90% chance Lake Powell will fall below elevation 3,525 feet next year, an elevation the Upper Basin is trying to protect. That target elevation provides a 35 vertical-foot buffer designed to minimize the risk of dropping below the minimum power pool elevation of 3,490 feet and balances the need to protect the infrastructure at Glen Canyon Dam and meet operational obligations to the Lower Basin States of Arizona, California and Nevada.

The effects of these historic drought conditions are not limited to an isolated region, and they are not limited to the major basin reservoirs. Rather, they extend from the headwaters in Colorado and Wyoming, through each Upper and Lower Basin State, and into Mexico. Further, projections and various modeling analyses suggest the prospects of improved water supply cannot be relied upon for future planning and decisions. We need to plan for continuing bad hydrology, and, like the drought, response measures need to extend to the entire basin rather than isolated regions.

Wyoming's Colorado River Basin and Drought Conditions

Water users in Wyoming continue to experience significant water shortages due to the extremely dry conditions. Currently, all of Wyoming's Colorado River Basin is suffering from either severe or extreme drought. The extended and current drought conditions have and will continue to impact Wyoming water users in significant ways. Impacts to irrigated agriculture from the exceptionally low flows in water year 2021 are just the latest example.

Unlike most water users in the Lower Colorado River Basin, Wyoming water users do not have large upstream reservoirs like Lakes Powell and Mead in which to save supplies for use in water short years. Instead, Wyoming users rely on snowmelt and are subject to whatever water is available in the rivers and streams. When the water supply is not sufficient to supply all water rights, the earliest, most senior water rights get satisfied first, and the junior water rights get turned off by Wyoming water officials. When there is not enough water available, they simply get no water.

The conditions in the northern portion of Wyoming's Green River Basin during 2021 illustrate this situation. Many streams in this basin do not have supplemental storage water for late season supply. Due to low stream flows and early runoff, regulation of those streams—the turning off of junior water rights—began in mid-June and continued throughout the remainder of the water year. They were regulated to priority dates dating from the 1880s and 1890s. This means water rights with priority dates of about 1900 and later were regulated before mid-way through Wyoming's short growing season. Instead of receiving their full supply of water for 5 months, they received that water for only about 2 months. Approximately 68,000 acres with valid water rights from these streams were subject to regulation.

The southern portion of Wyoming's Green River Basin and the Little Snake River Basin experienced similar drought conditions in 2021. Due to low stream flow conditions, the southern Green River Basin tributaries experienced regulation beginning in early May and continuing throughout the remainder of the water year. Water rights with priority dates later than 1890 in some instances did not receive natural flow supplies for most of the year. However, unlike most of the northern Green River Basin tributaries, there are some smaller storage facilities in the southern Green River Basin which helped supply supplemental storage water to some of those rights which were otherwise prevented from diverting natural flow. Those smaller reservoirs are currently between 6% and 27% full. Similarly, many irrigation rights in the Little Snake River Basin were forced to start relying on storage water instead of natural flow beginning in about mid-July. The primary reservoir in that basin is now only 27% full. While the existing storage in these basins certainly aids in providing a late season supply to Wyoming water users, it only aids those who have a right to the storage. Many water users are simply at the mercy of whatever flow the streams provide.

Over the course of the last 22 years of drought in the Colorado River Basin, Wyoming water users have routinely suffered shortages. Some years are worse,

some are better. These routine shortages occur even though Wyoming has developed less than 2/3 of its Compact apportionment under a full supply. During the drought years, Wyoming water use reduced more than 20% compared to years when water was more plentiful. These shortages get little attention and require no federal declaration, but they happen nevertheless and carry with them attendant economic impacts. Response measures intended to address the drought in the Colorado River Basin should not only focus on main stem storage and uses, but also uses at the top of the Basin like those in Wyoming.

In response to the continuing drought in Wyoming's Colorado River Basin, on July 16th Governor Mark Gordon convened a Wyoming Colorado River Working Group to meet regularly to discuss Colorado River issues and monitor potential impacts to Wyoming. The group is made up of representatives of key water use sectors of Wyoming's Green and Little Snake River Basins, including agricultural, municipal, industrial and environmental interests. It will discuss and share Colorado River information with interested stakeholders in Wyoming's Green and Little Snake River Basins. The Working Group is a continuation of a coordinated and proactive outreach effort that has been underway in Wyoming since 2019.

Drought Response Measures

Continued Collaboration in the Colorado River Basin

Collaboration will continue to be key in responding to drought. In response to the last two decades of historically dry hydrologic conditions and higher than normal temperatures, the Basin States, Reclamation, and Mexico have collaborated to implement unprecedented, innovative, and proactive measures, including the 2007 Interim Shortage Guidelines; binational Minutes 318, 319, and 323; the 2019 Drought Contingency Plans (DCPs); and other important water conservation, storage, and augmentation efforts.

Despite the severe hydrologic and water supply challenges, these measures have allowed the Basin States to continue to satisfy water needs, meet Treaty and Compact obligations, and fulfill environmental commitments, all while ensuring no one is left behind and no one unfairly bears the brunt of these necessary efforts. Wyoming is committed to continue to approach challenges with the same focus on collaboration and equity as the Basin faces worsening hydrology.

As the Basin States and Reclamation begin working on longer-term solutions to the shared risks and vulnerabilities we face in the Colorado River system, we will also be preparing for the development of the post-2026 Colorado River operating rules. Generally, the development of the post-2026 guidelines is expected to be focused on the management and operations of the Colorado River reservoir system. While each of the Basin States may have guiding principles or specific goals and objectives associated with developing the post-2026 guidelines, Wyoming is resolutely committed to working together to make the system work for all.

In addition to individual state efforts like those in Wyoming, the Basin States intend to coordinate and communicate with the Department of the Interior leadership, Basin Tribal leaders, NGO and environmental representatives, water users, and other stakeholders. The Basin States also expect that, in conjunction with the two sections of the International Boundary and Water Commission and the Department of the Interior, similar outreach and discussions will be held with Mexico in the near-term. Outreach efforts will require that multiple, parallel discussions occur alongside the formal NEPA process led by the Department of the Interior. While it will not be possible for everyone to be involved in every discussion, it will be important for the States to coordinate the various parallel discussions. Collaboration will continue to be key in responding to drought.

Upper Basin Drought Contingency Plan

Both the Upper Basin and the Lower Basin continue to implement the 2019 DCPs. The Upper Division States of Colorado, New Mexico, Utah, and Wyoming, along with Reclamation, are implementing the Upper Basin DCP. The principal goal of the Upper Basin DCP is to help assure continued compliance with the 1922 Compact. It does so by helping protect critical elevations at Lake Powell. Protecting those elevations reduces the risk that the Upper Basin will fail to meet its compact obligations. The Upper Basin DCP as approved by Congress in 2019 consists of two

agreements:[1] The Drought Response Operations Agreement (DROA) and the Demand Management Storage Agreement.

The DROA applies to the 1956 Colorado River Storage Project Act (CRSPA) Initial Units. The CRSPA Initial Units are Glen Canyon Dam, Flaming Gorge Dam, Curecanti (the "Aspinall Unit"), and Navajo Dam. The Agreement relies on available water supplies as needed to reduce the risk of Lake Powell dropping below the target elevation 3,525'. This target elevation appropriately balances the need to protect infrastructure, compact obligations, and operations at Glen Canyon Dam as storage approaches minimum power pool, with the Upper Division States' rights to put Colorado River System water to beneficial use.

In July 2021, Reclamation exercised the imminent need provisions of the DROA and began making releases from the upstream Initial Units to Lake Powell. Those DROA releases were designed to deliver an additional 181 thousand-acre feet of water to Lake Powell by the end of December 2021. The additional delivery was expected to raise Lake Powell's elevation by approximately three feet. Reclamation and the Upper Division States are now working together to develop and finalize, if necessary, a DROA plan in 2022. They expect to have a draft plan to provide for stakeholder outreach and feedback by the end of 2021.

Drought response operations are a first line of defense to protect critical elevations at Lake Powell. But that existing storage is not infinite and cannot protect Lake Powell under many of the dry scenarios now being projected. If dry conditions persist or worsen as many project, existing storage will diminish or be inadequate, and the Upper Basin may ultimately need to reduce its uses to comply with the 1922 Compact.

The Demand Management Storage Agreement authorizes the Secretary of the Interior to make unfilled storage capacity at the CRSPA Initial Units available for use by the Upper Division States, through the Upper Colorado River Commission (UCRC), at no charge. Such storage capacity is available provided that the UCRC requests use of the storage capacity for the purpose of storing water conserved as part of an Upper Basin demand management program. Once the Upper Division States secured this storage authorization in 2019, they, along with the UCRC, began investigating the feasibility of an Upper Basin demand management program.

The purpose of an Upper Basin demand management program will be to temporarily reduce consumptive uses in the Upper Basin or augment supplies with imported water, if needed in times of drought, to help assure continued compliance with Article III of the 1922 Compact and without impairing the right to exercise existing Upper Basin water rights in the future. Any demand management program will be a state-based effort implemented under state law. The Upper Basin has learned that no demand management program is likely to conserve enough water in any single year to achieve its goals. Therefore, an Upper Basin demand management program will require the ability to store conserved water over multiple years.

There are many outstanding issues that must still be investigated before an Upper Basin demand management program can be established. Those issues include, among other things, determining transit losses that will occur by moving conserved water downstream to Lake Powell, securing sufficient demand management water volumes, measuring conserved consumptive use volumes, evaluating local impacts from non-use, ensuring delivery of conserved consumptive use volumes to the CRSPA Initial Units without diminishment by downstream diverters, deterring water right speculation at the expense of agricultural communities, and developing the expertise and resources necessary to administer such a program. These issues, as well as others, are complicated by the fact that a demand management program must work in all four Upper Division States where differing water laws apply. Funding is another significant issue. Considerable funding will be necessary to compensate water users for their voluntary participation in the program for conserving consumptive uses.

Each of the Upper Division States, and the UCRC, continue to investigate the feasibility of a potential demand management program. But as described above, both the DROA and the Demand Management Storage Agreement are primarily intended to help assure continued compliance with the 1922 Compact. They do not address drought impacts in the Upper Basin but are instead designed to maintain downstream obligations to the Lower Basin.

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[1] Although not part of the DCP package approved by Congress in 2019, the Upper Basin DCP also includes a weather modification program within the Upper Division states to help boost snow accumulation and system water in the Upper Colorado River Basin. Several Lower Basin water utilities and entities participate and help fund the ongoing program.

Additional Drought Response Measures

There are numerous additional drought response measures which can be effective at helping water managers at all levels address the uncertainties threatening the Basin. Wyoming, alongside the other Basin States, recently expressed to the House Natural Resource Committee its general support for many investments and opportunities designed to respond to drought.[2] Wyoming continues to support securing authorizations and appropriations within proposed federal legislative initiatives related to those investments and opportunities. I would like to reference just a few of those investments and opportunities here:

- Storage Water Infrastructure: We must continue to invest in the aging water infrastructure necessary to meet current and future demands for water. Existing water infrastructure in the west is getting older and is in desperate need of expensive rehabilitation and improvement. Additionally, we must invest in additional storage in response to more variable hydrology and earlier runoff (earlier runoff results in less ability maintain existing uses). Small, watershed level storage can help address the types of shortages faced by Wyoming's agricultural water users in the Green and Little Snake River Basins. Further, storage provides additional water management flexibility to better meet downstream municipal and industrial water needs, improve flood control, generate clean hydropower, provide recreation opportunities, and create additional late season flows that can benefit downstream aquatic and terrestrial species.
- Funding for DCPs: Existing arrangements under the Lower Basin DCP and related Treaty Minute 323 with Mexico commit the Federal Government to create or conserve 100,000 acre-feet of Colorado River system water in the Lower Basin and to share in funding with Mexico for management and monitoring projects. Making the necessary investments to honor these commitments remains vital to ongoing drought response and stability in the Basin. Additionally, funding for the Upper Basin DCP can help assure those tools are implemented as intended, aid in more accurately representing Upper Basin uses and circumstances in existing and future planning tools, and enhance the potential that the existing DCP measures continue as future operating options.
- Species Protection Programs: The continued authorization (H.R. 5001) and reliable funding of threatened and endangered species programs remains vital to maintaining fish and wildlife protections in and around the Colorado River Basin. Reliable funding will become even more critical as power revenues decrease due to shrinking reservoir elevations. These programs are important not only for the benefit of the various species, but also to ensure water uses can develop and continue. Examples of important programs include the Upper Colorado River Endangered Fish Recovery Program, the San Juan River Recovery Implementation Program, the Glen Canyon Dam Adaptive Management Program, Multi-Species Conservation Program, and the Salton Sea Restoration Program.
- Improve Water Monitoring, Measurement and Weather Forecasting: Accurate data and information is critical for planning decisions regarding reservoir storage and releases, and improving the ability to readily adapt to extreme weather events and shifts in climate. Improved water measurement, such as funding for streamgages that are identified as Federal priority streamgages, will be critical to not only inform planning decisions, but also to implement existing tools such as the Upper Basin DCP. Accurate water measurement will also be necessary to properly implement elements of the Law of the River. The USGS should coordinate with the Upper Basin States to site streamgages within the Basin where they can be the most effective for these purposes.

  More must be done to accurately measure existing consumptive uses throughout the Basin, but especially in the Upper Basin. 80% of the total consumptive use in Wyoming's Colorado River Basin consists of the evapotranspiration (ET) of water through the irrigation of crops. Unfortunately, ET is the component of water use that is technically the most difficult to accurately estimate, which makes it difficult for water managers to plan

[2] Colorado River Basin States Representatives of Arizona, California, Colorado, New Mexico, Utah, and Wyoming in Support of Nevada Responses to Questions for the Record, letter to The Honorable Raúl M. Grijalva, Chairman, House of Representatives Natural Resources Committee, dated June 28, 2021.

and make decisions. While accurate satellite-based methods at the field scale are available, they are expensive and labor intensive, and therefore not easily accessible to those that would benefit from them most including water managers and the water users themselves. OpenET would help fill this data gap. The new software platform would provide cost effective and rapid online access to this key water use variable. It would also allow the means by which all users across the Basin States can better understand consumptive use. It can also help farmers and ranchers use water more efficiently and help water managers monitor historic and current water use, all using open and transparent data. Wyoming strongly encourages Congress, through legislation such as H.R. 4832, to provide OpenET funding and a "home" within an agency in the Department of the Interior (either Reclamation or USGS) so that OpenET can continue to be developed to fill this critical data gap.

- Incentivize Municipal Conservation and Infrastructure: In coordination with Colorado River Basin partners, programs should be continued and improved to incentivize implementation of municipal conservation technologies, including indoor and outdoor programs for potable use. These programs should be broad enough to not only include some of the largest municipalities in the Basin, but also smaller municipal providers like those in Wyoming.

More is needed to help ensure the Basin's resilience to higher temperatures, changing precipitation patterns, and pronounced storage fluctuations going forward. As previously described by the Basin States, the most immediate needs include ensuring that federal commitments under the Drought Contingency Plans can be met, securing access to clean water for tribal communities, and securing authorization and long-term funding for species recovery programs. In the long-term, there is a need to focus on a broad range of investments and opportunities, including: Large-scale augmentation, facilitating system conservation within existing authorities, promote watershed health, promote forest restoration and management including wildfire mitigation and protection, improvement of agricultural operations and infrastructure, incentivize municipal conservation (including large scale re-use projects), and improve water supply forecasting, measurement as well as monitoring to project future Basin conditions and inform decisions.

Conclusion

The Colorado River Basin is currently experiencing some of the worst drought conditions in recorded history. The effects of these conditions are not limited to an isolated region but extend across the entirety of the Basin. Drought response measures must equally stretch across the entirety of the Basin. It is also imperative to recognize that not all the actions can be implemented uniformly across the Basin. Success will require development and implementation across federal agencies in cooperation and partnership with the Basin States, Tribes, water users, and other stakeholders. Wyoming is ready and willing to engage in the collaborative efforts necessary to build and sustain water resiliency throughout the Basin, and to provide more information on the types of investments and opportunities most likely to help ensure the Colorado River Basin continues to support a thriving economy and a durable environment.

Thank you for the opportunity to testify here today. I am happy to answer any questions you may have.

QUESTIONS SUBMITTED FOR THE RECORD TO PAT TYRRELL, WYOMING COMMISSIONER TO THE UPPER COLORADO RIVER COMMISSION

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. The 1922 Colorado River Compact apportions 16 million acre-feet of beneficial use of water between the Upper and Lower Colorado River Basins. At the time, Compact negotiators believed there was much more available, up to 20 million acre-feet in the entire Colorado River system, and over 17 million acre-feet in the river's main stream. Even so, they recognized that the highly variable river would not provide a reliable supply in every year. Even before 1922 annual river flows sometimes fell below 10 million acre-feet. As such, the negotiators anticipated and provided for years of drought and low river flows. They also provided for the Basins to share in any deficiency to Mexico should such a deficiency ever be recognized. The 1922 Compact provided the certainty needed to construct Hoover Dam which has provided both flood control protection to California and Arizona as well as water supply security to the Lower Basin for over 85 years. That water security has enabled the Lower Basin development and economic prosperity envisioned by the Compact negotiators a century ago.

Since the 1922 Compact, the Law of the River affecting the interstate and international use, management, and allocation of Colorado River system water reflects an understanding that the Colorado River provides less water than the negotiators believed was available in 1922. Apportionments to individual Upper Basin States made in 1948 are by percentages of available water, not set volumes. In the U.S. Supreme Court's 1964 decree in *Arizona v. California* (376 U.S. 340), the Court anticipated shortages to the Lower Basin States' mainstream apportionments. We further know that the water rights of Native American tribes, whether currently quantified or not, must be satisfied from the individual state apportionments in which the tribal reservations are located. Additions to the Law of the River made in this century also reflect a keen understanding that the river's available supply cannot meet existing and growing demand without collaboration and flexibility to implement unprecedented, innovative, and proactive measures.

Although the 1922 Compact negotiators anticipated drought, and those who followed recognized a smaller supply, they hardly could have anticipated what we are experiencing now. Nevertheless, the original equitable division made in 1922 provides the foundation for all that has followed and must remain. We must take into account that original equitable division as well as every resulting right, obligation, and benefit which finds its source in that bargain.

Our challenge now is not reallocating water. Our challenge is to collaborate to address the increasing hydrologic risks. We do that by developing additional innovative and proactive solutions that fit within the existing structure to address the challenges we face today and going forward, including when there is insufficient water to fully satisfy the existing apportionments. In the past two decades, the United States, Mexico, the seven Colorado River Basin States, Native American tribes, water users, non-governmental organizations and other stakeholders have demonstrated the ability to collaborate to create and implement such innovative and proactive solutions, incorporating the ability to adapt to changing conditions, and to do so within the Law of the River framework as it exists today.

Mr. HUFFMAN. Mr. Tyrrell, thanks very much. We are going to move on to questions of the Members right now. If we can figure out the problem with Mr. D'Antonio's microphone, we will take him out of order and come back to him. But in the meantime, I am going to recognize myself for the first set of questions, and I would like to begin with Mr. Nelson from California.

Mr. Nelson, we spoke in the previous panel a little bit about the Salton Sea restoration. This, of course, is a partnership that is being led by the state of California, but it includes tribes and local partners, environmental stakeholders, and Federal agencies. Could you please just expand on why Federal support of those partnerships and their restoration work is so important, not just for those living near the Salton Sea, but, really, for the larger Colorado River Basin community?

Mr. NELSON. Sure. Thank you, Congressman Huffman, for the question. It is a great question.

The Salton Sea is, historically, a delta part of the Colorado River, and it is important to the region of Southern California.

First, the work that is being done now at the Salton Sea is associated with a continued implementation of the 2003 Quantification Settlement Agreement, which resulted in nearly 500,000 acre-feet of conserved water supply that are then transferred to the coastal plain. And that is an important aspect of water management in California.

Secondly, the Sea is a critical element of the Pacific Flyway. We have the Sonny Bono Refuge there. It houses, as other areas, resident and migratory bird species, which are important for ecological values there.

Thirdly, as the inflows to the Sea have decreased since 2003, mitigated by the QSA, and as well as increased irrigation efficiencies within the Imperial Irrigation District, the exposed playa continues to expand, and it is resulting in a significant public health threat associated with blowing dust. It is my understanding that the Imperial Valley contains some of the highest childhood asthma rates and other pulmonary health issues. This air quality impact is a social and environmental issue that is critical to the region, not only to the Imperial Valley, but across the Mexicali Valley, into the southwestern Arizona and eastern Riverside County.

And, finally, I would say it is worth acknowledging that the commitments for collaboration and partnerships contained in the August 2016 MOU between the Obama administration and the state of California. That MOU committed the state and the Federal Government for long-term coordination and a series of tests that would be accomplished, including an initial outlay of $20 million for habitat restoration and dust suppression, and $10 million for state-managed monitoring at the Sea.

California suggests that this MOU should be considered, basically, as a foundation for our collaboration in the area. We have the Salton Sea mitigation plan that the state is working through, and actually making some good progress on now.

Mr. HUFFMAN. Thank you, Mr. Nelson.

Mr. Entsminger, in the time I have left I would like to talk about this large-scale water recycling potential, the vision for bringing a new drought-proof source of water to this vexing shortage challenge we face in the Colorado Basin. Could you speak a little bit about why adding something like that to the region's water supply portfolio would be so critically important, and also the state of play in terms of Federal support for these large-scale water recycling projects?

Are we doing enough? Should we be doing more? You have the rest of my time.

Mr. ENTSMINGER. Thank you very much, Chairman Huffman.

First, just the water impact. The Metropolitan Project could add as much as 160,000 acre-feet of water to the system, and Met has been very gracious in agreeing to partner with southern Nevada and central Arizona to make that into a regional project with regional benefits.

I do think more projects like that are available, and as we move into the future, we really have to look at all water within this Basin as water that is precious and available for use, be those storm waters or the wastewater that Southern California is

currently discharging into the Pacific Ocean. All of that water can be utilized to solve the daunting problems in front of us.

In terms of the Federal Government, there is, I believe, $450 million contained in the Bipartisan Infrastructure Bill, which would be very good to get that across the finish line, and additional funds within the Reconciliation bill that would also be not just for water reclamation, but also for Federal compliance with their obligations. Thank you.

Mr. HUFFMAN. All right, I appreciate that very much.

Ranking Member Bentz is next up for questions, but I am told that we may have finally achieved an audio connection with Mr. D'Antonio. We want to give all seven Basin states equal time, and I promised I would bring him in out of order.

So, Mr. D'Antonio, let's see if we can hear you. And if Mr. Bentz is willing to just stand down for a few minutes, we will come right back to him after you.

[Pause.]

Mr. HUFFMAN. So, Mr. D'Antonio?

Mr. D'ANTONIO. I am on my cell phone.

Mr. HUFFMAN. And we can hear you. Fantastic.

Mr. D'ANTONIO. OK, great.

STATEMENT OF JOHN D'ANTONIO, STATE ENGINEER FOR NEW MEXICO, ALBUQUERQUE, NEW MEXICO

Mr. D'ANTONIO. Chairman Huffman, Ranking Member Bentz, Representative Leger Fernández, Representative Stansbury from New Mexico, and distinguished members of the Subcommittee, my name is John D'Antonio. I am the State Engineer for New Mexico and Governor Lujan Grisham's representative on the Colorado River Compact. I very much appreciate your patience today, and the opportunity to appear before you to provide comments and updates on behalf of the state of New Mexico regarding the current issues and priorities related to the Colorado River Basin.

First, the Upper Basin shortages: In the 1922 Colorado River Compact, the seven Colorado River Basin states agreed to share the Colorado River with each Basin apportioned the exclusive beneficial consumptive use of 7.5 million acre-feet of water per year. New Mexico's apportionment is 11.25 percent of that amount.

Since 2000, the Colorado River Basin has entered a period of continued drought. The Upper Division states have been taking shortages based on limited supply for the past two decades. In New Mexico, water shortages occur annually in the San Juan River Basin, including the Animas and La Plata tributaries. The San Juan-Chama Project, a major trans-basin diversion project authorized by Congress in 1962 to deliver San Juan water to New Mexico's municipalities and pueblos along the Rio Grande, has experienced significant variability in water supply, particularly during the last decade. As an example, in 2021 we experienced a shortage of 40 percent.

One key component of the Upper Basin Drought Contingency Plan is the Drought Response Operation Agreement, known as DROA. In June 2021, Reclamation projected that Lake Powell may fall below the critical elevation of 3,525 feet in less than 6 months. And under the emergency provision of the DROA, Reclamation, in

coordination with the Upper Division states, started releasing 181,000 acre-feet this year from three main reservoirs in the Upper Basin to help boost the elevation of Lake Powell.

Reclamation and the Upper Division states are currently working on a planned framework that will fully address the states' key issues and concerns prior to any future drill operations.

Authorized projects in the Basin states: One of the original intents of the 1956 Colorado River Storage Project Act was to allow the Upper Division states to fully develop their apportionment. To date, the Upper Basin states have not. New Mexico's Upper Basin water use is currently about half of its apportionment. Most of New Mexico's future development plans in the Upper Basin are for tribal water development, pursuant to the Indian water rights settlements that have already been authorized by Congress, such as the 2009 Navajo-Gallup Water Supply Project, which is vital in providing sustainable residential water to the rural communities within and around the Navajo Nation, the Jicarilla Apache Nation, and the City of Gallup. Those communities have been hit particularly hard by the drought and the COVID-19 pandemic.

When using or analyzing the existing climate trends, both prolonged dry periods and punctuated wet periods should be taken into consideration. The system will need to be addressed not only for worse droughts than we have experienced today, but also for short and wet periods from an infrastructure and public health and safety standpoint. It will be important to address the existing short- and long-term challenges with a long-term equitable approach, while retaining the flexibility for the states to develop their authorized amounts, particularly during the good years. Striking such a desired balance, however, is no easy task.

The 2007 Interim Guidelines will expire in 2026 and affect over 40 million people in seven states. The Upper and Lower Colorado Regional Offices of the Bureau of Reclamation have staff with relevant modeling expertise who can assist the Basin states with responding to our short-term priorities, i.e. modeling refinements and needs related to the DCP's implementation, and long-term priority, which is the post-2026 operations of Lakes Powell and Mead. We would request additional financial resources for Reclamation to support the Basin states in the next 1 to 5 years.

New Mexico supports the Build Back Better Act and the Reclamation Settlement Fund for Indian water rights settlements, which is really an investment in our future, as well as H.R. 5001, which is the Upper Colorado and San Juan River Basin's Recovery Act.

In conclusion, in 1922, the seven Basin states agreed to the terms of the Compact on the basis that it represented a fair apportionment for the resource and that it protected rights for each of the signatories. For almost a century, the states have worked cooperatively with each other and the Federal Government and the Republic of Mexico and other partners and stakeholders to manage the systems and implement necessary adaptive management actions within the confines of the law of the river.

Future decision-making process should consider science, legal, and policy aspects concurrently. I am confident that all seven Basin

states will strive to employ a fact-based approach that considers the holistic vision. Thank you.

[The prepared statement of Mr. D'Antonio follows:]

PREPARED STATEMENT OF JOHN R. D'ANTONIO JR., NEW MEXICO STATE ENGINEER

Chairman Huffman, Ranking Member Bentz, Distinguished Members of the Subcommittee: My name is John D'Antonio. I am the State Engineer for New Mexico and Governor Lujan Grisham's representative on the Colorado River Compacts. I very much appreciate the opportunity to appear before you today and provide comments and updates on behalf of the State of New Mexico regarding the current issues and priorities related to the Colorado River Basin.

Upper Basin Shortages:

In the 1922 Colorado River Compact, the seven Colorado River Basin States agreed to "share" the Colorado River, with each Basin apportioned the exclusive beneficial consumptive use of 7.5 million acre-feet of water per year. New Mexico's apportionment is 11.25 percent of that amount, based on the 1948 Upper Colorado River Compact.

Since 2000, the Colorado River Basin has entered a period of continued drought. The Upper Division States have been taking shortages based on limited supply for the past two decades. In New Mexico, water shortages occur annually in the San Juan River Basin, including the Animas and La Plata tributaries. The San Juan-Chama Project, a major trans-basin diversion project authorized by Congress in 1962 to deliver San Juan water to New Mexico's municipalities and Pueblos along the Rio Grande, has experienced significant variability in water supply availability, particularly during the past decade. As an example, the 2021 shortage amount for this project was approximately 40 percent.

Lake Powell Levels:

In response to the drought conditions, the Federal Government and the Basin States have worked together to establish measures to address the coordinated operations and levels of the two largest reservoirs in the nation, i.e. Lake Powell behind the Glen Canyon Dam, and Lake Mead behind the Hoover Dam. The elevation of Lake Powell is important to New Mexico and other Basin States, their citizens and water users, to continue to satisfy obligations under the two compacts, and to benefit from the power generated at Lake Powell and from its direct revenues. Those measures include the 2007 Colorado River Interim Guidelines and the 2019 Drought Contingency Plans (DCPs).

One key component of the Upper Basin DCP is the Drought Response Operations Agreement (DROA). In June 2021, Reclamation projected that Lake Powell may fall below the critical elevation of 3,525' in less than six months. Reclamation then informed the Upper Division States that it intended to act under the emergency provision of the DROA, which gives the Secretary discretion to act in case of an "imminent need." Reclamation, in coordination with the Upper Division States and after consultation with the Lower Division States pursuant to DROA, started releasing 181,000 acre feet in calendar year 2021 from three main reservoirs in the Upper Basin, to help boost the elevation at Lake Powell to the extent practicable. Reclamation and the Upper Division States are currently working on a plan framework that will fully address the States' key issues and concerns prior to any future DROA operations.

Authorized Projects in The Basin States:

One of the original intents of the 1956 Colorado River Storage Project Act was to allow the Upper Division States to fully develop their apportionment. To date, however, the Upper Division States have not fully developed their apportionment due, in part, to the fact that water users in the Upper Basin seldom have sufficient water to fully use their water rights in any given year.

New Mexico's Upper Basin water use is currently about half of its apportionment. Most of New Mexico's future development plans in the Upper Basin are for tribal water development pursuant to Indian water rights settlements that have already been authorized by Congress, such as the 2009 Navajo-Gallup Water Supply Project, which is vital in providing sustainable residential water to the rural communities within and around the Navajo Nation, the Jicarilla Apache Nation, and the City of Gallup. Those communities have been hit particularly hard by the drought and COVID-19 pandemic.

When using or analyzing the existing climate trends, both prolonged dry periods and punctuated wet periods should be taken into consideration. The system will

need to be assessed not only for a worse drought than we have experienced today, but also for short wet periods from an infrastructure and public health and safety standpoint. It will be important to address the existing short- and long-term challenges with a long-term, equitable approach, while retaining the flexibility for the States to develop their authorized amounts, particularly during the good years. Striking such a desired balance, however, will be no easy task.

Funding For Reclamation to Assist the Basin States:

The 2007 Interim Guidelines will expire in 2026. The Interim Guidelines, and any new operational rules that come after them, affect over 40 million people, in seven States. The Upper and Lower Colorado Regional Offices of the U.S. Bureau of Reclamation have staff with relevant modeling expertise who can assist the Basin States with responding to our short-term priorities, i.e. modeling refinements and needs related to the DCPs implementation, as well as addressing the States' long-term priority, which is the post-2026 operations of Lakes Powell and Mead. These tasks will be extremely time consuming.

In the spirit of harmonizing our working relationship with the Department of Interior and Reclamation, we would request additional financial resources for Reclamation to support the Basin States in the next one to five years.

Conclusion:

In 1922, the seven Basin States agreed to the terms of the compact on the basis that it represented a fair apportionment of the resource, and that it protected rights for each of the signatories. For almost a century, the States have worked cooperatively with each other and with the Federal Government, the Republic of Mexico, and other partners and stakeholders to manage the system and implement necessary adaptive management actions within the confines of the Law of the River. Any future decision-making process should consider science, legal and policy aspects concurrently. I am confident that all seven Basin States will strive to employ a fact-based approach that considers that holistic vision.

Thank you again for the opportunity to present our views on this matter.

QUESTIONS SUBMITTED FOR THE RECORD TO JOHN R. D'ANTONIO, NEW MEXICO COMPACT COMMISSIONER

Questions Submitted by Representative Costa

Question 1. The "Law of the River" and the quantification of the Upper and Lower Basin states amounted to around 17 million acre-feet of water, which was determined was the annual flow at the time. However, we know in the previous two decades it has been more like 12.4 million acre-feet. And this does not even account for other Native American tribes with water right claims that have yet to be resolved. There is a tremendous amount of demand, and with climate change we know the yield is only going to decline. Let's say the annual yield over the next 30 years is 10 million acre-feet, maybe with climate change it's more or less. How do we take into account how we got to the original allocation, with the Upper and Lower Basin States and the Native American tribes, and then reallocate that on a lot less water?

Answer. In the 1922 Colorado River Compact (1922 Compact), the seven Colorado River Basin States agreed to allocate the water in the Colorado River to provide more certainty and security that could help promote development. Both the Upper and Lower Basins were apportioned the exclusive beneficial consumptive use of 7.5 million acre-feet of water per year, and an amount of water was set aside in case a treaty was ever signed with Mexico regarding Colorado River water. Further, in 1948 the Upper Basin states entered into the 1948 Upper Colorado River Basin Compact (1948 Compact). New Mexico's apportionment under the 1948 Compact is 11.25 percent of the Upper Basin's share. All states have developed water in accordance with the respective Compacts and have plans for continued development. Reallocation of the Colorado River is not a recommendation New Mexico would support. It should continue to be up to each state to manage demand within its boundaries based on available supply within each state.

The 1922 and 1948 Compacts, and the body of laws, regulations, treaties, compacts and other documents that are collectively known as the Law of the River, have allowed the seven Colorado River Basin states, through cooperation and coordination, to manage the supply in the Colorado River up until now. The most recent addition to that body is the Colorado River Drought Contingency Plan. The Lower Division states (Arizona, California, Nevada) and Upper Division states (Colorado,

New Mexico, Utah and Wyoming) are actively coordinating on additional Upper and Lower Basin actions under the Drought Contingency Plans. At the same time, all seven states have begun coordination with the Department of the Interior to replace the 2007 "Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead" which expire at the end of 2025. The states are committed to working closely with the federal government and other partners in the Basin to negotiate a new agreement to replace the Guidelines.

New Mexico has entered into water rights settlements with its two Colorado River Basin tribes: the Navajo Nation and the Jicarilla Apache Nation; and consequently, does not have unresolved Indian water right claims in the Colorado River Basin. Those settled claims are part of New Mexico's 11.25 percent share of Colorado River water. New Mexico is actively engaged with both tribes to implement projects to put their water to beneficial use within New Mexico. In fact, these tribal projects are the major remaining water development projects for New Mexico within its 1948 Compact allocation.

As was the case for New Mexico, it is up to the individual states to address the tribal claims in their respective states, and within their respective apportionments, as identified in the 1922 and 1948 Compacts.

The existing precedents set by New Mexico for resolving Indian water rights claims could be used as a roadmap on how to address the tribal water and supply shortage issues in the entire Basin. In addition to fitting within an individual state's compact share, the settlement agreements include shortage sharing provisions. That means, for New Mexico, that supply shortages will be shared in accordance with the shortage-sharing provisions included in its tribal settlements.

Moreover, the Upper Division states have been taking water shortages for at least the past two decades. In New Mexico, water shortages occur annually in the San Juan River Basin, including on the Animas and La Plata tributaries. In addition, the San Juan-Chama Project, New Mexico's major trans-basin diversion project authorized by Congress in 1962, has experienced shortage in its water supply of between 10 and 15 percent, particularly during the past decade. The shortage experienced by this project in 2021 was approximately 40 percent of a full supply. New Mexico and its water users have learned how to manage through such water shortages according to the Law of the River and through Indian water rights settlements.

We all know more about the Colorado River system today than we did in 1922, and we are all concerned about additional aridification due to climate change. That knowledge, the collective operating experience of the federal government and the states, and the spirit of cooperation that is the hallmark of the Colorado River Basin will be useful tools to address the challenges we will face in the future.

Mr. HUFFMAN. Mr. D'Antonio, thank you for your technical perseverance.

And Ranking Member Bentz, thank you for your forbearance. You are up. You are recognized for 5 minutes.

Mr. BENTZ. Thank you, Mr. Chair. I want to start with Mr. Tyrrell from Wyoming.

You mentioned, Mr. Tyrrell, watersheds and forest restoration as something, of things that need to happen. Here in Oregon, we agree with you completely that watersheds are an absolutely essential part of our water systems, and that forest restoration is an absolutely essential activity.

But, sadly, we can't seem to get into the forest. And there is a prohibition almost upon cutting down a tree, or trying to remove junipers or other things that would actually help dramatically in improving the watershed and our water supply. It is the craziest thing, when we all know that good things can happen if we can get into the forest, but we can't seem to get there.

So, my question to you, is the same thing happening in Wyoming? And if so, what are you doing about it?

Mr. TYRRELL. Thank you for the question, Representative Bentz. I don't know that I can speak greatly to Wyoming's forests right

now, other than in access to them. We have also been not quite like Oregon this year, but the victim of fires in recent years. The Mullen fire last year, west of Laramie, was horrible.

And in my view, if we are interested in hydrologic health of forests and rivers, that points backward to a healthy forest. Whether it is removing fuels or just having healthy growth, forests are valuable for the water they can hold in the winter, in terms of snow, and in maintaining many riparian and stream flow areas for both the environment and for people who rely on the water. So, it would seem to me that looking at forest health can do nothing but help our conditions on the river.

Mr. BENTZ. Thank you. And shifting to Ms. Mitchell from Colorado, there is a lot of talk and a lot of reference to collaboration and conservation, and words like that. Pretty general.

What I would be interested in knowing is if a study has been done in your state to determine, first of all, what sort of conservation might actually be available. And if implemented, how much water you could actually save. And this question I could ask of any one of the seven states before us, so I don't want to pick on you particularly, but I think you did mention collaboration, certainty, and other words like that. So, that is why I am asking you the question.

Can you give us some idea of how much water is available, if you were able to implement conservation across the board in your state?

Ms. MITCHELL. Yes, and thank you for that question, Congressman Bentz.

As part of our work through our Colorado water plan, conservation has been one of the pillars that has stood up in how we move forward to a long-range future of water for Colorado. And conservation being highlighted in that is just one of the solutions. There is quantification in that to some level, along with goals, but that is not just in the Colorado River Basin, it is across the entire state.

There is a goal of over 400,000 acre-feet of conservation measures to take place. But that is across the state. I would have to get back to you on exacts of what would potentially be possible, not all of our state is in the Colorado River Basin.

Mr. BENTZ. Thank you for that. I would love to see those numbers. And if they exist somewhere, please share them.

Mr. Shawcroft of Utah, there is an unfortunate focus on agriculture as the source of water in situations like this. And the result, of course, is that agriculture gets cut off, because there are a lot more people in cities than there are on farms.

My question to you is, what should the farmers be doing, given this focus that they find themselves squarely within?

Mr. SHAWCROFT. Thank you for the question. You are exactly right. A large majority of the water in Utah, and I believe the other states, as well, is used for agriculture. And I agree with you that many times agriculture gets a bad name for using water, or wasting water, when in reality a farmer uses water, what he diverts, part of that is used by the production of the crop. Part of that returns to the river, which turns out to be the next appropriator's water supply.

So, it is not as simple as some people think, simply diminishing use for agriculture automatically produces water for culinary purposes. In my mind, it has to be a market-based situation, where there is an advantage for those who are using water that has historically been used for agriculture to move it to municipal. And that is typically how it has been done in Utah, and it happens quite comfortably, if those conditions are set: willing buyer, willing seller.

Mr. BENTZ. Thank you.

With that, Mr. Chair, I yield back.

Mr. HUFFMAN. Thank you, Mr. Bentz. We are glad to be joined by two Members of the Nevada Delegation for the next set of questions, so we will now recognize Representative Dina Titus for 5 minutes.

Ms. TITUS. Thank you very much, Mr. Chairman, for giving us an opportunity to sit in on this very informative panel.

I represent the heart of the Las Vegas Valley. We have over 2 million people there and 40 million tourists coming every year, so the water in the Colorado River that goes to supply us is a very important issue. I would like to address our representative, Mr. Entsminger.

There are three factors happening here, all at the same time.

One, southern Nevada is one of the fastest growing areas in the country and increased by 18 percent over the last decade. But this has been going on for much longer than that. We went from 1.3 million folks to 2.3 million between 2002 and today. There was a time when you had to build an elementary school a month to keep up with the growth. So, growth is one factor.

Second, we are the fastest warming community in the country. I think you called it aridification. So, that is the second factor.

Third, we have the smallest amount of water in the allocation from the river to start with. Yet, I think we are one of the best stewards of the amount that we do get.

I was really glad that you mentioned in your comments the Large Scale Water Recycling Project Investment Act, which I am a co-sponsor of, and pointed out that money that will go toward water projects in the bills that are being considered for infrastructure.

All this time these three factors are going on, though, we have reduced our consumption of water. It is pretty amazing how we have been able to do that. Could you talk about how we can sustain growth or continue growth, while also reducing our consumption of water from the river?

Mr. ENTSMINGER. Absolutely, Representative Titus. And as you said, it is good to see a couple of friendly Nevada faces on the call, after being outnumbered by the New Mexicans for most of the hearing.

As you say, since 2002, we have reduced our depletions off of the Colorado River by 23 percent, while at the same time adding over 800,000 new residents. And we did that largely by taking out turf. But we have arrived at a place where, in order to continue to accommodate the type of growth we are seeing, we need to continue on that conservation journey. And that is why the Nevada legislature adopted this year Assembly Bill 356, which prohibits the use

of Colorado River water for non-functional turf in the Las Vegas Valley by 2026, and that will save about 10 percent of our Colorado River allocation, just by getting grass out of street medians and places where nobody's kids or grandkids are using it.

So, the key to our journey is continuing to control our demands because, as you say, climate change isn't doing us any favors, either. We estimate that our gallons per capita per day will go up by 9 gallons between today and 2035, just because of increased warming.

Ms. TITUS. Well, I know you had that great project, where you could convert your yard to desert landscaping, and I think that was a big success. Could you just share with us a little about how that worked?

Mr. ENTSMINGER. Absolutely. We refer to that as our Waters Smart Landscape Program. Right now, we pay $3 a square foot to incentivize people to take out grass. And the results have been pretty staggering. Again, since the turn of the century we spent about $250 million of local funds to fund that program. And as a result of that, you could actually lay an 18-inch wide piece of sod around the circumference of the Earth at the equator with all the grass that we have removed from the Valley.

Ms. TITUS. Wow. People think about Las Vegas and golf courses, and big resorts, and fountains, and things that—but in reality, they use only a small percentage of the water that is consumed here in the Valley. Is that right?

Mr. ENTSMINGER. That is correct. Well, actually, Clark County, which is home to 76 percent of the state's population, uses less than 5 percent of the water that is available within the state of Nevada. And if you look at that resort industry, that, as you said, brings in 45-ish million visitors a year, they use less than one-tenth of 1 percent of the water that is available within the state of Nevada.

Ms. TITUS. Are you working with DRI on any water conservation projects?

Mr. ENTSMINGER. Yes, I am fortunate enough to sit on the board of trustees for the Desert Research Institute, and we coordinate with them regularly, both on conservation initiatives, water quality issues in Lake Mead, and any number of other scientific endeavors.

Ms. TITUS. Are you involved at all with the St. George Water Project just north of here?

Mr. ENTSMINGER. I am not, but Mr. Shawcroft is here, if you would like to ask him about that.

Ms. TITUS. I will save that for next time.

Thank you, Mr. Chairman. I yield back.

Mr. HUFFMAN. Thank you, Representative Titus. And we are going to go to your Nevada neighbor.

Congresswoman Susie Lee, you are recognized for 5 minutes.

Mrs. LEE. Thank you, Chair Huffman, and thank you, Ranking Member Bentz, for hosting this really important meeting, and to all of our witnesses for their excellent testimony.

As Congresswoman Titus said, southern Nevada and the entire Southwest is facing unprecedented drought. As we know, in my district, Lake Mead, which supplies water for over 25 million

people across Nevada, Arizona, and California, is at its lowest level since construction in the thirties.

And to help address this crisis, so much more must be done to accurately measure consumptive use, which includes programs like OpenET. And I want to thank Mr. Tyrrell and Mr. Shawcroft for recognizing the importance of this program in their testimony, which, Congresswoman Titus, was developed through Desert Research Institute.

Here in the House I have introduced the Open Access Evapotranspiration Data Act—that is a long word—OpenET, with fellow colleagues of this Committee to establish a program under the Department of the Interior that uses publicly available data from satellites and weather stations to provide measurements and estimates of evapotranspiration and help water managers, farmers, and ranchers make decisions about their water use.

And I have also been working to secure Federal funding for the large scale water recycling projects. In fact, my colleagues on this Committee—along with them, the Large Scale Water Recycling Investment Act was included in the Bipartisan Infrastructure Bill.

Mr. Entsminger, as you mentioned in your testimony, the Southern Nevada Water Authority is partnering with Metropolitan Water District of Southern California on a multi-billion-dollar regional water recycling project. Can you speak to how this proposed project will provide tangible benefits to Nevada, California, and other communities along the Colorado River Basin?

Mr. ENTSMINGER. Absolutely. So, in its simplest explanation, what the Met project will do is take wastewater that is currently being discharged into the Pacific Ocean—and thereby can't be utilized—treat that, either inject it into aquifers in Southern California, or perhaps even take it to direct potable reuse, thereby extending the use of that water in Southern California.

And, in concept, what we have discussed with Met is that Southern Nevada Water Authority would invest $750 million toward the capital needs of that project. And in return for that, Metropolitan would leave a small amount of their Colorado River entitlement in Lake Mead for our use over the period of the project.

And I believe the Central Arizona Water Conservancy District has now also signed on to participate in that project. So, in a very real way, with the funding that is in the Bipartisan Infrastructure Bill, this is a regional project with large amounts of funding from local agencies, but also partnership with our Federal partners.

Mrs. LEE. Thank you. And how would you rank this in our fight against the worsening drought, in all of the tools in your toolbox?

Mr. ENTSMINGER. Well, I think what I would say is, of all the testimony we have heard today, that is the only project that is actually adding new water into the fight against the problem. We have talked a lot about how to use less, and how many more needs there are, but in terms of introducing real, wet water that is not currently available, that is the project and the model for the future.

Mrs. LEE. Thank you. I am actually looking out on my backyard, which does have artificial turf as part of the Water Smart project, so we have been fighting to combat drought, as a member of Appropriations, with such activities.

So, in addition to supporting regional recycled water partnerships, are there any other specific types of investments in water-related climate resilience in the Colorado River Basin that need Federal assistance?

Mr. ENTSMINGER. Well, I think the most obvious one is there is a Federal obligation contained in the DCP to contribute 100,000 acre-feet a year to the protection of Lake Mead elevations. And while Reclamation has done a good job trying to meet that obligation, they haven't quite gotten all 100,000 acre-feet a year. So, I think, providing Reclamation with additional funding so that they can meet that goal, but also expand the programs that Mr. Buschatzke talked about in his testimony in terms of agreements with some of the tribes in Arizona and expanding system conservation efforts, would be a good use of Federal funds.

Mrs. LEE. Great. Thank you very much.

Thank you, Mr. Chair. I yield.

Mr. HUFFMAN. I thank our colleagues from Nevada for closing us out on, I think, a more hopeful note, talking about some projects and strategies that can really make a difference in addressing these challenges.

I want to thank the witnesses for their——

Mr. COSTA. Mr. Chairman?

Mr. HUFFMAN. Yes, sir?

Mr. COSTA. Was I going to get a chance to ask questions?

Mr. HUFFMAN. Mr. Costa, of course. Of course, we want to include you. I didn't have that in my notes, that you wanted to jump in, but you are recognized.

Mr. COSTA. I have been listening tentatively to all the debate and appreciate it very much from both panels. Thank you.

Let me make two statements, and then ask what my father would say is the $64,000 question. But, based upon the value of water per acre-foot these days, I suspect it is a lot more than $64,000.

The first statement is that I subscribe to some of the comments that you made earlier, that our water allocation for the production of food is a national security issue. It really is. Less than 5 percent of our Nation's population is engaged in agriculture production. But a majority of Americans, maybe as a result of the pandemic, with schools and restaurants closed, began to understand that food doesn't come from your restaurant, or your favorite store, but it comes from people and farm workers and farmers throughout the country, who put it on America's dinner table every night.

The second point I want to make has been part of the witnesses' statements here that we have heard this afternoon, and it is not new, and it is something I think we all subscribe to, and that is using all the water tools in our water toolbox.

And I would be interested—Ms. Mitchell talked about quantification and the pillar of conservation, and I strongly subscribe to that notion, because we have done a lot in conservation. But I think, for all of the witnesses, it would be nice if we could quantify how much more we can build upon, in terms of conservation as a part of one of the water tools in our water toolbox.

But let me get back to the point I made in my opening statement, which was that the law of the river and the quantification

of the Upper and the Lower Basin states amounted to some 17 million acre-feet of water, that it was determined at that time was the annual flow of the Colorado River. And we know that in the last two decades it has been more like 12.4 million acre-feet, and that doesn't account for other Native American tribes that have reserved water rights claims that have yet to be resolved. So, there is just a tremendous amount of demand. And with climate change, we know the yield is only going to decline.

So, this is the question I would like to submit to all of you. And if you want to provide a written statement for your answer, I think we would appreciate that. Let's say the annual yield over the next 30 years is 10 million acre-feet. I don't know, with climate change, maybe it is plus or minus. How do we take into account how we got to the original allocation with the Upper and Lower Basin states and the tribes, the sovereign nations, and then reallocate that on a lot less water?

That is the $64,000 question, but it is also a lot more than that because, frankly, of the value and the importance of water security to everybody, everybody.

It was so difficult to agree upon 17 million acre-feet, which we know now is not there. How do we agree among the Upper and Lower Basin states, and the Native tribes on a reduced amount, knowing that we are all going to use all the water tools in our water toolbox, and we are going to conserve, and we are going to do all that stuff, OK? So, that is the $64,000 question.

Mr. HUFFMAN. In a minute and 34 seconds, do any of the witnesses want to answer Mr. Costa's Hunger Game scenario of how we get through that kind of shortfall?

Mr. NELSON. Congressman Costa, I will take a first crack at it.

The law of the river is a series of agreements, court adjudications all down the line, the DCP being the most recent one. I have been on several panels that the question is, is the DCP enough?

Mr. COSTA. I know, and I was involved in the Quantification Agreement a number of years ago, and that was a success of sorts.

Mr. NELSON. Very much a success to reduce water use in California.

So, when you look at that progression, it is an incremental change. And currently we are in the process of meeting quite frequently with the Lower Basin and the Upper Basin and the seven Basin states, in trying to quantify additional measures of conservation that we can do in the interim, but also working on the 2026 guidelines. So, it is really a series of collaborative work together that tries to (1) quantify, and (2) develop the areas in which we are going to make those conservation investments.

Mr. COSTA. Would it be too easy to digest that we use all the water tools in the water toolbox, and we measure what that adds up to, and then we take the percentage of water that was allocated, and the difficult law of the river contract and, on a percentage basis, reduce it by that factor to 10 million acre-feet, or whatever we determine the yield to be?

Mr. NELSON. Yes, one of the challenges with that is the long-term water rights that folks have——

Mr. COSTA. I know, I know.

Mr. NELSON. So, that is the challenge. And it is a collaborative process to get through that.

And I will say one thing—I notice that you, and no disrespect, I notice a number of folks had lunch during the panel today. And I take your comments to heart, and the food that we eat actually comes from water. And food security is an important issue. And food equals water, and we all are a part of that process, and the food production cycle is very important.

Mr. COSTA. Well, thank you. And thank you, Mr. Chairman, and I look forward to continuing to work on this.

Mr. HUFFMAN. Thank you. It is a great question you ended with, and I am sure that, if any witness wants to provide any written supplemental answers to that or any other questions, we would all be happy to see it.

Let me just check to see if there are any other colleagues that were hoping to jump in with questions. I don't want to overlook anyone. But I don't think there are.

So, I think, at this point, we are going to bring this first day of our Colorado River Basin hearing to a close.

Again, thanks to the witnesses on this second panel, and to all the Members for their great questions.

Members of the Committee may have some additional questions for the witnesses, and we will ask you to respond to those in writing. Under Committee Rule 3(o), members of the Committee must submit those witness questions within 3 business days after the hearing, and the record will be held open for 10 business days to allow for responses.

If there is no further business, and seeing none, then, without objection, the Committee stands adjourned. Thanks.

[Whereupon, at 4:31 p.m., the Subcommittee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

PREPARED STATEMENT OF THE HON. GRACE F. NAPOLITANO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

I want to thank Chairman Huffman and Ranking Member Bentz for holding two days of hearings on the dire drought conditions in the Colorado River Basin. This is such an important topic and one that I have been invested in well before I came to Congress.

I also want to thank and welcome Metropolitan Water District's new GM, Adel Hagekhalil, for being here, and to the Subcommittee and the Chair for inviting him to testify.

I can't think of a better witness than Metropolitan to be here today due to their vast history and knowledge with this river system. The Colorado River Aqueduct, built and operated by MWD, provides about 25% of the water used in their service area. For the past two decades, MWD has been committed to increasing the sustainability of the Colorado River by building partnerships inside and outside California based on conservation, storage, and reuse.

An example of one of these partnerships is the proposed partnership between Metropolitan, the LA County Sanitation District, the Southern Nevada Water Authority, Central Arizona Water Conservation District, and the Arizona Department of Water Resources, to develop the largest wastewater purification facility in the US, known as the Regional Recycled Water Project. This multi-billion-dollar project would produce 168,000 acre-feet of water annually, enough for more than 500,000 households.

This innovative recycling project represents an opportunity for three states in the Basin to improve their water supply reliability through a single project. It could

transform how water is managed in the Basin and become a model for future interstate partnerships.

Due to the high price tag of this project, there currently aren't any meaningful existing grant programs in the federal government to adequately support it which is why I introduced H.R. 4099, which would create a new grant program within the Bureau to support large-scale recycling projects with an estimated cost of at least $500 million.

With the help of MWD and other local water agencies, Southern California has continued to be a leader in modernizing water infrastructure and working to reduce our reliance on imported water. LA currently recycles more than 100 million gallons of water per day for use in irrigation, industrial purposes, and groundwater recharge. But as LA continues to grow, climate change becomes more severe, and droughts only getting longer and harsher, now more than ever the federal government should be stepping in to make adequate, long-term financial investments into drought resilience and conservation projects.

I again want to thank the Chairman and this Subcommittee for holding this hearing. I look forward to hearing from the witnesses and continuing to work with the Bureau, Basin States, Tribes, environmental organizations, water agencies, and all other stakeholders on the Colorado River for a path forward to a more drought resilient West.

Submission for the Record by Rep. Huffman

Statement for the Record

Michael Cohen
Senior Associate, Pacific Institute

Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee:

Thank you for holding this hearing and for the opportunity to submit this written testimony. In the following I offer brief comments on:

1. The drying of the West
2. The exemplary efforts of many Colorado River water users to adapt to these conditions
3. The compelling need to reduce greenhouse gas emissions, because adaptation will not be sufficient.

The Pacific Institute, a California-based non-profit, has investigated and proposed solutions to Colorado River challenges for thirty years. In 1993, Institute researchers produced *Colorado river basin and climatic change. The sensitivity of streamflow and water supply to variations in temperature and precipitation* for the U.S. EPA (EPA230-R-93-009). We also participated in the development of Colorado River surplus and shortage criteria and in the 2012 Basin Study.

The Drying of the West

Colorado River flows have decreased significantly over the past 100 years, from the 1922 Compact assumption that the river yielded more than 16.5 million acre-feet (MAF) per year, to the 20th century annual average of 15.2 MAF, to the Millennium drought average of less than 12.4 MAF. Yet we should not assume that runoff has now stabilized at this dangerously low rate. Rather, in the face of continuing anthropogenic climate change, we can expect to see Colorado River runoff continue to decline, rapidly exhausting system storage and imposing harsh and inequitable impacts on the people, environment, and economies of the West.

The rate of the river's decline has exceeded climate scientists' disturbing runoff projections. More than forty years ago, Stockton and Boggess [1] projected that a 2°C temperature increase and a 10% decrease in precipitation could reduce annual upper basin runoff by a third, to 9.75 MAF. In fact, this estimate is slightly higher than the average annual natural Colorado River flow for the years 2000–2004 and the estimated runoff in 2020 and 2021.

To its credit, the Bureau of Reclamation has recognized this alarming trend and has updated and improved its modeling assumptions to reflect the more recent dry

[1] CW Stockton and WR Boggess, 1979, Geohydrological implications of climate change on water resource development, Fort Belvoir, VA: US Army Coastal Engineering Research Center.

period. Reclamation now projects that both Lake Powell and Lake Mead could fall to critically low elevations in the next several years—well before the current Interim Shortage Guidelines expire.

The challenges confronting the Colorado River Basin extend throughout the West. California just suffered its driest water year in a century. In July, the Great Salt Lake fell to its lowest level in 60 years, likely reducing lake-effect snowfall on the ski resorts along the Wasatch Front. The Salton Sea is now 43 square miles smaller than it was when the Quantification Settlement Agreement was signed in 2003, and 10.5 feet lower. Devastating forest fires have burned millions of acres, sterilizing soils and generating smoke that impairs air quality across the nation. Farms and ranches that have been in families for generations have folded in the absence of water. River rafters and fly fishers have seen their seasons curtailed due to insufficient instream flows. Hydropower generation has declined with falling reservoir elevations. The West is drying.

Collaboration and Adaptation

Colorado River water users have taken dramatic and exemplary steps to adapt to the drying West. Major cities have successfully decoupled their water use from economic and population growth: Albuquerque and Denver and Las Vegas and Los Angeles and Phoenix have added hundreds of thousands of people and seen significant economic expansion yet use less water than they did twenty and even thirty years ago. In 2020, the Imperial Irrigation District—the largest single user of Colorado River water—consumed 20% less water than it did in 2002 while still irrigating 98% of the land, using 0.66 MAF less water overall. This conservation and efficiency helps to maintain agricultural productivity while providing resilience for southern California cities during the state's punishing drought and reduces demand on the river.

In the most recent five-year period (2016–2020), annual Colorado River consumptive use by the lower basin states averaged 6.89 MAF, well below their annual 7.5 MAF compact entitlement. Lower Basin consumptive use of Colorado River water declined by more than 1.6 MAF from its high point in 2002 to 2020. Lower Basin users and the Republic of Mexico have "stored" some 4 MAF of water in Lake Mead, delaying the shortage declaration until this year and enabling users to better prepare for a drier future. Water agencies in the U.S. are now investing in water conservation and efficiency projects in Mexico—in a foreign country!—and agencies in Arizona and Nevada are in discussions to invest in a water recycling project in California. One of the basin's four endangered fish species—the humpback chub (*Gila cypha*)—was just downlisted to threatened earlier this week, and another may be downlisted in the near future, reflecting the success of upper basin fish recovery programs. California has invested hundreds of millions of dollars in Salton Sea projects and, with additional federal financial and technical support, can begin to make real progress to protect ecological and human health and ensure the long-term viability of the nation's largest agriculture-to-urban water transfer.

An amazing level of cooperation, trust, financial investments, and measurable actions by stakeholders have generated these remarkable achievements. The basin is a model, studied internationally, for its ability to set aside the traditional tools of litigation in favor of collaborative investments in conservation and efficiency. Credible science and modeling have supported these efforts, improving water users' understanding of the river system and the potential impacts of proposed actions. A network of bold and innovative thinkers from a variety of sectors, a willingness to (slowly) enlarge the negotiating table, and many, many years of discussions and outreach and hard work made this progress possible.

Adaptation is not sufficient

The basin's extraordinary collaboration and cooperation and dramatic reductions in total consumptive water use over the past twenty years postponed the declaration of a shortage for the Lower Basin by several years, building a bridge toward water supply security and certainty. But the climate change-generated chasm separating us from that security and certainty grows ever wider. Simply put, if we fail to address the root cause of the worsening crisis in the West and slow the rate of climate change, we will never complete that bridge.

Climate change is occurring faster than projected. Its impacts have been more severe. In the Colorado River basin, the rate at which runoff has declined has exceeded even the extraordinary efforts by water users to conserve. The elevation of Lake Mead could fall another forty-four feet in two years.

Water touches all of the West. Ranchers, farmers, tribes, fishing and whitewater enthusiasts all depend on it. It supports growing cities that have held their water demands flat (or have actually seen them decline). We need to sustain the western

way of life and take aggressive actions to diminish the rate at which western water supplies are crashing.

Adaptation measures are not enough. Emergency drought responses are not enough. Alleviating the symptoms is not enough. It's time to confront the clear cause of the long-term and intensifying drying of the American West. Privileging and protecting a narrow set of extractive industries at the expense of the western way of life should no longer be tolerated.

Congress needs to enact aggressive climate mitigation legislation to reduce greenhouse gas emissions, while continuing to support the impressive and innovative adaptation efforts that have enabled many in the West to postpone the worst impacts of the accelerating crisis.

# # #

OVERSIGHT HEARING ON COLORADO RIVER DROUGHT CONDITIONS AND RESPONSE MEASURES—PART 2

Wednesday, October 20, 2021
U.S. House of Representatives
Subcommittee on Water, Oceans, and Wildlife
Committee on Natural Resources
Washington, DC

The Subcommittee met, pursuant to notice, at 11 a.m., via Webex, Hon. Jared Huffman [Chairman of the Subcommittee] presiding.

Present: Representatives Huffman, Costa, Grijalva, Levin, Lowenthal, Soto; Bentz, Boebert, Fulcher, González-Colón, and Westerman.

Also present: Representatives Gosar and Susie Lee.

Mr. HUFFMAN. Good afternoon, everyone. The Subcommittee on Water, Oceans, and Wildlife will come to order. Good morning, rather, I should say.

The Subcommittee is meeting today, this is Day 2 of our hearing on Colorado River drought conditions and response measures. Obviously, a very important subject.

Under Committee Rule 4(f), any oral opening statements at this hearing are limited to the Chairman and Ranking Member. This allows us to hear from our witnesses sooner, and allows Members to better keep their schedules.

In addition, please note that, as with our in-person meetings, Members are responsible for their own microphones. So, please remember that you can be muted by staff only to avoid inadvertent background noises.

Finally, Members or witnesses who experience technical problems should inform Committee staff immediately.

I will now recognize myself for 5 minutes to make an opening statement.

THE HON. JARED HUFFMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HUFFMAN. Thanks again, everyone, for joining us for the second of our two meetings on Colorado River drought conditions and response measures.

As we heard during our first meeting on this very important subject last week, the Colorado River, which serves 40 million people and fuels $1.4 trillion in economic activity every single year, is currently experiencing a 21-year drought that is greatly exacerbated by climate change.

Last week, we heard testimony from the Interior Department about the unprecedented drought conditions that we are seeing. In August, the Department made its first-ever shortage declaration in

the Lower Colorado River Basin, and unprecedented actions were taken in the Upper Basin, as well, to slow the declining water levels at key reservoirs—levels that haven't been seen in decades.

We will hear about some of the creative problem solving today in testimony from the Metropolitan Water District of Southern California. That is an important part of this conversation, and I will note that Met is the largest treated drinking water provider in the United States, serving 19 million people. Met is also collaborating with water managers in Nevada and Arizona to advance a large-scale water recycling project that, once it is built, can deliver enough drought-proof water supplies for half-a-million households. As we heard in testimony last week from California, Nevada, and Arizona, innovative projects like what you will hear about from Metropolitan are going to be needed to respond to changing climate conditions.

Last week, we also heard from two witnesses representing Tribal Nations. We will continue that discussion today on the need to account for tribal water needs across the Colorado River Basin, and there are 30 Tribal Nations in the Basin. We noted that last week, under the Winters Doctrine, which was first recognized by the Supreme Court in 1908, these tribes have significant legal rights to enough water from the Colorado River to secure and maintain viable homelands. But these tribal communities still face significant water access barriers with devastating consequences.

For example, according to the Center for Disease Control, American Indians and Alaska Natives are more likely than any other ethnic or racial group to be hospitalized or die from COVID-19. The data shows that one of the main factors contributing to this elevated hospitalization and death rate is limited access to running water. These and other consequences of limited running water access simply have to be addressed.

We will also hear more today about environmental water needs in the Basin, as declining water flows and high temperatures severely impact fish and wildlife. Low water levels are also accelerating the spread of invasive, non-native species, reducing critical habitat, and contributing to an ecological and human health crisis at the Salton Sea.

As the Salton Sea shrinks, due to reduced inflows and other factors, important Pacific Flyway habitat is lost, and exposed lakebed is causing harmful air quality challenges for many communities. Addressing these environmental challenges must be a major focus, as well, as we move forward.

While we face a lot of major challenges in the Colorado River Basin, I must note we also have some effective tools in place to help respond to our current drought conditions. This includes the measures that we included in the Colorado River Drought Contingency Plan, which was authorized through legislation led by Chairman Grijalva in the last Congress.

And many other initiatives are being led by members of this Committee to help address challenges that we will hear more about today. That includes measures for near-term drought response, investments in water rights settlements, water data and technology developments, resources for the Salton Sea improvement projects, and investments in drought-proof water recycling projects.

I look forward to hearing from our panel of expert witnesses today on these and other response measures.

[The prepared statement of Mr. Huffman follows:]

PREPARED STATEMENT OF THE HON. JARED HUFFMAN, CHAIR, SUBCOMMITTEE ON WATER, OCEANS AND WILDLIFE

Thank you for joining us today for the second of two meetings on "Colorado River drought conditions and response measures."

As we heard during our first meeting on this important subject last week, the Colorado River—which serves 40 million people and fuels $1.4 trillion in economic activity each year—is currently experiencing a 21-year drought that is greatly exacerbated by climate change.

Last week, we heard testimony from the Interior Department about the unprecedented drought conditions we're now seeing. In August, the Department made the first-ever "shortage" declaration in the Lower Colorado River Basin, and unprecedented actions were taken in the Upper Basin as well to slow declining water levels at key reservoirs that haven't been seen in decades.

Last week, we also heard testimony from the representatives of seven states who described how they're working to share water supplies from a river that's greatly overallocated. We'll hear more about that today.

There are legal entitlements to the use of 17.5 million acre-feet of water each year from the Colorado River. In the 21st century, the river's natural flow has averaged just 12.4 million acre-feet. Meanwhile, climate scientists are urging us to prepare for even less due to climate shifts that are bringing about even drier conditions across the Southwest.

Adjusting to these new, drier conditions will be one of the biggest climate challenges we face. Fortunately, parties across the Colorado River Basin have a long history of collaboration and creative problem solving. Those skills will be needed in the period ahead.

We'll hear about some of that creative problem solving today in testimony from the Metropolitan Water District of Southern California—the largest treated drinking water provider in the United States, which serves 19 million people. Metropolitan is collaborating with water managers in Nevada and Arizona to advance a large-scale water recycling project that, once built, can deliver enough drought-proof water supplies for half a million households. As we heard in testimony last week from California, Nevada, and Arizona, innovative projects like this will be needed to respond to changing climate conditions.

Last week, we also heard from two witnesses representing Tribal Nations. We'll continue the discussion today on the need to account for tribal water needs across the Colorado River Basin.

There are 30 Tribal Nations in the Colorado River Basin. Under the Winters doctrine—which was first recognized by the Supreme Court in 1908—these Tribes have significant legal rights to enough water from the Colorado River to secure and maintain viable homelands. And yet tribal communities still face significant water access barriers with devastating consequences.

For example, according to the Centers for Disease Control, American Indians and Alaska Natives are more likely than any other ethnic or racial group to be hospitalized or die from COVID-19. The data show that one of the main factors contributing to this elevated hospitalization and death rate is limited access to running water. These and other consequences of limited running water access must be addressed.

We'll also hear more today about environmental water needs in the Basin as declining water flows and high temperatures severely impact fish and wildlife.

Low water levels are also accelerating the spread of invasive non-native species, reducing critical habitat, and contributing to an ecological and human health crisis at the Salton Sea. As the Salton Sea shrinks due to reduced inflows and other factors, important Pacific Flyway habitat is lost and exposed lakebed is causing harmful air quality challenges for many communities. Addressing these environmental challenges must be a major focus as well moving forward.

While we face major challenges in the Colorado River Basin, I must note that we also have some effective tools in place to help respond to our current drought conditions. This includes the measures included in the Colorado River Drought Contingency Plan, which was authorized through legislation led by Chair Grijalva last Congress.

Many other initiatives are being led by members of this Committee to help address challenges that we'll hear more about today, including measures for near-term drought response, investments in water rights settlements, water data and

technology development, resources for Salton Sea improvement projects, and investments in drought-proof water recycling projects.

I look forward to hearing from our panel of expert witnesses today on these and other response measures.

Mr. HUFFMAN. And with that, I would like to recognize Ranking Member Bentz for any remarks that he may wish to give.

STATEMENT OF THE HON. CLIFF BENTZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OREGON

Mr. BENTZ. Thank you, Mr. Chair. Today marks the second hearing on the important topic of drought in the seven-state Colorado River Basin. We heard last week from federal, tribal, and state witnesses, whereas today we hear from water managers, farmers, ranchers, and others who are experiencing the firsthand impacts of drought.

Some of the witnesses here today are, literally, on the front lines of the devastating drought. In the cases of water managers, they answer to their ratepayers and their boards, and in the cases of farmers and ranchers, they have to put food on their own table, while providing agricultural commodities for the rest of America. And as we heard last week, and as we will hear today, they and most everyone else are extremely concerned that another year of this drought will make matters extremely worse.

The issues facing the Colorado River Basin are identical to what communities throughout much of the West are experiencing. As I indicated last week, the development of the Colorado River has helped create the vast cities of Los Angeles, Phoenix, Salt Lake City, and Denver. And its hydropower, historically, has been a cheaper renewable alternative to fossil energy for over 4 million electricity consumers in the Basin.

The river also irrigates nearly 5.5 million acres of farmland, providing an assortment of crops that have created a massive regional agricultural economy. As we have heard from nearly everyone last week, and what we will hear today, is that the math is no longer adding up because of the 20-year-long drought. The question, then, is over what to do about it, both short-term and long-term.

From a historical perspective, the states and constituencies in the Federal Government have managed to find agreement on the Colorado River matters, even on endangered species programs. In fact, they are now living under their agreed-upon Drought Contingency Plans that were enacted in the last Congress, and mentioned earlier by the Chair. While the Drought Contingency Plans and other matters expire in 2026, the states and other stakeholders are beginning the process to find resolution beyond that time frame, and we heard general words such as the "need for collaboration and cooperation and conservation."

But to what end? Have studies been done to determine how much water will be saved, how much found, how much reused? I hope today's witnesses will touch on these matters.

Certainly, one message that a drought should send loud and clear to everyone is we need to manage our forests better. A healthy forest means a healthy working watershed and more water

for other uses. Mr. Pat O'Toole, who is, literally, on the ground, living this on a daily basis on his working ranch in Wyoming and Colorado, will tell us firsthand that forests and rangeland restoration can provide some water supply solutions.

Mr. O'Toole, Mr. Tom Davis, and others will also address what is called demand management, which could end up being water reallocated from agriculture to other purposes. As we heard last week, this could have a negative impact on rural communities and could end up harming those downstream who rely on agricultural return flows.

The fact is, and we all know it, there are no easy, simple solutions. It will take everyone in the region, once again, to roll up their sleeves. Today's debate is another excellent start.

I appreciate everyone's participation in today's hearing and I look forward to the testimony.

Mr. Chair, I thank you for holding a hearing on this important issue, and I yield back.

Mr. HUFFMAN. Thank you, Ranking Member Bentz. I am told that the Ranking Member of the Full Committee, Mr. Westerman, may wish to make some opening remarks.

Mr. Westerman, are you with us?

Mr. BENTZ. He is not here yet, Mr. Chair.

Mr. HUFFMAN. OK, well, very good. We will go ahead and proceed then to hear from the witnesses.

Before introducing our witnesses today, I want to remind everyone the witnesses are encouraged to participate in our Witness Diversity Survey created by the Congressional Office of Diversity and Inclusion. Witnesses may refer to the hearing invitation materials for further information about that.

Under our Committee Rules, witnesses must limit oral statements to 5 minutes, but your entire written statement will appear in the Committee record.

When you begin speaking, the timer will start counting down, and it turns orange when you have 1 minute remaining. I want to recommend that Members and witnesses use the grid view in Webex, so that you can lock the timer on your screen. That just makes everything much easier.

After your testimony is complete, please remember to mute yourself to avoid any inadvertent background noise. The flip side of that is, when I recognize you, please unmute yourself, so we can hear from you right away without delay.

I will allow all the witnesses to finish their testimony before we begin questions from Members.

We will begin testimony from Mr. Adel Hagekhalil, General Manager of the Metropolitan Water District of Southern California.

And I am sorry, I think I mispronounced your name, sir—I believe it is Hagekhalil. So, welcome, you are recognized for 5 minutes.

STATEMENT OF ADEL HAGEKHALIL, GENERAL MANAGER, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA, LOS ANGELES, CALIFORNIA

Mr. HAGEKHALIL. Good morning and thank you, Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee. Thank you for the opportunity to testify before you today. I have submitted formal written testimony for your consideration. In my time today, I wanted to share a few points of how Metropolitan is approaching the challenge of the Colorado River, a challenge that we must all solve together.

We are facing a new normal: hotter and drier days, and shrinking runoff from our snowpacks. My recent testimony itemizes the building blocks of success and collaboration we have had in the past. We will need many, many more building blocks, moving forward.

The enormity of this challenge, frankly, speaks for itself. Leadership from the Federal Government and investments in new projects and programs will be key to addressing the challenges ahead. I wanted to go over three basic actions that I think will compromise the building blocks of success.

The first thing for Southern California and our region is to transform our water strategy. The new approach that I call 'One Water' is essential for us to move forward. One Water is putting all of the pieces of water policy, of economic policy, and community policy together into a single, unified regional approach. One Water means lowering demand and making Southern California one of the most efficient water societies in the Nation.

Since 1990, we have invested $800 million in conservation programs that reduced per capita water consumption by 40 percent.

One Water means converting wastewater and capturing stormwater that now heads into the ocean into a resilient, drought-proof supply. Through 100 local water supply projects, 470,000 acre-feet per year were created, enough for 1.5 million households.

One Water means planning for climate change and variations in our imported supplies from the Colorado and Northern California.

One Water means building a new conveyance and new storage to make this transformed system work better and more resiliently for all of us. We started the year with 3.2 million acre-feet of storage, with 1.3 million acre-feet in Lake Mead.

One Water means uniting Southern California's diverse communities of all walks of life into a common purpose that addresses the challenges, and does not leave our disadvantaged communities behind. We will be focused on addressing leaky pipes and direct installs for conservation measures in our underserved communities.

The second set of actions is forging new interstate and international partnerships and projects. Our partnership with Southern Nevada Water Authority in Arizona to develop the Nation's largest recycled water project, augmenting supplies for both Southern California and the Colorado River, is a perfect example of big and bold new actions we can take together. This project will add 150 million gallons a day of new local water supply, enough for 500,000 households.

Federal investments in projects like this will help build resilience to future challenges in the Colorado Basin. My agency shares a border with the country of Mexico, the Republic of Mexico. We must make sure that there are no institutional barriers to prevent progress, whether it is partnering to improve agricultural efficiency, banking water behind Lake Mead, or providing environmental flows. Breaking down barriers is key to success. We have been able to realize 100,000 acre-feet per year of water conservation with Mexico.

Lastly is to expand our partnership with our agricultural partners. The Colorado River is not an urban challenge, it is not an agricultural challenge, it is a shared resource, and a shared challenge for all of us. Metropolitan works with the farming community in California to find ways to use water more efficiently and preserve and protect the underlying farming economy. Our partnership with the Bard Water District is a very promising example, how a farmer with seasonal crops can maximize the value of their water when a crop in the winter commands the best market price, and can sell water for storage in the summer, when a summer crop requires significant water, yet with less attractive market return.

While using the same partnership with our Watsonville Indian Tribes as the example of partnership we need with tribal communities.

In the Palo Verde Valley, Metropolitan continues to look for innovative ways to make farming more water efficient, so that fallowing is limited and the underlying farm economy remains strong. We must show commitment to these communities. Federal investments can help. With more than $20 million in conservation investments, we are able to save 500,000 acre-feet that we are able to leave in the river.

In the Imperial Valley, we must support ongoing and new efforts to address and restore the shrinking Salton Sea, because with that more conservation will be possible, and we can leave more Colorado water in Lake Mead.

In closing, I would say this year has been a wake-up call for all of us, for Southern California and the entire Southwest. Climate change is converting modest snowpacks into meager amounts of runoff. The year of abundance in the river is over, and the era of shortage is upon us. Reversing the decline of Lake Mead will not be easy, but I am sure we are able to do it together, and be up to the challenge.

Through conservation, recycling, reuse, and collaboration, One Water is the future vision for Southern California and the river. Confronting the Colorado River challenge as One Water is the solution for us all. Federal leadership and funding can help us make this happen.

Thank you, Mr. Chair.

[The prepared statement of Mr. Hagekhalil follows:]

PREPARED STATEMENT OF ADEL HAGEKHALIL, GENERAL MANAGER AND CHIEF EXECUTIVE OFFICE OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Chairman Huffman, Ranking Member Bentz, Representative Napolitano, and members of the Subcommittee, thank you for the opportunity to discuss Metropolitan's work on the Colorado River. The Metropolitan Water District of

Southern California (Metropolitan) is the largest treated drinking water provider in the United States. We are comprised of 26-member public agencies, including 14 cities, 11 municipal water districts, and one county water authority, that collectively serve drinking water to approximately 19 million people and businesses in more than 300 cities and numerous unincorporated communities in Southern California.

Metropolitan was created by the California Legislature in 1928 for the express purpose of building an aqueduct to provide Colorado River water to Southern California. Delivery of Colorado River water to Southern California began in 1941 and today, 80 years later, the Colorado River remains a cornerstone of Southern California's water supply portfolio.

As you are aware, the Colorado River is under strain and our reliance is being challenged by climate change and unprecedented drought. The Colorado River Basin has experienced historic drought conditions since 2000. Over the last two decades, the average annual flow of the Colorado River has declined by around one million acre-feet (AF). In addition to less snowpack and other precipitation, hotter temperatures have changed how the system behaves as well. In 2020, precipitation in the basin measured 84% of normal, but the runoff reaching the river and the reservoirs was only 33% of average. The higher temperatures resulted in drier soil that absorbed more water, plants bloomed earlier increasing evapotranspiration, and there were higher evaporation rates from the snowpack and reservoirs.

As was discussed at the October 15 hearing, the Bureau Reclamation's recently published forecasts show that Lake Powell may get so low that it could result in loss of power production at Glen Canyon Dam. Recently, the Secretary of the Interior declared the first ever water shortage in the lower basin, resulting in cuts in water deliveries to Arizona and Nevada as mandated under the 2007 Colorado River Interim Guidelines.

While California is not subject to water curtailments under the Interim Guidelines, we recognize that all of us across the West are 'one' when it comes to water. We must work together through a 'One Water' integrated approach to address water shortages. Metropolitan is committed to working cooperatively within California, and with the other basin states, the federal government, Mexico, tribes and other stakeholders to find the necessary solutions to minimize the impacts of reduced water supply reliability to all users.

Metropolitan's Approaches to Drought and Climate Change in the Colorado River Basin

Metropolitan imports about half of Southern California's water supply from the Colorado River via the Colorado River Aqueduct and Northern California via the State Water Project. We have significantly reduced our reliance on imported water through investments in local supply development and conservation. Starting in the early 1980s, we turned our focus toward helping our member agencies develop their own local supplies within the region to augment our imported supplies. We don't own any of these local projects, but we help finance them with programs designed to defray the costs once the projects are operating. For Metropolitan, these incentives have been a way to help our member agencies develop more than 100 local supply projects yielding over 470,000 AF of water per year. We have also worked to make water conservation a way of life in Southern California. Since 1990, Metropolitan has invested over $800 million in conservation programs providing rebates for toilets, turf removal, sprinklers and smart irrigation controllers, and custom efficiency projects for businesses and industries in our service area. These changes have helped cut the average per capita potable water use from about 205 gallons per day in 1990 to 120 gallons per day now. With both of our imported water supplies facing unprecedented drought, these investments are more important than ever.

Storage is also an important tool to help us adapt to changing water supply conditions and ensure reliability. In collaboration with our member agencies and others we have significantly expanded our region's storage capacity in recent decades. The cornerstone of this investment is Diamond Valley Lake, a $2 billion reservoir located in Riverside County that can hold 810,000 AF. We have also increased the amount of water stored in Lake Mead through the Intentionally Created Surplus program provided for in the 2007 Colorado River Interim Guidelines and 2019 Lower Basin Drought Contingency Plan. Thanks to these agreements in the wet water years of 2017 and 2019, we were able to conserve a significant amount of Colorado River water to build up its storage account in Lake Mead. Today we have nearly 1.3 MAF stored in Lake Mead, accounting for almost 17 feet of greater elevation.

As Peter Nelson, Chairman of the California Colorado River Board, discussed at the October 15 hearing, water year 2021 was the second driest on record in California. As the water year unfolded, and we had only a 5% state water project

allocation, we began operating the Colorado River Aqueduct at its full eight pump flow capacity. We thought we would even need to withdraw some of our reserve in Lake Mead to meet demands in our service area. Then something unexpected happened, thanks to conservation in our region, demands for water did not materialize as we thought they would. Instead, we were able to store a modest amount of water in Lake Mead during this very dry year. As the drought worsens across the West, we will need to work together to conserve water and develop local supplies to create a resilient water portfolio for the entire Colorado River basin.

Collaboration and Partnerships on the River

The ongoing drought has placed the Basin States in new and ominous territory. Augmenting supplies, reducing demands, and forging new partnerships is the only way to bring supplies and demands into balance on the River. Luckily the groundwork for the path forward is already in the place. The lower basin states of Arizona, California and Nevada have taken many steps to lower their overall demands on the Colorado River. The year 2019 saw the Lower Basin States divert the least amount of Colorado River water in over 50 years. Mexico has contributed to meeting the challenge by leaving water in Lake Mead as well.

As the junior water rights holder in California, Metropolitan has long recognized the benefits of collaboration and partnerships. The Quantification Settlement Agreement (QSA) in 2003 helped reduce California's lawful uses of Colorado River water down from 5.3 MAF to California's basic apportionment of 4.4 MAF. For Metropolitan, this meant reducing its historical use of Colorado River water from 1.25 MAF per year to 550 TAF per year, plus any water management programs we develop. Metropolitan has spent the last two decades fostering unique and innovative partnerships in order to augment its basic apportionment and to help fill its Colorado River Aqueduct, when needed. These programs include storage/exchange programs with other Colorado River users in California, including Coachella Valley Water District, Desert Water Agency, and Imperial Irrigation District (IID).

We have also recently entered into a settlement agreement with IID over the implementation of the Drought Contingency Plan. Under the settlement agreement, IID can store additional amounts of conserved water in Metropolitan's Lake Mead account. If Lake Mead continues dropping to a level requiring California to make a contribution under the Drought Contingency Plan, IID will help make that contribution. The agreement allows Metropolitan and IID to resume negotiating new solutions to address the imbalance on the Colorado River. We will work together to explore ways to improve Lake Mead's drought resilience and secure state and federal funding for the Salton Sea.

a. Agricultural Partnerships

Metropolitan has a long history of collaborating with farmers and agricultural districts. These win-win partnerships provide flexible and affordable water supplies for cities across Southern California. At the same time, the programs support the local agricultural economies by providing a stable source of income for farmers and funding system improvements for participating irrigation districts.

In 2005, we entered into a long-standing partnership with the Palo Verde Irrigation District. As part of this landmark land fallowing program, farmers are paid to refrain from irrigating between 7 and 28 percent of the valley's land at Metropolitan's call. This water is then made available to communities in our service area. As part of the program, Metropolitan invested $6 million in a fund administered by local authorities to provide benefits to the Palo Verde Valley community. To date, the money has been spent on activities including small business grants and keeping the local swimming pool open during local budget shortfalls. This 35-year agreement is a critical component of our commitment to finding innovative ways to expand our water resource portfolio.

We also have a partnership with Bard Water District. Bard is located within the Yuma Project in Southeast California and receives water from the Colorado River via the All-American Canal. Metropolitan and Bard Water District developed a seasonal fallowing program to augment water supplies for our service area and support Bard's agricultural economy. Under a 7-year agreement through 2026, participating farmers avoid planting lower-value, higher water-intensive crops during the spring and summer in exchange for financial incentives. In the winter and fall the farmers continue to plant higher-value crops, such as vegetables and lettuce varieties, which use less water. The conserved water is made available to Metropolitan for use in its service area, or to store in Lake Mead for future use. As part of the agreement, 25 percent of Metropolitan's payments fund improvements to Bard's water infrastructure.

Also located within the Yuma Project, Metropolitan developed a forbearance program with the Quechan Indian Tribe of the Fort Yuma Indian Reservation (Quechan Tribe). Under the terms of the agreement, Metropolitan provides incentive payments to the Quechan Tribe to limit its share of Colorado River water used on the reservation.

b. Interstate Partnerships

Over the past decade, Metropolitan has teamed up with Southern Nevada Water Authority, Central Arizona Water Conservation District and the Bureau of Reclamation to fund projects that conserve water for the benefit of the Colorado River. The system conservation effort, which adds water to Lakes Powell and Mead, was expanded to include Denver Water to fund projects in the Upper Basin states. These system conservation projects exceeded more than $20 million in investments and resulted in more than 500,000 AF left in the Colorado River system.

Dedicated funding is needed to help create or conserve even more water for the benefit of the system. Section 3b of the Lower Basin Drought Contingency Plan Agreement commits the Department of Interior to creating or conserving 100,000 AF of water per year or more. The conserved water will remain in storage in the Lower Colorado River to help reduce the likelihood of higher tier shortage reductions and stem the decline of Lake Mead toward critical low levels. We appreciate that funding for this work is included in House and Senate Fiscal Year 2022 appropriation bills and H.R. 3684, the Infrastructure Investment and Jobs Act. The Bureau of Reclamation needs this funding to meet its obligations under the 2019 Drought Contingency Plan.

c. Partnerships with the Republic of Mexico

Metropolitan along with the Imperial Irrigation District, Southern Nevada Water Authority and Central Arizona Water Conservation District are funding conservation projects in the Republic of Mexico as part of Minutes 319 and 323 of the 1944 international treaty between Mexico and the United States referred to as the Mexican Water Treaty. Pursuant to that treaty, Mexico is allocated 1.5 million AF of available Colorado River flows. As part of Minute 319, we have collectively funded the conservation of nearly 100,000 AF of water in Mexico. Metropolitan looks forward to working with the Mexico to continue its successful binational partnership.

Innovation and Opportunities

More frequent and deeper droughts caused by climate change require new ways of thinking about stretching our limited supplies. An example of innovative thinking is the proposed partnership between Metropolitan, the Los Angeles County Sanitation District, the Southern Nevada Water Authority, Central Arizona Water Conservation District, and the Arizona Department of Water Resources to develop the largest wastewater purification facility in the United States. As discussed by Mr. Deven Upadhyay, Metropolitan's Assistant General Manager and Executive Officer, at a June Subcommittee hearing the Regional Recycled Water Project (RRWP) represents an opportunity for three states to improve their water supply reliability through a single project. It could transform how water is managed in the Colorado River basin and become a model for future interstate partnerships to address the impacts of climate change.

Metropolitan thanks Congresswoman Napolitano, Chairman Huffman, Congresswoman Susie Lee, and other members of the Committee for their leadership in the development of a new program to fund large-scale water recycling projects like the RRWP and appreciates their steadfast support for Reclamation's Title XVI water recycling program to fund local projects. Metropolitan supports H.R. 4099, the Large-Scale Water Recycling Project Investment Act, H.R. 1015, the Water Recycling Investment and Improvements Act, and H.R. 3684, the Infrastructure Investment and Jobs Act. Metropolitan appreciates these and other important federal investments that will help us build resilience to future challenges on the Colorado River.

One of the significant barriers that could impact the costs and recycling opportunities is the salinity levels of the Colorado River. The Colorado River Salinity Control Program has been effective at reducing the salinity of the Colorado River by more than 100 milligrams per liter or mg/L at Lake Havasu, but the Program is facing challenges. The largest single salinity control project, an injection well in the Paradox Valley, has been idle for 2 years, resulting in 110,000 tons of salt that had previously been controlled now entering the Colorado River. Metropolitan urges Reclamation to consider operating the existing well at a safe level while it finds a long-term solution to control the salt in the Paradox Valley.

We want to partner with the Bureau of Reclamation and other stakeholders to help build a climate change resilient water supply and help identify and manage the various remediation efforts throughout the Colorado River Basin that will enable us to provide additional flexibility to federal, state, and local water managers.

Another innovative tool to help manage Colorado River supplies is the OpenET platform. OpenET utilizes satellite-driven evapotranspiration models to map consumptive water use within agricultural fields, ecosystems, and urban green areas. Metropolitan supports H.R. 4832, the Open Access Evapotranspiration Data Act, and proudly contributes to this work. Once completed, OpenET will provide a tool for credible, transparent, automated, and easily accessible data on consumptive water use across the western United States. Metropolitan thanks Representatives Lee, Stewart, and Huffman for introducing this bill.

a. Improving Water Reliability while Protecting the Environment

Supplying water reliably for the 40 million people that depend on the Colorado River means that infrastructure investments must bring both supply reliability and environmental benefits that carry far into the future. Historic dry conditions and the resulting decline of water supply throughout the Basin has contributed and will likely continue to contribute to significant economic, environmental and other impacts in the Colorado River Basin.

Metropolitan set a precedent with public/private partnerships that focus on environmental protection of entire ecosystems rather than individual species. The Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was created for the conservation of endangered and threatened species and their habitats. The program involves state and federal agencies, and stakeholders from Arizona, Nevada, and California representing water and power utilities, municipalities, Native American tribes, and conservation organizations. We are the largest non-federal contributor to the program. The LCR MSCP will result in the creation of over 8,100 acres of habitat and the stocking of 1.2 million native fish to augment existing populations. The program area extends over 400 miles of the lower Colorado River from Lake Mead to the border with Mexico, and includes lakes Mead, Mohave, and Havasu, as well as the historic 100-year floodplain along the main stem of the lower Colorado River. The 50 year program was executed in 2005 and is currently ahead of schedule. As of 2020, 80% of the habitat has been created and 40% of the native fish have been stocked in the mainstream.

The Salton Sea is California's largest inland lake and due to drought and unintended consequences of conservation, water levels have declined and caused an ecological and human health crisis. As the Sea has subsided, it has exposed 1,000s of acres of playa, that can create harmful dust during strong wind events. Nearby communities have been impacted by dust that exceeds clear air act standards. Metropolitan supports federal investments from this Committee and others for dust mitigation and ecosystem management projects on the Salton Sea. This will help local communities and have long-lasting economic and ecological benefits in the basin.

b. Additional Federal Support Needed

The Colorado River is the lifeline of the American Southwest. Preparing for the challenges of the River's supply and demand imbalances will not be easy or inexpensive. Additional investments to help mitigate the impacts of climate change, improve supply reliability, and provide necessary infrastructure improvements and ecosystem benefits will be crucial. Strong federal leadership and significant federal funding is essential to ensuring success in meeting this challenge.

Metropolitan is prepared to work with the Bureau of Reclamation, the Basin States, the Republic of Mexico, Indian Tribes, environmental organizations, and all the other stakeholders on the Colorado River to find a path forward. The time to act is now.

QUESTIONS SUBMITTED FOR THE RECORD TO MR. ADEL HAGEKHALIL, GENERAL MANAGER, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Questions Submitted by Representative Napolitano

Question 1. Water recycling is a critical tool in the West, where drought is becoming more common and severe. I have bills to increase federal support for water recycling, including a bill that will help support large-scale water recycling projects

like the one the Metropolitan Water District is advancing with partners in Arizona and Nevada.

(a) Can you describe some of the benefits of large-scale water recycling projects for communities in the Colorado River Basin and across the West facing severe drought conditions?

Answer. Currently, much of Southern California's wastewater is discharged to the Pacific Ocean. This is a legacy of when urban communities and regulatory agencies considered sewage a waste rather than a precious resource central to the water portfolio. Our region has implemented dozens of innovative local water recycling programs, including the world-renown Groundwater Replenishment System in Orange County. Large scale water recycling projects, like our Regional Recycled Water Project (RRWP), will bolster this legacy and maintain the region as the nation's leader in recycling water for potable consumption. At full build out the RRWP could produce 168,000 acre-feet of water per year providing a new sustainable source of drinking water for roughly half a million families in Southern California. This program is being pursued through a significant partnership within our region between the Metropolitan Water District and the Los Angeles County Sanitation Districts.

Southern Nevada Water Authority, Central Arizona Water Conservation District, and the Arizona Department of Water Resources are partnering with us to develop this project that could benefit all three states. If they eventually invest in a portion of our recycling program, Metropolitan can leave that amount of its own Colorado supply in Lake Mead behind Hoover Dam for our partners to use. Through existing and new agreements on the Colorado River, the Lower Basin states can improve their reliability through a single project. And this will help the entire Colorado River Basin.

(b) Do you believe that large-scale water recycling projects, like the one you and your partners in the Lower Colorado River Basin are pursuing, can be an important part of the response to climate change and drought for the entire Basin?

Answer. Yes. Until now Metropolitan has never advanced a proposal to build our own recycled supply that we would own and operate. The Regional Recycled Water Project will be our first foray into producing local supply at scale that makes sense for a regional agency. At full buildout, the RRWP would be the largest wastewater purification facility in the United States and could help transform the reliability of supplies in the Colorado River basin. This shift in approach acknowledges the steep new challenges facing our water industry. Climate change, water quality degradation, increasing salinity, and regulatory impacts all threaten our supply reliability. In the face of these challenges, we now know that the treatment technologies exist to be able to purify wastewater for largescale potable use. The scale of this endeavor matches the regional capabilities of Metropolitan and would leverage the infrastructure we already have in place to develop a reliable drought proof water supply for the Lower Basin states.

(c) Do you believe that Federal investments can accelerate large-scale water recycling projects so we can respond and prepare for rapidly changing climate conditions as quickly as possible?

Answer. Yes. With our imported water supplies from the Colorado River and the State Water Project facing unprecedented drought and future threats from climate change, we need new federal financing tools to help advance visionary multi-benefit projects like the RRWP. Metropolitan supports H.R. 4099, the Large-Scale Water Recycling Project Investment Act, and appreciates the inclusion of this bill in H.R. 3684, the Infrastructure Investment and Jobs Act. The creation of a new Bureau of Reclamation program to support large regional recycling projects in the arid west will help the entire Colorado River Basin prepare for the future.

Additionally, robust Title XVI funding for smaller recycled water projects is needed to accelerate the development of local water supply projects. Metropolitan supports H.R. 1015, the Water Recycling Investment and Improvement Act, and H.R. 3404, the FUTURE Western Water Infrastructure and Drought Resiliency Act and appreciates all the funding provided for water recycling projects in H.R. 3684, the Infrastructure Investment and Jobs Act.

Questions Submitted by Representative Costa

Question 1. In the hearing, I asked about how repairing conveyance infrastructure in other basins outside of the Colorado River could benefit management of the Colorado River but also the State Water Project and Central Valley Project. Since

we had limited time in the hearing, I would like to give you the opportunity to provide written responses to this question: Could you explain how improving or repairing conveyance infrastructure in basins outside of the Colorado River could help with regards to managing the Colorado River's demands?

Answer. Metropolitan's infrastructure connects two of the West's critical watersheds: the Colorado and the Sacramento-San Joaquin Bay-Delta. Metropolitan's system is truly integrated, if we have a more reliable California Aqueduct when water is more available in the Northern Sierras, we can decrease our demand on the Colorado River system and leave water in Lake Mead storage. Conversely, if State Water Project supplies are limited due to subsidence or other infrastructure issues, demands on the Colorado River system will increase and we will likely draw from Lake Mead. In addition, a reliable State Water Project supply provides enhanced water quality for blending with the region's other water supply sources, including the Colorado River Aqueduct supply. This blending capability enhances water management for recycled water and groundwater storage within Metropolitan's service area. Programs like the Regional Recycled Water Project benefit from the State Water Project supply by further bolstering the ability to shift water resources within the service area from the two watersheds—particularly during multi-year droughts as we are experiencing on the Sacramento-San Joaquin River watershed.

Infrastructure reliability is key to ensure we can continue to supply water to our communities. The California Aqueduct is in need of critical repairs. It is a 60-year-old system that has lost up to 20% capacity in some reaches. Climate scientists predict that increasing variability in precipitation this century will seriously challenge existing water storage, conveyance and flood control infrastructure. If California's conveyance system is not repaired, it will limit opportunities to shift water resources within the Metropolitan service area, from these two watersheds. Metropolitan supports H.R. 2552, the Canal Conveyance Capacity Restoration Act, to provide federal funding to help repair California's conveyance system.

Questions Submitted by Representative Levin

Question 1. Mr. Hagekhalil, in your testimony you describe the Colorado River Basin Salinity Control Program, which has helped reduce salinity for years. However, as you acknowledge, that Program is facing challenges associated with continued operations of its largest individual salinity control project, the Paradox Valley Unit. I've also heard from constituent water agencies who are concerned about increased salinity in Colorado River water. Can you describe the costs of increased salinity levels and some policy options we should consider to address salinity challenges?

Answer. The Salinity Control Program has been a success on the Colorado River, reducing salinity levels by more than 100 mg/l at our intake. However, the Program is facing implementation challenges. The Colorado River Salinity Control Forum's 2020 Triennial review estimated that economic impacts from elevated salinity levels in the Colorado River will grow from $353 million per year to $670 million per year without further investments.

Higher salinity in water supplies affects many sectors, from reduced crop yields in agriculture, to increased cooling costs in the commercial and industrial sectors, and to homeowners from the reduced useful life of water heaters, clothes washers, and plumbing fixtures. Of particular concern, rising salt levels impair water recycling operations and reduce the ability to recharge the groundwater with lower-salinity supplies. Water recycling and groundwater replenishment are two cornerstones of Southern California's One Water approach to reliability.

Metropolitan encourages the Bureau of Reclamation to resume operation of the brine injection well at Paradox Valley, Colorado at a safe level while working on a long-term solution. Additionally, Reclamation should implement long-term solutions for other hyper-saline springs such as Pah Tempe in southwestern Utah. In the near term increased federal funding for the Colorado River Salinity Control Forum programmatic efforts is also needed. Long term, local funding for salinity control on the Colorado River is threatened by reduced power generation at Lake Mead. The parties involved are working on negotiating a solution. Congressional authorization will be needed to amend the funding agreement and sustain the current level of salinity control efforts. Additionally, salinity control and brine management research are also needed to help manage salts on the Colorado River. Metropolitan supports reauthorization of the Water Desalination Act of 1996.

Question 2. Why is it preferable to address salinity issues before that water reaches us down in California?

Answer. Salinity entering the Colorado River basin comes about equally from naturally occurring and human-caused sources. Metropolitan has studied desalting our Colorado River supplies in the past and found it is expensive and energy intensive. It is more cost effective to manage salinity through blending supplies with our other imported water from Northern California and investing in the Colorado River Salinity Control Forum. For example, salinity control efforts for alternatives at Paradox Valley range from $60 to $90 per ton of salt removed whereas costs for removing salinity in recycled water ranges can be an order of magnitude higher.

Question 3. Mr. Hagekhalil, in your testimony, you point to water conservation and the development of local supplies as being critical to the water portfolio of the Colorado River Basin as a whole. Why should drought-prone communities that rely heavily on imported water be taking steps to enhance local supplies, not only through water recycling projects like the ones you describe in your testimony, but also desalination projects where appropriate?

Answer. Though the region's economy will continue to rely on imported supplies for the foreseeable future, a One Water approach to the water reliability challenges we face in the Southwest fosters unique solutions. Imported supplies, recycled water, stormwater capture, groundwater recovery, and desalination—these are all part of the same system. The One Water approach calls for local resources to be selected by individual communities according to their unique needs and opportunities. Because local supplies such as recycling and seawater desalination are largely disconnected from the normal swings of hydrology and drought, they provide a level of certainty each year that snowpack-derived supplies cannot always deliver. However, these alternatives also come at a cost that is higher than our traditional supplies, which is why the funding programs we have discussed are so important.

Question 4. How can investments in the development of local water supply sources promote resilience at the Basin-wide scale?

Answer. About 25 percent of all drinking water in Southern California comes from the Colorado River, so it's an extremely important source. Between climate change and severe drought, the Colorado River looks likely to be remain in shortage for years to come. Diversifying the resource mix of individual communities in Southern California and across the basin benefits all the committees and tribal entities that rely on the Colorado River.

In 2007, Metropolitan and other Colorado River partners entered into an Intentionally Created Surplus (ICS) agreement with the U.S. Bureau of Reclamation to create, store, and later deliver conserved water in Lake Mead. This agreement allows Metropolitan and local agencies to incentivize local resource development such as water recycling, groundwater desalination, and groundwater recovery and store that water in Lake Mead. All basin states benefit from California's ICS program because it provides a powerful common incentive to keep this conserved water in Lake Mead when possible. As an example, with about 1.3 million acre-feet of ICS water stored behind Hoover Dam, Lake Mead is now 18 feet higher and much more resilient because of Metropolitan's local resource projects and conservation.

Mr. HUFFMAN. Thank you, Mr. Hagekhalil. The Committee will now hear testimony from Mr. Enrique Martinez, General Manager of the Imperial Irrigation District.

Mr. Martinez, you are recognized for 5 minutes.

ENRIQUE MARTINEZ, GENERAL MANAGER, IMPERIAL IRRIGATION DISTRICT, IMPERIAL, CALIFORNIA

Mr. MARTINEZ. Thank you very much, Chairman Huffman and Ranking Member Bentz. My name is Enrique Martinez. I am the General Manager of the Imperial Irrigation District. Thank you for the opportunity to speak in front of this Committee.

IID was established in 1911 and is delivering Colorado River water to approximately a half-million acre-feet of highly productive farmland, other commercial users, and seven municipalities in the

Imperial Valley, which is located near the United States and Mexico border in the Southern California area. To continue delivery of Colorado River water, our community's only water supply, it is vital to the Imperial Valley to sustain its agrarian economy and rural existence.

Since 2003, IID's water management programs have generated nearly 6.8 million acre-feet of conserved water from both on-farm and system efficiency programs to meet its water transfer obligations and storage objectives. IID and its water user's exemplary commitment to conservation, with program yields now averaging nearly a half-million acre-feet annually, will ensure the long-term viability of the Qualification Settlement Agreement, or QSA, the Nation's largest agriculture-to-urban water transfer, providing water supply resiliency to California and other Lower Basin.

As the largest single contractor of Colorado River water, it is in IID's interest to serve as a responsible steward of this precious natural resource. IID is actually monitoring the ongoing drought conditions and forecasted reservoir elevations, and supports a collaborative approach to river management, including renewed efforts of the Basin states to protect the long-term reliability of the system.

IID will continue to work with its growers and water conservation partners to promote the efficient management of all Colorado River supplies. It looks forward to additional consultations with Federal and Basin state representatives to identify further opportunities that can serve to protect critical system elevations, as the next set of long-term operational guidelines are developed and implementation beginning in 2026.

In the spirit of agency cooperation and collaboration, I want to share that last month, on September 16, IID and the Metropolitan Water District of Southern California settled a 2-year legal dispute regarding the water storage and environmental concerns that will result in a number of benefits to the Colorado River system and, in particular, to declining Lake Mead Reservoir elevations.

The reached agreement expands the benefits of IID's successful on-farm efficiency conservation program, supports efforts to ensure the state of California supports the Salton Sea's restoration commitments, and commits our agencies to explore additional opportunities to utilize the extraordinary conservation to support the Colorado River system.

The Salton Sea, California's largest lake, finds itself in a decline, causing impacts to the environment, wildlife, and air quality in neighboring regions in Southern California, Arizona, and Mexico. The Salton Sea is one of the most important links of the Pacific Flyway, supporting over 400 species of birds, including several listed endangered species.

In addition, as the QSA water transfer continues, the farmers implement conservation measures, becoming more efficient in the use of irrigation water, and as drought conditions have continued to become a new normal, Salton Sea inflows have decreased significantly, along with reduced flows from Mexico.

Other factors, such as evaporation, farming practices, local weather conditions, and urban conservation all contribute to current projections that indicate the Salton Sea will see an exposure

of up to 70,000 acre-feet of previously inundated lakebed, or playa, over the next 10 years. This exposed playa will be a source of particulate matter when it becomes airborne during windy conditions if aggressive dust control measures are not implemented, and further deteriorate the already compromised air quality.

Furthermore, the current salinity levels are now twice that of the Pacific Ocean, and a drop in surface water elevation can expose an additional more than 25,000 thousand acres of barren, salt-covered playa. Much of the land is owned by the Federal Department of the Interior, whose total land holdings at the Sea exceeds 110,000 acres.

The linkage between the Colorado River and the Salton Sea is irrefutable. Transfers or other mechanisms that reallocate water away from the Salton Sea to address these shortages will hasten its demise. For this reason, protection of the Salton Sea will be necessary for any basin-wide Colorado River solutions.

Federal investments are required to help prevent or reduce the impacts of future droughts. IID thanks the Committee for including $250 million for Salton Sea projects in the Budget Reconciliation Bill passed by the House Natural Resources Committee in September.

Without a reliable water supply, every sector of the economy will suffer, from agriculture, to manufacturing, to high tech. This could also impact an emerging industry in the Imperial Valley.

The recovery of battery-grade lithium or geothermal—from the geothermal brines—this domestic supply of lithium would help secure reliable minerals essential for the development of batteries and other energy storage technologies that are important to achieving state and Federal climate goals.

[The prepared statement of Mr. Martinez follows:]

PREPARED STATEMENT OF ENRIQUE MARTINEZ, GENERAL MANAGER, IMPERIAL IRRIGATION DISTRICT

Chair Huffman, Ranking Member Bentz, and members of the Subcommittee: My name is Enrique Martinez and I am the General Manager of the Imperial Irrigation District. Thank you for this opportunity to share our comments on the drought conditions that continue to affect the Colorado River Basin as well as the challenges facing the Salton Sea, California's largest lake.

Collaboration is Key for Sustainability of the Colorado River

The Colorado River is a shrinking resource and yet the lifeline that serves over 40 million people in the Western United States. Unfortunately, warmer temperatures and drier soils are exacerbating the impacts of the now decades-long drought, and the River's declining hydrology is hard pressed to meet historical allocations and the many competing demands of its multitude of users. With similar challenges affecting most other watersheds within California and the western United States, reservoirs are reaching historically low levels, including Lake Powell and Lake Mead.

Established in 1911, the Imperial Irrigation District (IID) delivers Colorado River water to approximately half-million acres of highly productive farmland, other commercial users and seven municipalities in the Imperial Valley which is located near the United States and Mexico border in Southern California. The continued delivery of Colorado River water, our community's only water supply, is vital to the Imperial Valley to sustain its agrarian economy and rural existence.

Since 2003, IID's water management programs have generated nearly 6.8 million acre-feet of verifiable conserved water from both on-farm and system efficiency programs to meet its water transfer obligations and storage objectives. IID and its water user's exemplary commitment to conservation, with program yields now averaging nearly a half million acre-feet annually, will ensure the long-term viability of

the nation's largest agriculture-to-urban water transfer, providing water supply resiliency for California and the Lower Basin.

As the largest single contractor of Colorado River water, it is in IID's interest to serve as a responsible steward of this precious natural resource. IID is actively monitoring the ongoing drought conditions and forecasted reservoir elevations, and supports a collaborative approach to river management including renewed efforts of the Basin States to protect the long-term reliability of the Colorado River system. IID will continue to work with its growers and southern California water conservation partners to promote the efficient management of all Colorado River supplies, and looks forward to additional consultations with federal and Basin State representatives to identify further opportunities that can serve to protect critical system elevations.

In the spirit of agency collaboration, I wanted to share that last month, on September 16, IID and the Metropolitan Water District of Southern California (Metropolitan) settled a two-year legal dispute regarding water storage and environmental concerns that will result in a number of benefits to the Colorado River system, and in particular to declining Lake Mead reservoir elevations. The reached agreement, in this spirit of collaboration, provides increased storage capacity for IID through Metropolitan's Lake Mead Intentionally Created Surplus account. This will contribute to elevation building efforts in the Lower Basin while expanding the benefits of IID's successful On-Farm Efficiency Conservation Program, which has generated nearly a million acre-feet of conserved water since its 2014 rollout. Metropolitan in turn has committed to supporting efforts to ensure the State of California upholds its Quantification Settlement Agreement (QSA) Salton Sea restoration commitments and the utilization of federal partnerships to supplement and expand California's Salton Sea Management Program, and commits our agencies to exploring additional mechanisms to utilize extraordinary conservation to support the Colorado River system.

The only way to ensure the long-term viability of the Colorado River system is for water agencies, the states, tribes, Mexico and other stakeholders that rely on the river to commit anew to working alongside one another to identify new partnerships and solutions to address the imbalance on the Colorado River. As such, IID supports continued coordination and collaboration with federal agencies and Colorado River Basin partners in the upcoming consultation process and as the next set of long-term operational guidelines are developed for implementation beginning in 2026.

The Salton Sea and the Colorado River

The Salton Sea finds itself in rapid decline, causing impacts to the environment, wildlife and the people who call this part of the state their home, not to mention the air quality effects to the neighboring regions in Southern California, Arizona and Mexico. With an estimated surface area of approximately 350 square miles, the Salton Sea is the largest lake in California. The Salton Sea is one of the most important links on the Pacific Flyway, supporting over 400 species of birds and a myriad of invertebrates, including several federally or state listed endangered species, such as the Ridgway's rail, the desert pupfish and the California black rail. The importance of the Salton Sea as an aviary and wildlife preserve was officially recognized by the federal government with the establishment in 1930 of the wildlife refuge now known as the Sonny Bono Salton Sea National Wildlife Refuge.

In the 1980s and 1990s inflows to the Salton Sea were approximately 1.2 to 1.3 million acre-feet per year, with the majority of the inflows from agricultural return flows. As farmers became more efficient with the use of irrigation water, and as drought conditions have become the new normal, Salton Sea inflows have decreased significantly along with reduced runoff from Mexico. Other factors such as evaporation, changing agricultural markets, local weather conditions and urban conservation and reuse all contribute to current projections that indicate the Salton Sea will see an exposure of up to 70,000 acres of previously inundated lakebed, or playa, over the next 10 years. This newly exposed playa will be a source of particulate matter when it becomes airborne during windy conditions if aggressive dust control measures are not implemented, and further deteriorate the already compromised air quality in the Imperial, Coachella and Mexicali valleys.

Flow reductions to the Salton Sea have already resulted in increased salinity levels that are now twice that of the Pacific Ocean, and caused a drop in surface water elevation that has exposed more than 25,000 acres of barren salt-covered playa. Much of this land is owned by the Department of the Interior (Interior), whose total land holdings at the Sea exceed 110,000 acres. This impending environmental crisis has nearly destroyed the fishery and wetland beneficial uses of the Salton Sea, however the consequential effects on the nearby human populations will be even more devastating. The region is comprised largely of disadvantaged rural

communities that are already failing federal air quality standards, saddling them with the state's highest rates of childhood asthma, and can ill-afford yet another environmental and social injustice.

The linkage between the Colorado River and the Salton Sea is irrefutable and the challenges facing it are ones both the upper and lower basins must recognize as a community of aligned interests. The Salton Sea is, as you also know, the linchpin and proving grounds of the nation's largest agricultural-to-urban conserved water transfer program, the QSA. The viability of these water transfers depends, as it always has, on a sustainable path forward at the Salton Sea and the urgency that all of us assign to it. The best way to protect the QSA and ensure there will be water resiliency in Southern California and throughout the Colorado River basin in the future, is to afford that same kind of resiliency, commitment, and dignity to the Salton Sea.

All of the Basin States are acutely aware of the impending water shortages on the Colorado River. Recent modeling suggests that the shortages may be even more severe than previously anticipated. As the Committee is aware, transfers or other mechanisms that reallocate water away from the Salton Sea to address these shortages will hasten its demise. For this reason, protection of the Salton Sea while working with others to increase efficiency of water use will be necessary for any basin-wide Colorado River solutions.

Renewable Energy at the Salton Sea

While the challenges at the Salton Sea are vast, there are also opportunities. The Salton Sea Known Geothermal Resource Area is the largest potential supply of this renewable baseload in the world. As the Salton Sea's shoreline recedes, it exposes playa that can provide access to this resource and numerous critical minerals, including battery-grade lithium, an essential component for electric vehicles and energy storage. Geothermal development and lithium recovery from its brine represents a significant opportunity for our community and the nation. It can provide clean energy while helping to spur economic development in one of the state's most impoverished areas, and simultaneously help secure a reliable source of a mineral essential to the development of electric vehicle batteries and other energy storage technologies that are important to achieving state and federal climate goals.

The federal government listed lithium in its critical minerals list and the California Energy Commission has conducted activities to help develop lithium extraction technologies. In addition, geothermal energy can help to address grid reliability concerns given it provides critical ancillary services required to maintain a reliable energy grid. The over 1,700 megawatts of identified geothermal resources located in the Imperial Valley already provide significant value in meeting current and future energy, climate and economic development goals.

Federal Investments and Support

Federal investments in improving and building new water supply infrastructure can help prevent or reduce the impacts of future droughts. Without a reliable water supply, every sector of our economy would suffer—from agriculture, to manufacturing, to high-tech. Critical water infrastructure must be maintained and modernized to ensure the delivery and safety of water today and for future generations.

Congress has been supportive of additional funding and legislation that helps finance improvements and rehabilitation of aging federal water infrastructure, broadening WaterSMART grants, authorizing a new collaborative program for snowpack monitoring and runoff forecasting and improving the efficiency of authorities for the use of federally owned facilities for aquifer recharge. These are only a few samples of the much-needed investments in water infrastructure and management but they are critical.

Similarly, Congress has repeatedly affirmed its strong federal interest in the Salton Sea, requiring Interior to develop management plans in 1992, 1998, and 2007. Interior is also the largest single landowner, owning roughly 40 percent, of total lands under or adjacent to the Salton Sea. In 2016, Interior and the California Natural Resources Agency signed a memorandum of understanding that focused on coordination, funding, overall prioritization of Salton Sea projects and recognition of the need for federal involvement as the landowner of the largest amount of acreage at the Salton Sea. Now more than ever, progress toward these unfulfilled commitments to protect the Salton Sea is an essential first step toward longer-term collaboration.

IID continues to advocate for protection of the Salton Sea and, with our partners, will continue to support state and federal funding to construct much-needed restoration projects there. IID thanks the Committee for including $250 million for Salton

Sea projects in the budget reconciliation bill passed by the House Natural Resources Committee in September.

Collaboration Over Conflict: The Law of the River

While the recent history of the Colorado River is built on a foundation of collaboration, its early foundation was established by a series of laws, compacts and agreements rooted in conflict and court cases that at times took decades to resolve. Representative Costa posed a question at the October 15th hearing suggesting a future of significantly reduced hydrology and queried participants as to how to offset the supply demand imbalance moving forward. IID agrees that River planning exercises should follow the science, and acknowledge it is unlikely that the system's hydrology will return to historically forecasted values. But IID also knows that the River's collaborative success have always respected the Law of the River and the water rights priority system, and must continue to do so or the legal battles likely to ensue would be even more dire than Congressman Costa's hydrologic forecast.

IID is confident that the Basin States, Mexico and tribal water contractors will develop a path forward with the Bureau of Reclamation and other stakeholders, and forge additional partnerships and alliances that build upon past collaborations. The often-competing interests of agricultural, urban, environmental, tribal and recreational water users still overlap on certain commonalities, the first and foremost of which requires maintaining the long-term viability of the system. These efforts are too critical to fail, as our food supplies, communities and ecosystems depend on it. IID has a continued interest in solutions that build upon partnerships, particularly those that respect agriculture and rural communities and not those that come at their expense.

We look forward to working on these shared interests and the supporting efforts of the Committee and Congress to ensure the long-term viability of the Colorado River as well as investments in the rapidly declining Salton Sea. We stand ready to assist in any manner possible.

Thank you for this opportunity to submit this testimony.

Mr. HUFFMAN. Thank you, Mr. Martinez. We will have to follow up on the remainder in the question portion, but we very much appreciate your testimony.

We will now hear from Ms. Taylor Hawes, Colorado River Program Director for the Nature Conservancy.

Ms. Hawes, you are recognized.

STATEMENT OF TAYLOR HAWES, COLORADO RIVER PROGRAM DIRECTOR, THE NATURE CONSERVANCY, BOULDER, COLORADO

Ms. HAWES. Thank you, Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee, for inviting me to testify today about collaborative solutions for the Colorado River.

My name is Taylor Hawes, and I am the Colorado River Program Director for the Nature Conservancy, and I have worked on Colorado River issues for 25 years.

The Conservancy is a global environmental non-profit working to create a world where both people and nature can thrive. We work in more than 70 countries, and our Colorado River work spans all seven Basin states and into Mexico.

The story of climate change is being written in water: too much or too little water at the wrong time or the wrong place. Today, we are witnessing the uptick of climate disasters, such as deadly flooding in the East and devastating drought and wildfires in the West.

While drought is a part of the West's normal cycle, climate change has intensified the impacts experienced in every corner of

the Basin. After two decades of ongoing drought, we must recognize this is likely our new normal.

As you have heard from other panelists, the Colorado River system is in the middle of one of the most severe droughts in recorded history, with the last 2 years hitting particularly hard. You might not, however, have heard about the impacts to our rivers, wildlife, and tourism that depend on them. In Colorado this year, the Dolores River ran completely dry, resulting in significant fish kills. The Yampa River was closed to fishing and recreation for more than 3 months, due to low flows and high temperatures.

Low water levels can accelerate the spread of invasive species, which reduces critical habitat for endangered fish in the Grand Canyon, and for migratory birds along the Pacific Flyway.

As we face this deepening crisis together, we no longer have the luxury of time. The longer we wait, the fewer options we will have. We must develop a suite of tools to adapt to this new reality, or we risk increasingly difficult challenges for our communities, our agricultural producers, the $1.4 trillion economy of the region, and the iconic wildlife and landscapes of the West.

Despite the dire situation, there is also hope. This Basin has a track record of developing collaborative solutions. Some of our successes include effective recovery programs for endangered fish, agreements between Mexico and the United States to share in shortages, while also providing water for the environment and the river's Delta, the 2019 Drought Contingency Plan that defined measures to slow the reservoir system's decline, and many more local solutions to address our dwindling water supply.

More is needed, however, and there is increasing urgency to accelerate these and other types of efforts to prepare for an uncertain future.

Programs and opportunities that this Committee should consider that will help this region adapt include the following: solutions that reduce consumptive water use in the Basin across all sectors; resilience strategies, such as forest management, that can improve snowpack retention while restoring forest health and minimizing catastrophic wildfires; agricultural programs to improve soil health, restore wet meadows, modernize our infrastructure, and test regenerative agricultural practices; decision-making processes that are transparent, inclusive, and promote buy-in—this includes voices that have historically been under-represented in the Basin's management decisions, such as sovereign Tribal Nations and environmental stakeholders; support ongoing recovery program efforts, such as passing Representative Neguse's H.R. 5001, which will allow the two Upper Basin recovery programs to continue to operate through Fiscal Year 2023; expand and improve existing programs, such as WaterSMART, to allow more flexible management of water resources through multi-benefit projects that decrease water consumption; invest in scientific tools that will help us adapt more quickly, as conditions continue to change—this includes planning for a range of scenarios to ensure we are ready for a future with declining river flows, not just the river we have today.

In other words, things could get even worse than what we are experiencing today.

To wrap up, the future will not look like the past. This Basin can be a model of sustainability and adaptation, but Federal and state investments are needed now to give us the chance for a thriving future.

Thank you for the opportunity to provide testimony. I will be available to answer any questions you might have.

[The prepared statement of Ms. Hawes follows:]

PREPARED STATEMENT OF TAYLOR E.C. HAWES, COLORADO RIVER PROGRAM DIRECTOR, THE NATURE CONSERVANCY

Thank you, Chairman Huffman, Ranking Member Bentz, and members of the Subcommittee for inviting me to testify. I am honored to speak with the subcommittee to explore collaborative solutions for the Colorado River.

My name is Taylor Hawes, and I am the Colorado River Program Director for The Nature Conservancy ("the Conservancy" or "TNC"). I have worked on Colorado River issues for almost 25 years in a variety of roles, including working as a water attorney for the Colorado River Water Conservation District, a regional water agency, and Northwest Colorado Council of Governments, a coalition of local governments. The Conservancy is a global environmental nonprofit working to create a world where both people and nature can thrive. We work in all 50 U.S. states and more than 70 countries across six continents. Our Colorado River work spans all seven Basin states and into Mexico.

I. URGENCY IN THE COLORADO RIVER BASIN

The Colorado River is at a crossroad. For the last two decades, we have witnessed the Basin's major reservoirs trending downward even as consumptive uses declined. The Basin states and stakeholders engaged in the management of the River have tried to stabilize the system. Agreements such as the 2007 Interim Guidelines,[1] Minutes 319[2] and 323,[3] and the 2019 Drought Contingency Plan[4] did slow the decline, but as we are seeing now, those agreements are inadequate relative to the impacts and changes we are experiencing in the Basin. The change in hydrology is outpacing the change in management.

We have an opportunity to be a model of sustainability. It will not be easy, and it will require a Basin-wide ethic of conservation. It will require trade-offs and it will be expensive, but it is necessary, as the stakes are high for 40 million people, agriculture, 30 federally recognized tribal nations, industry, and nature.

The Conservancy believes the future of people and nature are inextricably intertwined. My testimony focuses on opportunities that benefit both people and nature. Having worked in this Basin for almost two and a half decades, I am optimistic we can expand and accelerate our work across sectors and borders to choose a future that is one of sustainability and collaboration, not conflict.

A. IMPACTS OF CLIMATE CHANGE-DRIVEN DROUGHT

The story of climate change is being written in water—too much or too little water or at the wrong time or place. We are currently witnessing the uptick of climate disasters, such as deadly flooding in the East and devastating drought and catastrophic wildfires in the West. While droughts are part of the West's normal cycle, climate change has intensified the impacts experienced in every corner of the Colorado River Basin. After two decades of intensifying drought, we must all recognize and prepare for the reality that this is likely the Basin's new "normal."

The average annual flows in the Colorado River have declined by 20% since 2000. More than half of that decline has been attributed to warming temperatures. Scientists predict that this trend will continue, as we expect to lose an additional 3–5% of annual flows with every degree of temperature increase. We are also becoming more aware of the role soil moisture plays in our water supply. For example, this year, we received about 90% of normal snowpack but less than 35% of normal runoff reached our rivers and major reservoirs due to dry soils soaking up the snowmelt. This scenario is becoming more common, which is the reason we are promoting investment in resilience strategies.

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[1] https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.
[2] https://www.ibwc.gov/Files/Minutes/Min319_Env_Fact_Sheet.pdf.
[3] https://www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2018/43.pdf.
[4] https://www.usbr.gov/dcp/.

The recent headlines related to the Colorado River have focused on record-setting temperatures, declining reservoir storage, impacts to agriculture where ranchers are left with few options as streams run dry in the headwaters, declining hydropower generation at Lake Powell, and cities and farms in Nevada and Arizona facing the first ever Tier 1 shortages from Lake Mead. What you might not hear about as much are the impacts to our rivers, and the wildlife and tourism that depend on them.

Declining flows severely impact the health of the Colorado River and its tributaries, because there are often no alternatives to mitigate effects. Fish and wildlife cannot survive without water. Yet, this summer in Colorado, the Dolores River ran completely dry, resulting in significant fish kills. The Yampa River was closed to fishing and recreation for more than three months due to low flows and high temperatures. Both of these rivers provide important habitat to endangered and sensitive fish species. Many states in the Basin broke records this summer for low precipitation and temperatures, which impact wildlife and fish particularly hard. Low water levels can accelerate the spread of invasive non-native species and have reduced critical habitat for endemic and endangered fish species within the Grand Canyon and for migratory birds along the Pacific flyway.[5] Moreover, opportunities to reconnect the Colorado River to its natural Delta are further complicated as claims to limited water supplies increase.

B. URGENCY AND A CALL FOR ACTION

If we hope to sustain the Colorado River Basin going forward, we must recognize that we no longer have the luxury of time. The longer we wait, the fewer options we will have to adapt to this new reality. We must develop and utilize a suite of tools that fit the varying needs of the Basin to build resilience, or we risk increasingly difficult challenges for our communities, our agricultural producers, the $1.4 trillion economy of the region, and the iconic landscapes of the West.

This urgent need for action is coupled with the equally important need to work together. What happens in the Upper Basin impacts the Lower Basin and vice versa. Our agricultural, tribal, recreational and urban economies are intertwined. We all benefit from a healthy river system and a resilient watershed. We must not sacrifice one sector or interest for the sake of the others and no interest group, sector, region or state can solve this alone. We are fundamentally tied together by the very nature of this river system. The federal government, acting through its agencies and Congress, has a vital role in fostering collaboration, funding multi-benefit solutions and ensuring transparent and inclusive decision-making processes.

C. HOPE FOR THE COLORADO RIVER BASIN

Despite the dire situation, there is also hope for the Colorado River Basin. This Basin has a track record of developing collaborative solutions. Our greatest success stories resulted from collaborations of "unusual bedfellows", such as collaboration between agricultural and conservation interests. These successes include effective Recovery Programs for endangered fish, multiple agreements between Mexico and the United States that provide for shortage sharing caused by climate change driven drought while also providing water for the environment in the Colorado River Delta, pilot programs to explore the utility of system conservation activities, and the 2019 Drought Contingency Plan that included measures to slow the reservoir system's decline between 2019 and 2026. The federal government played an important role in all of these successes whether through funding, diplomacy, science or just "getting everyone in a room to work it out". Most of these examples had the potential to be extremely controversial but instead resulted in better solutions through collaboration and inclusion. More is needed and there is increasing urgency to accelerate these and other types of efforts to prepare for our new reality.

II. NEEDED ACTIONS FOR THE BASIN AND THE FEDERAL ROLE

In addition to work at the local, state and regional level, there are actions the federal government can take to facilitate adaptation in the region. In addition to serving as a convener, Congress and federal agencies can (1) allocate needed funding to programs and activities that support reducing water use and promote water resilience and adaptation in the Colorado River Basin; (2) work with stakeholders to improve and expand legislation and policies to support resilience and adaptation; and (3) support efficient and effective implementation of new policies and funding to ensure mitigation and adaptation measures are put into place as quickly as possible.

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[5] https://www.pressreader.com/usa/yuma-sun/20210816/281492164388290.

Congress is considering major initiatives to address the root causes of climate change, build a clean energy future, enhance community resilience, utilize our natural infrastructure, and improve forest health. Federal investments in the Infrastructure Investment and Jobs Act (IIJA) and Build Back Better Act are the best chance we have to respond at the scale needed to address climate change and move the country toward a more resilient, prosperous future. They also include investments responding directly to the crisis we are experiencing in the Colorado River Basin. TNC urges Congress to support these pieces of legislation.

The IIJA and Build Back Better Act include billions of dollars to help the West manage the current drought crisis while investing in long-term water supply solutions to help us prepare for droughts in the future and conserve healthy rivers and the fish and wildlife that depend on them. Specifically, the legislation supports needed upgrades to existing water infrastructure, new surface and groundwater storage projects, water recycling, reuse, and desalination, water conservation, ecosystem restoration, tribal water rights settlements and water supply needs, science and data monitoring to support decision making, and emergency drought response. In particular, I want to commend Congress for its attention to nature-based solutions throughout the legislation. Nature-based solutions provide multiple benefits across water use sectors, including for the environment.

A. SUPPORT TOOLS AND PROGRAMS TO REDUCE WATER DEMANDS

We cannot ignore the reality that there will be less water in the Colorado River than in the past. Unfortunately, this means we must reduce our water use throughout Basin. This will not be easy, and it will include difficult conversations about how we make reductions. There are, however, water sectors and stakeholders who are actively exploring ways to reduce water use.

Support Municipal Water Conservation and Re-use

Many cities in the Basin are leaders in implementing conservation and re-use programs. Investments in the IIJA and Build Back Better Act—both in traditional water recycling and reuse (such as the Bureau of Reclamation's Title XVI program) and new large-scale water recycling—are prime examples of innovative and forward-looking solutions to municipal water supply challenges that will support locally led efforts. However, more can be done in cities and towns that might not have the resources to reduce their water use or to develop and implement meaningful conservation programs. The WaterNOW Alliance, for example, has provided Reclamation with a set of detailed recommendations for making its WaterSMART Water and Energy Efficiency Grant (WEEG) program easier to access for small and mid-sized towns and cities. We support these recommendations to facilitate access to WaterSMART funds.

Support Agricultural Producers

More than 70% of water supplies in the Basin are used for agriculture. Along with providing an important food supply, agriculture is an essential part of the West's economy and culture. While cities may have more resources to implement conservation programs, farmers and ranchers often lack the resources to try new conservation measures. The federal government can support agricultural producers in finding ways to reduce water use and adapt to our new reality in a way that supports agricultural production and the long-term viability of the West's agricultural economy. Agriculture is not uniform in the Basin, and we will need financial resources and technical support to create locally adapted solutions as different opportunities will be available in different parts of the Basin. The U.S. Department of Agriculture (USDA) has done a good job increasing the flow of funds to the Basin; however, we strongly encourage increased coordination between Reclamation and USDA to ensure funds are spent efficiently and at the appropriate scales. For example, coordination between the two agencies can help individual producers and entire irrigation districts at the same time.

In the Lower Basin, where there are large irrigation districts and longer growing seasons, programs could be created to reduce summer water use when crops use the greatest amounts of water. Supporting "system conservation" programs with willing producers can help stabilize the system in the short term. In the Upper Basin, we can invest in modernizing infrastructure, improving measurement of water use and continuing to explore ways to reduce water use, such as split-season fallowing and reducing irrigation on less productive lands.

Across the Basin, we can do a better job of focusing federal investments on building long-term resilience. Over WaterSMART's 12 years, for example, among irrigation modernization projects within the Colorado River basin, over half of the water "conserved" (58.7%) and of the project dollars awarded (58.4%), went to

projects that actually increased consumptive water use. Changes could be made to Reclamation's Drought Response Program under the WaterSMART umbrella to better encourage real reductions in water use. The criteria for selecting projects to fund under the Drought Response Program could be changed to prioritize those projects that will reduce water consumption on irrigated lands. Prioritizing support for voluntary, innovative demonstration projects of split-season fallowing, rotational fallowing, conversion of marginal lands to wildlife habitat, and changes to less water-intensive crops are all examples of ways to incorporate a reduction in water consumption while supporting irrigated agriculture.

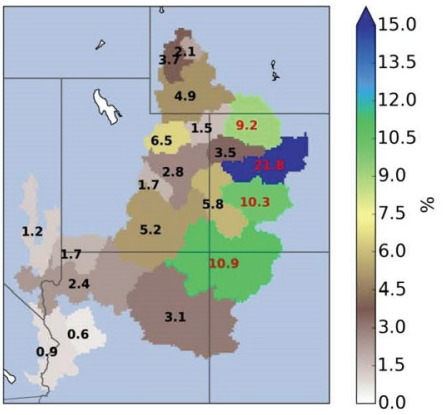
Because of our work on the ground, the Conservancy believes the farmers and ranchers are the best judge of what is possible. We have invested in partnerships with agricultural producers to test innovative ways to reduce water use, while following their lead to ensure it will work for their operations. Several of these efforts have been made possible through federal funding, including Farm Bill conservation programs, Reclamation's WaterSMART program, and the federal contributions to the System Conservation Pilot Program. Others have been assisted by federal agency input on how to achieve water management flexibility. In the Upper Basin, this has included pilot and demonstration projects in the Grand Valley, Uncompahgre Valley, the headwaters of the Colorado River near Kremmling, the Gunnison River, and the rivers in the Southwest corner of Colorado; the Virgin and the Price rivers in Utah; and the Upper Green River in Wyoming. We have supported scientific research to evaluate how crops are affected by different management strategies, and economic work to understand what it means for the producer's bottom line. We have also provided legal support to ensure that water rights are protected, that farmers and ranchers get answers to their legal questions, and to assure that their most valuable asset—their water right—is not diminished. In the Lower Basin, we have worked in the Verde River to test new crop types, such as barley, that use less water and are irrigated in the winter, when the river is less stressed. Our projects in the Verde River also included supply chain investments, like the creation of a malt house to process the barley to ensure the farmers had a market for their new crop. Funding to support these kinds of projects—both through environmental non-profits and farmers directly—can help farmers adapt while also benefiting river health.

B. INVEST IN RESILIENCE STRATEGIES

The scale and pace of climate-related changes in the Colorado River Basin pose an increasing risk to the reliability of water supplies that support humans and nature. Water conservation efforts have often focused on addressing the "water budget" problem (i.e., balancing supply and demand). While these efforts are necessary and important, they are not enough to deal with the risks our communities face from changing climate dynamics. New approaches are needed to help our communities adapt and respond to the compounding and extreme risks of climate change to economies, communities, landscapes, and the water resources that support them.

A new report called the *Ten Strategies for Climate Resilience in the Colorado River Basin*[6] (developed by a coalition of conservation organizations, including TNC) highlights potential strategies that could help the region adapt to climate change-driven drought and aridification while reducing pressure on existing water supplies. Currently, the Conservancy is testing some of these strategies through on-the-ground projects and research. Examples include forest management to improve water retention, agricultural practices to enhance soil health, natural infrastructure to enhance water retention and groundwater recharge, and exploring opportunities with energy companies to help communities transition in a way that also considers water security. Funding scientific research and demonstration projects is essential in the short term to determine which strategies can best increase resilience.

[6] https://www.tenstrategies.net.



There are a few key sub-basins that produce more than 55% of the water in the Basin. As we test these strategies mentioned above, we can prioritize the more productive sub-basins to ensure we have the greatest return on investment for the entire Basin.

Natural water retention and release projects are another example of projects that can foster resilience. These projects mimic beaver dams and can slow and spread water onto areas that previously supported riparian and wetland ecosystems by allowing water to soak into the landscape.[7] Such projects aim to reduce extreme flood risk and mitigate drought.[8] These projects help foster adaptive capacity in ecosystems and help ranching operations to cope with ongoing climate shifts.

Water retention projects can mimic beaver dam activity in streams: retaining sediment, reconnecting streams with floodplains, elevating groundwater levels, and increasing habitat for wildlife. Wet meadows and beaver ponds provided refuge for wildlife and served as a fire break during the East Troublesome fire seen above. Photo credit: Jason Houston.

The *Ten Strategies* Report provides tangible examples of projects that can increase resilience in the Basin. Funding in the IIJA and Build Back Better Act will support these types of projects. For example, the IIJA includes $100 million for natural infrastructure projects through the WaterSMART program, $2.1 billion for forest ecosystem restoration and $100 million for multi-benefit watershed health projects. If this legislation is passed, the federal agencies need to be prepared to get funding to projects quickly and efficiently. To maximize the benefits for communities and the environment, agencies should involve local, state, tribal governments, and key stakeholders in decisions about how to allocate these and other funds.

C. SUPPORT INCLUSIVE ENGAGEMENT

Two voices that have often been left out of Basin negotiations in the past are environmental non-profits and sovereign Tribal Nations. In the Colorado River Basin, we are fortunate that both parties have proven their willingness to provide

[7] Pollock, M.M. *et al*. Using Beaver Dams to Restore Incised Stream Ecosystems. *BioScience* 64, (2014): 279–290; Pilliod, D.S. *et al*. Survey of Beaver-related Restoration Practices in Rangeland Streams of the Western USA. *Environ. Manage* 61, (2018): 58–68.

[8] Caroline S. Nash et al., "Great Expectations: Deconstructing the Process Pathways Underlying Beaver-Related Restoration," *Bioscience* 71, (2021): 249–267.

constructive input and be part of developing solutions. While engagement has improved over the last ten years, we can do a better job including these voices and perspectives from the beginning, which will improve the outcomes and long-term solutions for water management and operations.

The federal government can and should support broader engagement in the various processes and negotiations over management of the Colorado River. Inclusive and meaningful stakeholder engagement is not only critical to avoid conflict and litigation, but it will also increase buy-in and result in more durable solutions. Leadership by the federal government is important, as a convener, as a guardian of a process that is transparent and inclusive, as a science provider, and as a funder. Federal leadership, especially in carrying out its federal trust responsibility with tribes, must continue to emphasize inclusivity and promote collaboration.

Specifically, consultations on the Upper Basin's Drought Response Operations Agreement (DROA), the Lower Basin Drought Operations Plans, and the Basin-wide 2026 Interim Guidelines have begun or are ramping up. We strongly encourage Congress and Reclamation to includes and environmental non-profits in these negotiations in a meaningful way.

D. PROTECT RIVER HEALTH AND WILDLIFE

The Colorado River is one of the most iconic rivers in the world, and includes the Grand Canyon, which is one of the seven natural wonders of the world. The region is home to a renowned wildlife community, including moose, elk, bighorn and desert sheep, river otters, and iconic bird species, as well 30 native fish species found nowhere else in the world. Biologists have identified more than 150 species that are risk from water management operations. These species are struggling now, and climate change and drought are expected to exacerbate the impacts to these wildlife communities. The health of our environment and the species that depend on the river serve as proverbial "canaries in the coal mine." If the health of the river system crashes, we will very likely experience negative impacts to our communities as well.

We have two important fish recovery programs in the Upper Colorado River Basin. These programs are working to recover four species of endangered Colorado River fish while still allowing water uses in our communities. The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program (the "Programs") take a balanced approach to recovering four endangered fish species in Wyoming, Utah, Colorado and New Mexico by implementing a range of basin-wide strategies, including improved management of federal dams and irrigation infrastructure, river and floodplain habitat improvement, fish stocking, and management of non-native fish species.

The Nature Conservancy has been an active partner in the Upper Basin Recovery Program since the 1980s and a partner in the San Juan Recovery Program for more than a decade. Since 1988, the two Programs have provided Endangered Species Act (ESA) Section 7 compliance without litigation for over 2,500 federal, tribal, state, and privately managed water projects across the Upper Colorado River basin. Together, these projects are able to divert more than 3.7 million acre-feet of water per year to benefit people while mitigating the impacts for the endangered fish species.

Over the last 30 years, in addition to allowing for ESA compliance to water users, conservation actions have improved conditions in many areas of the Colorado River Basin that supported these species historically. As a result of these actions, the razorback sucker has been proposed for down-listing, and the humpback chub is being down-listed this week. Both steps demonstrate the continued success and progress of these collaborative, partnership-informed approaches to conservation that benefit both people and native species. These two Programs will require reauthorization in 2023 and continuing federal support. The Conservancy strongly supports Representative Neguse's Upper Colorado and San Juan River Basins Recovery Act (H.R. 5001), which allows the Recovery Programs to continue to operate through fiscal year 2023 and provides time for actions that were delayed due to the pandemic. We urge you to pass this legislation as soon as possible.

In addition to these two Upper Basin Programs, the Virgin River Program, the Long Term Experimental and Management Plan focused on the Grand Canyon and the Lower Colorado River Multi-species Conservation Program are also focused on conserving and protecting species that depend on the river while allowing for water use by people. All of these programs are important to maintaining species and their habitat as conditions become drier, and they all rely on state and federal resources. We hope Congress will continue to support these programs.

E. INVEST IN SCIENTIFIC MODELS AND TOOLS

The future will not look like the past. We need tools and models that will allow us to plan for this uncertainty. Reclamation's model for managing and forecasting conditions in the Colorado River, the Colorado River Simulation System or CRSS, needs to be upgraded to deal with the increasing hydrologic variability. Reclamation has a great team of scientific and technical staff working to update the CRSS, and the agency needs your support to complete this critical effort.

Federal investment in monitoring and science will allow water managers to better forecast, model and track water availability throughout the Basin. For example, replacing and adding new stream gages is a high priority. OpenET is another priority program that can support water conservation and management efforts in the Basin. The main goal of OpenET is to provide reliable access to evapotranspiration data that is accurate, consistent, and scientifically valid. This innovative program is useful for many aspects of water management, whether for an individual agricultural field or an entire river basin. We support and appreciate the investments included in the Build Back Better Act for the U.S. Geological Survey's work in stream measurements, OpenET, forecasting and monitoring.

III. CONCLUSION

The Colorado River Basin is in crisis and the urgency to act has never been greater. Failure to develop a sustainable path is not an option for the 1 in 8 Americans who depend on the Colorado River for their water supply. We need solutions now to support the region's $1.4 trillion regional economy and the health of our rivers. The federal government can foster the political will and provide resources to help stakeholders in the Basin develop and implement effective measures to respond to climate change, build resilience and ensure water availability for our economy and the environment.

As Congress prioritizes funding opportunities, the Conservancy supports partnership and collaboration between the federal government, Sovereign Nations, and stakeholders in the Basin. Federal funding and leadership by key federal agencies are critical pieces of the puzzle to address the challenges we face today and those that we expect in the future. We also support several pending bills before Congress that would provide the Basin's stakeholders with the resources we need to respond to the climate change-driven drought that touches every corner of the West.

Thank you for the opportunity to provide testimony. I look forward to answering any questions you might have.

QUESTIONS SUBMITTED FOR THE RECORD TO MS. TAYLOR HAWES, COLORADO RIVER PROGRAM DIRECTOR, THE NATURE CONSERVANCY

Questions Submitted by Representative Costa

Question 1. In the hearing you noted that TNC is working on multiple projects to address the groundwater issues in California. Please share a list of those projects.

Answer. Groundwater reliance and over-pumping are a concern in California as well as across the West such as in Arizona, Nevada, and Utah. As surface water supplies decline, water users often turn to groundwater pumping. Many groundwater sources are non-renewable or recharge very slowly and pumping can outpace recharge rates. This can lead to subsidence, saltwater intrusion in coastal areas, and can negatively impact groundwater dependent ecosystems and springs that are critical to wildlife in the arid west. While you asked about projects in California, I have included projects in neighboring states to highlight a broad array of proven solutions to address groundwater sustainability.

CALIFORNIA GROUNDWATER PROJECTS

California is at a critical stage of implementing groundwater reform, known as the Sustainable Groundwater Management Act (SGMA), enacted in 2014. Under SGMA, local groundwater sustainability agencies (GSAs) must develop groundwater sustainability plans (GSPs), with plans due in 2020 or 2022, depending on the status of basin overdraft. These plans must consider impacts of groundwater conditions and planned groundwater management on all beneficial users of water, including disadvantaged communities and groundwater dependent ecosystems.

To assist GSAs in developing their plans to address impacts to nature and disadvantaged communities, TNC has partnered with a coalition of NGOs to provide technical assistance on how to meet the requirements to address beneficial users.

TNC's efforts include developing tools and science, including mapping of groundwater dependent ecosystems, all of which are freely available at www.groundwaterresourcehub.org. With our partners, we are also reviewing and providing comments to local agencies on their draft plans,[1] which are due to the state in 2022. The 2022 plan review builds on efforts by TNC individually, and as a member of a coalition, through which we provided comment letters on draft and final plans that were due in 2020, some of which can be found at https://groundwaterresourcehub.org/sgma-tools/gsp-comments/.

In addition to SGMA planning, TNC is helping agencies implement sustainable groundwater management by addressing both groundwater supply enhancement and demand reduction, both through nature-based solutions.

To increase groundwater supply, we are advancing multi-benefit recharge projects. This includes completing a pilot project with Colusa Groundwater Agency to demonstrate recharge that provides seasonal bird habitat, located within a disadvantaged community. In addition, we are advancing multi-benefit recharge in partnership with the Department of Water Resources (DWR's) Flood Managed Aquifer Recharge (FloodMAR) program, with a goal to develop projects that achieve recharge, bird habitat and flood risk reduction. Pilot projects are being planned in the Sacramento Valley.

To address demand reduction, TNC is working with willing landowners to develop a program to strategically retire irrigated agricultural lands and restore them to arid upland habitat, with a goal to permanently reduce groundwater pumping while potentially helping to recover imperiled species. TNC developed a formal partnership with Lower Tule Irrigation District to plan and pilot the program. These efforts are timely, as the state has allocated $50 million for land repurposing, which includes retirement and restoration, in the recent Water and Drought Resilience package, which will be administered by the Department of Conservation.

TNC is also addressing demand reduction by advancing groundwater markets to enable farmers to more efficiently manage limited supplies. With Fox Canyon Groundwater Management Agency, Ventura County Farm Bureau and California Lutheran University, TNC helped develop and launch the first groundwater market under SGMA, designed to provide farmers flexibility as they reduce pumping by approximately 40%.

Finally, in recognition that storage is a critical component of the achieving groundwater sustainability, TNC is supporting conjunctive use projects that strive to jointly manage groundwater and surface water supplies. Under the State's Water Storage Investment Program, which is funding storage projects with state bond funds, TNC is providing support for the Harvest Water Program by the Sacramento Regional County Sanitation District along the Cosumnes River and the Willow Springs Water Bank Conjunctive Use Project by the Southern California Water Bank Authority.

For related questions, please contact:

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Sandi Matsumoto, California Water Program Director, smatsumoto@tnc.org, 805-746-6664

ARIZONA GROUNDWATER PROJECTS

The Nature Conservancy is a founding member of the Cochise Conservation and Recharge Network in southeastern Arizona (www.ccrnsanpedro.org), which is a collaborative effort to develop a regional network of groundwater management projects between TNC, the U.S. Army/Fort Huachuca, Cochise County, the Hereford Natural Resource Conservation District, and the cities of Sierra Vista and Bisbee. Together we have already recharged and/or conserved over 40,000-acre feet of groundwater for rural Arizona over the past five years, through eight projects, spanning over 6,000 acres, along 25 miles of the San Pedro River. The projects work together to sustain groundwater levels in the region and preserve flows and habitats of the San Pedro Riparian National Conservation Area, managed by the U.S. Bureau of Land Management. Three more recharge infrastructure projects are planned to convey treated effluent and stormwater runoff to the locations where recharge will benefit the aquifer the most, at an estimated cost of $20 million. If funding for these three additional infrastructure projects can be secured, hydrologic models forecast that

[1] Letters on draft plans can be accessed from the Department of Water Resources (DWR) SGMA Portal/All Submitted GSP Initial Notifications—then click on the comment bubble on the far right under the "Action" column to view letter.

flows in the river, and aquifer levels, can be maintained for several decades to come, meeting the water needs of both local and federal interests.

NEVADA GROUNDWATER PROJECTS

The Las Vegas area, Nevada's largest population base, is heavily reliant on Colorado River water, and uncertainties in future water supplies often lead to increased withdrawals and reliance on groundwater. Nevada is the driest state in the nation, so the scarce precipitation can take a long time to replenish groundwater supplies. TNC mapped indicators of groundwater-dependent ecosystems (GDEs) in Nevada in 2019 (see https://arcg.is/qyj0v) and is using the maps along with available data to assess stressors and threats to GDEs in Nevada with expected completion in early 2022. These kinds of assessments can support better integrated management of groundwater and surface water while ensuring protection of GDEs.

The Nevada Division of Water Resources (also called the State Engineer's Office) administers groundwater in Nevada in 256 hydrographic areas across the state. The amount of groundwater available for use is determined according to the perennial yield that was estimated for most basins in the 1960s and 1970s using very basic methods. The Nevada Division of Water Resources will be updating these water budget estimations in all 256 hydrographic areas using the latest science and technology, which would provide more robust, science-based estimations of water availability, enabling better and more sustainable management of groundwater in Nevada.

Groundwater does not adhere to state boundaries, and several groundwater basins in Nevada are shared with other states like California and Utah. In the Mojave Desert, the Amargosa River is a groundwater-fed river that originates in Nevada and flows into California, terminating in Death Valley. It is sustained by groundwater-fed springs throughout its length, and is an oasis in the desert for plants, wildlife and humans, with extremely high biodiversity. The Nature Conservancy has properties and easements in both California and Nevada to help protect this water resource and those that depend on it. We are concerned about a number of threats to groundwater sustainability in the region that may impact this sensitive ecosystem, including climate change, mining, solar infrastructure, highway infrastructure, and renewable energy transmission. We have several projects to restore and sustain habitat throughout the region and responsible groundwater management plays an essential role, but it is important recognize the threats to cross-boundary groundwater basins.

UTAH GROUNDWATER PROJECTS

Utah is the second driest state in the United States. Some of Utah's largest population centers, such as Salt Lake City, Moab, and St. George, are dependent on water from the Colorado River and its tributaries as well as groundwater. Human populations are rapidly growing. In the St. George area, the population has doubled every decade for the past four decades—with that trend expected to continue in the future—and water resources are diminishing.

TNC is working closely with a large group of stakeholders in Moab, Utah to better understand the limits of groundwater aquifers and the impacts to TNC Matheson Wetlands Preserve, streams and aquifers from current and additional withdrawals. The town of Moab located in southeastern Utah, is a gateway community to numerous national parks. Over 1.8 million visitors recreated in the national parks of Southeast Utah in 2020. With surface waters fully appropriated, water needs to support future development must be met with groundwater resources. A recent USGS study, partially funded by TNC, shows a groundwater outflow of 300 to 1,000 acre-feet per year from the watershed to the Colorado River, leaving little left for future growth or environmental needs. Stakeholders, including the City of Moab, Grand County, and Grand Valley Water and Sewer are interested in employing more flexible water marketing strategies to ensure the health of our wetlands, streams and the Colorado River. TNC is currently working with the Utah Division of Water Rights to refine the water budget calculations and better understand impacts to the environment.

Questions Submitted by Representative Neguse

Question 1. Your work on-the-ground to improve environmental conditions along the Colorado River and its tributaries has included partnerships with water users and agricultural producers to conserve water for the benefit of species and overall river health.

How can increased Federal investments in drought relief lead to resiliency for ecosystems and agriculture alike?

Answer. The Nature Conservancy (TNC) actively engages with water users and agricultural producers to find win-win-win projects that support our communities and agricultural producers while also benefiting nature and river health. Environmental non-governmental organizations (NGOs), like TNC, can play a critical role in facilitating projects on the ground, but these projects need funding for all project phases, from development through construction and implementation. Often NGOs serve as a liaison and fiscal agent to our partners who are not familiar with managing grants from the federal government. Before describing ways that federal investments can lead to resiliency in the region, it is worth highlighting that it is very important that NGOs are able to apply for and manage these federal funds that come from federal agencies. The Consolidated Appropriations Act of 2021 made changes to Bureau of Reclamation (Reclamation) grant programs to make NGOs eligible applicants for the first time. Going forward, Congress should ensure NGOs, like TNC, are eligible to the maximum extent practicable for federal drought relief and resilience funding.

Turning to ways the federal government might invest in resilience, the new report *Ten Strategies for Climate Resilience in the Colorado River Basin* (developed by a coalition of conservation organizations, including TNC and available at www.tenstrategies.net) highlights a number of potential strategies that could help the region adapt to climate change-driven drought and aridification while reducing pressure on existing water supplies. Examples of the strategies outlined in the report include forest management to improve water retention, agricultural practices to enhance soil health, natural infrastructure to enhance water retention and groundwater recharge, and exploring opportunities with energy companies to help communities transition in a way that also considers water security. Funding scientific research and demonstration projects is essential in the short term to determine which strategies can best increase resilience.

Continuing to support the recovery programs for endangered species throughout the Basin is another example of how federal investments can support species, river health and water users. In the Upper Colorado River, the recovery programs implement many measures to improve habitat or conditions for endangered and threatened fish species while also providing Endangered Species Act compliance for more than 2,500 water users in the region. These programs need support through annual appropriations as well as passage of your legislation H.R. 5001, the Upper Colorado and San Juan River Basins Recovery Act.

Finally, there is a critical need for investment in agricultural operations and infrastructure through both Reclamation and U.S. Department of Agriculture (USDA) programs. These programs can help agricultural producers adapt to a hotter and drier future, and if done in accordance with environmental considerations, there can be significant benefits to irrigators and river health. For example, investments from the Environmental Water Resources Program at Reclamation can stimulate multi-benefit projects. Reclamation's WaterSMART program can also fund improvements to irrigation infrastructure to better measure and manage water resources, collaborative watershed planning efforts to address drought resilience, and the exploration and creation of water marketing solutions to address limited water supplies. USDA programs like the Regional Conservation Partnership Program (RCPP) and PL-566 can also provide important funding for irrigation infrastructure and watershed scale activities. Federal investments like these need to minimize or prohibit increasing consumptive use of water using federal funds, because increasing consumptive use in over-allocated river basins like the Colorado River will exacerbate future drought impacts and water supply imbalances.

Below are several examples where TNC and partners are successfully using federal investments to support agriculture and ecosystems.

- Through the Recovery Program, TNC has helped the Grand Valley Water Users Association (GVWUA) make important upgrades to their irrigation system, including the installation of seven check structures in their main irrigation canal that allow the GVWUA to maintain agricultural water deliveries with less water in the canal, saving tens of thousands of acre-feet in reduced diversions annually. The saved water has been used to improve flows for endangered fish in the 15-mile reach of the Colorado River, which is considered Critical Habitat for the fish.
- Through WaterSMART and state funding, TNC worked with the Maybell Irrigation District to line portions of an old earthen canal to reduce seepage losses and install check structures for improved operations, allowing Maybell to meet the same irrigation demand with reduced diversions. The project

increases flows in the Yampa River for endangered fish and recreation while benefiting local producers.

- USDA and PL-566 funding are supporting work in the Price River in Utah to rehabilitate Olsen Reservoir, which will store and release water to meet environmental flow targets in the Price River. The Carbon Canal Company plays a critical role in managing water deliveries to the reservoir and federal dollars have helped improve measurement and water control in the canal to enable this.
- RCPP funding for the Virgin River in Washington County, Utah is modernizing the irrigation system to reduce seepage losses and helping agricultural producers convert from flood to sprinkler irrigation to improve efficiency. The project will benefit local producers and water managers and improve flows and water temperatures in the Virgin River to support fish and wildlife.
- In Arizona, TNC and other partners are using federal funds to help protect critical habitat, agricultural production and scenic open space through conservation agreements. TNC is also working closely with agricultural water users to help improve water use and restore stream flows on the Verde River. The installation of efficient automated ditch systems combined with financial incentives for conservation have resulted in less water being diverted and increased flows along 20 river miles in the Verde Valley and in the Wild and Scenic reach between Camp Verde and Phoenix. The project received a federal grant of $2.8 million from NRCS's RCPP program.

In addition to examples of projects, I have also included some more general considerations below for federal investment to support work that can benefit both people and nature.

- Federal funding from USGS for initiatives like OpenET and supporting a robust stream gaging system is essential for understanding how much water we are currently using. We can't manage what we can't measure and if we want to be resilient in the face of drought and declining supplies, we need to know how much water we are using and where.
- Funding for the development of projects needs to include all phases of project implementation, including initial hydrologic modeling, design, and engineering, and not just construction costs. Federal funding programs need to expand to meet the full funding needs of innovative projects, that in the long run, can benefit multiple water use sectors/stakeholders.
- Water management infrastructure projects that provide multiple benefits, such as erosion control, sediment reduction, water quality improvement, aquifer recharge to increase groundwater supplies, and/or aquifer recharge to sustain flowing rivers, should be prioritized for federal funding over projects that only provide singular benefits.
- Funding for watershed health and forest management can also provide many co-benefits to all water users while supporting benefits to nature. Most stakeholders and the public in the West support improved forest management to avoid catastrophic wildfires, but there is sometimes disagreement about the best approach to forest management. While clear-cutting might help avoid catastrophic wildfires, it might actually exacerbate the challenges to our shrinking water supplies. TNC is currently researching how forest management can provide ecological and river benefits while also minimizing fire risk.

Question 2. The Nature Conservancy has been actively involved in a decades-old program working to recover four endangered fish species in the Upper Colorado River Basin. The Upper Colorado River Endangered Fish Recovery Program and its counterpart for the San Juan River, a major tributary to the Colorado, brings together tribes, water providers, environmental groups, and state and Federal agencies for the benefit of recovering these species.

Can you tell us more about these recovery programs and the impacts of drought on river ecosystems, and why continuing the programs is so important?

Answer. The Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program (the "Programs") take a balanced approach to recovering four endangered and threatened fish species in Wyoming, Utah, Colorado and New Mexico by implementing a range of basin-wide strategies, including improved management of federal dams and irrigation infrastructure, river and floodplain habitat improvement, fish stocking, and management of non-native fish species. These programs are working to recover four species of endangered and threatened Colorado River fish while still allowing water uses to

continue in our communities. Since 1988, the two Programs have provided Endangered Species Act (ESA) Section 7 compliance without litigation for over 2,500 federal, tribal, state, and privately managed water projects across the Upper Colorado River basin, including projects that provide water to agriculture, industry, and municipalities such as Denver, Colorado Springs, and Salt Lake City.

Over the last 30 years, in addition to allowing for ESA compliance to water users, conservation actions have improved conditions in many areas of the Colorado River Basin that supported these species historically. As a result of these actions, the razorback sucker has been proposed for down-listing, and the humpback chub is being down-listed. Both steps demonstrate the continued success and progress of these collaborative, partnership-informed approaches to conservation that benefit both people and native species.

While we have seen forward progress to recover the fishes, the challenges confronting the Upper Basin have increased. Since 2000, the average annual flows in the Colorado River have declined by 20%. More than half of that decline has been attributed to warming temperatures. Scientists predict that this trend will continue, as we expect to lose an additional 3–5% of annual flows with every degree of temperature increase. Low precipitation, reduced snowpack, and increasing temperatures severely impact the health of the Colorado River and its tributaries, because there are often no alternatives to mitigate effects. Fish and wildlife cannot survive without water. Low flows reduce, or in some cases eliminate, available habitat, limit the ability of fish to move up and down the river, increase predation on the fish, and increase temperatures, making it more and more difficult for the fish to get enough oxygen. Low water levels can also accelerate the spread of invasive non-native species, which is one of the most significant challenges the endangered and threatened fish species face. Finally, opportunities to augment low flow conditions are further complicated as claims to and demands on ever-more limited water supplies increase.

TNC strongly supports your Upper Colorado and San Juan River Basins Recovery Act (H.R. 5001), which allows the Recovery Programs to continue to operate through fiscal year 2023 and provides time for actions that were delayed due to the pandemic. We appreciate your leadership on this issue and urge Congress to pass this legislation as soon as possible.

These two Programs will also require reauthorization in 2023 in order to continue the important work of recovering the fish as well as to continue ensuring compliance with the ESA and will require continuing federal support. Without full implementation of the Upper Colorado and San Juan recovery programs, the 2,500 federal and non-federal, tribal and private water and power projects are likely to lose ESA compliance—which could halt ongoing water uses throughout the region. The legal and regulatory consequences would result in tremendous uncertainty regarding the ability of these projects to provide municipal, agricultural, and industrial water supplies in accordance with state water law and interstate compacts approved by Congress.

The two programs must also continue, in order to ensure recovery actions can be responsive to the changes we are experiencing in the Basin. The programs use adaptive management, meaning that management adapts to incorporate new information as it becomes available. We are constantly learning about the fish and what they need—and what they need is changing along with the climate of the basin—so there is still important work for these programs to do. Bringing species back from the brink of extinction takes time—it doesn't happen overnight. Even though we have seen successes with two of the fish, we are still learning what it will take to fully recover all four species. We have to find solutions to existing and emerging challenges and then put those creative ideas into action. The partners are already talking about what the programs could look like after 2023.

Both of these programs are important to maintaining the four endangered and threatened species, especially as their habitat conditions become drier, and both of these Programs rely on state and federal resources. We hope Congress will continue to support these programs as well as drought resilience programs that will allow us to meet the needs of people and nature in a more arid future.

Mr. HUFFMAN. Thank you very much, Ms. Hawes. We will now hear from Mr. Pat O'Toole, President of the Family Farm Alliance. The Chair recognizes Mr. O'Toole for 5 minutes.

STATEMENT OF PAT O'TOOLE, PRESIDENT, FAMILY FARM ALLIANCE, SAVERY, WYOMING

Mr. O'TOOLE. Thank you, Chairman Huffman, Ranking Member Bentz, and the members of the Committee. It is really an honor for me to be able to testify on such an important subject.

I am a rancher and farmer on the headwaters of the Colorado River. Our irrigation starts 20 miles from the Continental Divide. We are the first irrigators of this part of the Colorado River, and this summer celebrated our 140th year at this ranch. So, we have seen good and bad, up and down. There is nothing to compare with what is happening right now, from a drought perspective and water supply perspective. And I have said that in my testimony, and my testimony is somewhat prodigious.

I would like to thank Dan Keppen, our Executive Director, and my board, that goes from the Imperial Valley to here, on the Colorado River, for information.

But we live this, and I am in a situation where our family is trying to figure out what are the next steps for us.

I just spent 3 months in the national forest with our cattle and sheep. We are done with our use this year, and I spent my life riding horses through trees. You don't do that anymore. The forest is collapsing on itself because of the combination of pine beetle, aspen death, and a lack of activity to deal with those issues. It is so frustrating for us who have known, really, for years that things weren't right. And now we have established, whether it is the California fires or what we are learning here, that the relationship between the healthy forest and water are absolute.

I was a legislator in Wyoming in the 1980s and 1990s, and our county is the headwaters of both the Platte and the Colorado River, and I was involved in negotiations and discussions between the states and the state of Wyoming on both rivers.

At that time, we had a statistic that came that I have testified before is that 160,000 acre-feet of water is not going into the North Platte River, because the forest is not functioning correctly. The same thing is on this side, on the Colorado River. We don't have the numbers now in how a healthy forest would respond. Our number is based on the snowpack that we get. But the absolute relationship between a healthy forest and water management is so important for us to understand.

I give speeches occasionally, and I talk about the hopefuls and the hatefuls—and the hopefuls are the people that I have worked with for 30 years in my community. We have a model community of working within RCS, with the Interior Department, with the Fish and Wildlife Service. And we have seen absolute correlation between the kind of work we do on the ground, and wildlife, and water quality and water quantity. To be in that kind of a model, with 30 years of success of river restoration, of trout passage on our whole river system, and to watch the forest be the state that it is in, it breaks your heart.

My leader, who has been here 30——

[Audio malfunction.]

Mr. O'TOOLE [continuing]. Really, 20 percent, because they wouldn't let me in the forest. And that is because the hatefuls that I refer to are the——

[Audio malfunction.]

Mr. O'TOOLE [continuing]. The dead forests, we should have been acting, and we have not acted. We need to act, and I would just implore, on a bipartisan basis, as to realize if we are going to have the systems to produce food, that have wildlife, that have rural communities, we have to act.

I have been on multiple boards nationally, and the food issue—50 percent more food is identified by everybody. Everybody in the world knows that we need to produce more food. We are producing less. We are losing farmers and ranchers. We are losing the ability to use our water in a way that allows us to produce food.

I look at the demand management, for example, as a place that we are going to take water off the ground at a time we need to produce more food. It will have huge effects on wildlife.

We need to think through these, how do we recharge an aquifer when we take water off the ground, for example.

So, there are so many pieces to this puzzle that I am happy to be able to be a resource for the Committee. I would invite any Committee or your staff to come and look at a working watershed at the Upper Colorado River and see how it actually could happen.

But I appreciate very much the opportunity to talk to you today. Thank you.

[The prepared statement of Mr. O'Toole follows:]

PREPARED STATEMENT OF PATRICK O'TOOLE, PRESIDENT, FAMILY FARM ALLIANCE

Chairman Huffman, Ranking Member Bentz, and Members of the Subcommittee: On behalf of the Family Farm Alliance (Alliance), thank you for the opportunity to present this testimony today on the catastrophic drought conditions in the Colorado River Basin and related response measures. My name is Pat O'Toole, and I have served as President of the Board of Directors of the Alliance for over 16 years.

About the Family Farm Alliance

The Family Farm Alliance (Alliance) is a grassroots organization of family farmers, ranchers, irrigation districts, and allied industries in 16 Western states. We are committed to the fundamental proposition that Western irrigated agriculture must be preserved and protected for a host of economic, sociological, environmental and national security reasons—many of which are often overlooked in the context of other national policy decisions. The American food consumer nationwide has access to fruits, vegetables, nuts, grains and beef throughout the year largely because of Western irrigated agriculture and the projects that provide water to these farmers and ranchers.

Personal Background and Experience with Colorado River Challenges

I have served on the Family Farm Alliance's Board of Directors since 1998 and was named as the organization's President in 2005. I am also a former member of Wyoming's House of Representatives. I presently serve on the board of directors of Solutions from the Land and work closely with both the Intermountain Waterfowl Joint Venture and Partners for Conservation.

My family has a strong background in irrigated agriculture and our 140-year-old ranch (Ladder Ranch) is located near Savery, Wyoming. Our family raises cattle, sheep, horses, dogs and children. My family and Ladder Ranch were the recipients of the distinguished 2014 Wyoming Leopold Environmental Stewardship Award. Our ranch straddles the Wyoming-Colorado border at the headwaters of the Colorado River, which has long afforded me the opportunity to view some unique water issues first-hand. I have personally testified before congressional committees several times, and Alliance representatives have testified before Congress nearly 90 times since 2005. We've seen the ups and downs and the volatility of weather and the changing climate—now it's clear that the cycle of life has been disturbed.

Overview

This testimony focuses on this year's drought—an unprecedented disaster for many farmers and ranchers, their families and rural communities across the West. The Colorado River Basin is in its 21st year of drought and its reservoirs will end up at their lowest levels since they were initially filled. Central Arizona farmers are bracing for water cuts resulting from the first ever shortage declaration, and the most recent modeling shows increasing risk of reaching additional critical levels at Lakes Powell and Mead. The drought impact on Western irrigated agriculture is not limited to the water, either. Reduced hydropower generation and the high cost of replacement power is threatening to cause double digit percentage power cost increases to many farmers and non-agricultural users. In the midst of the numerous challenges caused by the ongoing drought, efforts are underway to renegotiate new operating guidelines in advance of the expiration of the "Interim Guidelines for the Lower Basin Shortages and the Coordinated Operation for Lake Power and Lake Mead (Interim Guidelines)" in 2026.

The Family Farm Alliance developed additional written testimony on impacts that are facing our water and power users in the Colorado River Basin, which was submitted for the record at your October 15, 2021 hearing. I have been asked to testify on my involvement with forest and watershed health activities in the Upper Colorado River Basin, and to convey the position of Family Farm Alliance members throughout the West on the importance of actively managing to restore our critically important Western forested watersheds.

The State of Western Forests

As the "endless summer" of 2021 came to an end, wildland firefighters continued to work toward containment of 63 large fires and complexes that have burned more than 3.1 million acres in the Western United States, according to the National Interagency Fire Center (NIFC). So far this year, over 46,000 fires in the West have charred more than 5.8 million acres, slightly lower than the 10-year average at this time of the year.

The number of acres burned by wildfire in the U.S. last year—2020—broke a modern record, according to data published by the NIFC, as extreme heat and dryness fueled major conflagrations across many populated areas in the West. Wildfire burned over 10.3 million acres in 2020, breaking the calendar-year record of 10.1 million acres, set in 2015. From August through October 2020, the most extreme conditions caused thousands of evacuations, homes and structures lost, and tragic fatalities of 11 people in Oregon and 34 people in California. Last year marks the third year that wildfire has burned more than 10 million acres in the U.S., according to fire center records going back to 1983. All three of those years have been since 2015.

Increasingly fierce Western wildfire disasters are becoming an annual occurrence and underscore the importance of improving on-the-ground vegetation management actions that can lead to improved forest health. Improving the condition of our nation's forested lands is of primary importance to water providers. National Forest lands are overwhelmingly the largest, single source of water in the U.S. and, in most regions of the West, contributing nearly all the water that supplies our farms and cities. In addition, our already fragile water infrastructure can be severely damaged or rendered useless by fire and post-fire flooding and debris flows. Burned areas hold no water at all, leading to floods, erosion, and mudslides. It also increases turbidity in the streams flowing through our watersheds. The unhealthy state of our national forests, which were initially reserved specifically to protect water resources, has led to catastrophic wildfires that threaten the reliability, volume, and quality of water for tens of millions of Americans, along with the wildlife, recreational, and multi-purpose values of these lands.

Our great Western forests are damaged and diseased. This came about through a perfect storm of neglect, misguided litigation, lack of use of science, strained management budgets, and, of course, climate change. We can have no doubt that the West is warming, and some places are warming more rapidly than past modeling has predicted. Insect outbreaks have weakened and killed trees. Violent winds have brought these trees down providing an abundant source of fuel. Drought and forests cluttered with dead fall timber serve as a tinderbox for increasingly intense and devastating fires. Our National Forests in the Rocky Mountain Region are suffering from climate-driven lack of function. The inability to develop a logical management strategy has led to these consequences: catastrophic fires, lack of wildlife habitat and critical interruption of our water supply.

Challenges

Today's wildfires are often larger and more catastrophic than in the past. Some of the blame can be attributed to climatic conditions, like reduced snowpack in alpine forests, prolonged droughts and longer fire seasons. Western population growth has also played a role, since we now have more homes within or adjacent to forests and grasslands. However, decades of fire suppression and inability to manage our forests through controlled burns, thinning, and pest/insect control probably play an even bigger role. Where California now has about 100 trees per acre, it once had about 40 trees/acre.

Much of the recent media coverage on the fires raging in Northern California has featured commentary from politicians, environmental activists and academics who point to climate change as the driving factor behind the fires that have forced tens of thousands of Westerners to flee their homes. Climate change concerns may certainly be shared by some rural Westerners who live in once-thriving timber dependent communities. However, there is also a growing frustration that forest management—or rather, the perceived lack of management by federal agencies, driven in part by environmental litigation—fails to get the attention it deserves in many media accounts of the current Western wildfire infernos.

Some of us who live in rural Western communities who have watched the condition of federal forests deteriorate in recent decades have a different perspective. We have witnessed how federal forest management actions have been hampered in recent decades, in part due to environmental lawsuits initiated by certain activist groups. We encourage the Subcommittee to listen to the men and women on the ground regarding the urgency of implementing forest restoration and management.

National Environmental Policy Act (NEPA) Processes Associated with Forest Health

The U.S. Forest Service (Forest Service) is not fully meeting agency expectations, nor the expectations of the public, partners, and stakeholders, to improve the health and resilience of forests and grasslands, create jobs, and provide economic and recreational benefits. The Forest Service spends considerable financial and personnel resources on NEPA analyses and documentation, as well as environmental litigation.

In recent years—catalyzed by the ominous increase in Western wildfire activity—we have worked with other organizations, seeking ways to discourage litigation against the Forest Service relating to land management projects. We have supported efforts to develop a categorical exclusion (CE) under NEPA for covered vegetative management activities carried out to establish or improve habitat for economically and ecologically important Western species like elk, mule deer, and black bear. Thus, we have advocated for expediting and prioritizing forest management activities that achieve ecosystem restoration objectives.

Reforming the Forest Service's NEPA procedures is needed at this time for a variety of reasons. An increasing percentage of the Forest Service's resources have been spent each year to provide for wildfire suppression, resulting in fewer resources available for other management activities, such as restoration. In 1995, wildland fire management funding made up 16 percent of the Forest Service's annual spending, compared to 57 percent in 2018. Along with a shift in funding, there has also been a corresponding shift in staff from non-fire to fire programs, with a 39 percent reduction in all non-fire personnel since 1995.

Additionally, the Forest Service in 2019 had a backlog of more than 5,000 applications for new special use permits and renewals of existing special use permits that are awaiting environmental analysis and decision. On average, the Forest Service annually receives 3,000 applications for new special use permits. Over 80 million acres of National Forest System land need restoration to reduce the risk of wildfire, insect epidemics, and forest diseases.[1]

Forest Management Impacts on Upper Watershed Water Supplies

It is hard to overstate the importance of snowmelt as a source of fresh water in parts of the Rocky Mountain West, and great attention is paid to ecosystem water cycles in this region. Some of the snow that falls in the mountains goes directly from crystalline snow to water vapor, bypassing the liquid water phase. This phenomenon—sublimation—accounts for the loss of a large portion of the snowfall during the winter months in the Rocky Mountains. Snow intercepted by tree branches sublimates the fastest, often disappearing within a few days of a snowfall.

[1] Federal Register Doc. 2019-12195 Filed 6-12-19.

Recently published work by the Rocky Mountain Research Station[2] (RMRS) teases apart how the loss of spruce canopy affects the sublimation rates for snow both in the canopy and on the ground in these ecosystems. These findings have some important implications to snow interception and retention.

Two years ago, I testified before the Senate Energy and Natural Resources Committee, where I referenced the Forest Service's figure that 160,000 acre-feet (AF) of water is not going into the Platte River system because of invasive species such as the pine beetle. The study I referenced relates to research[3] conducted by the Forest Service on the Upper North Platte River in 2000 and 2003. It shows that management restricting timber harvest had already severely impacted the watershed and water yield to the tune of a minimum of 160,000 AF[4] per year. The Forest Service uses Equivalent Clear-cut Acres modeling to predict water yield associated with vegetation disturbance, primarily associated with timber harvest and wildfire. The literature and research show that implementing a 100-year rotation on all eligible timber lands would sustain an increase of 50–55,000 AF of water per year—for just one part of one forest in the state of Wyoming.

In focusing on opportunities in Wyoming, it is important to provide context for what is happening in the West because lessons learned across the region has application in Wyoming. For example, across the West, federal laws, regulations and environmental litigators have greatly restricted our ability to thin forests and take other actions to aggressively combat invasive insects like the pine beetle. As a result, large swaths of national forest lands essentially remain "un-managed". In some places, all you can see for miles is a sea of dead trees, victims of the pine and spruce beetles.

Overgrown Western forests also means forests are using more water than they did historically. Because the moisture content of the trees and brush is so low, it makes them more vulnerable to fire and parasites, such as the bark beetle, which has ravaged millions of acres throughout the West. The Western wildfire disasters have underscored the importance of improving on-the-ground management that can lead to improved forest health. Thinning out trees can reduce water stress in forests and ease water shortages during droughts. By reducing the water used by plants, more rainfall flows into rivers and accumulates in groundwater. If we could calculate potential water yield impacts with even more confidence, we could determine how much water could be freed up by thinning forests and controlling pests and invasive insects like the pine and spruce beetle. Fortunately, we are seeing more recent, positive developments toward this end.

Examples described below provide additional models for ways of quantifying the amount of water removed from Wyoming's water supply by dying forests and invasive species like the bark beetle.

Scientists affiliated with the National Science Foundation (NSF) Southern Sierra Critical Zone Observatory (CZO) in 2018 conducted a study in the forests of California's Sierra Nevada mountains. The team of scientists from the University of California and the National Park Service combined sensors that measure evapotranspiration with satellite images of "greenness" on the landscape to estimate the additional freshwater runoff that could be created by thinning overgrown forests. Their research, published in 2018 in the journal *Ecohydrology*, shows that water loss from evapotranspiration has decreased significantly over the past three decades, due in large part to wildfire-driven forest thinning. Forest thinning has increased in recent decades to stave off disastrous wildfires fueled by dense forests. This study shows that restoring forests through mechanical thinning or prescribed burning can also save California billions of gallons of water each year. The total effect of wildfires over a 20-year period suggests that forest thinning could increase water flow from Sierra Nevada watersheds by as much as 10 percent.

We have also heard numerous other anecdotal reports from around the West of water yield increases resulting from clearing pinon and juniper stands in northwestern Utah, arid communities in the high desert of Oregon and Northern California, the Pecos River watershed in New Mexico and the upper Purgatoire River in eastern Colorado. Pinon and juniper reduction in the Gallup, New Mexico area triggered the reappearance of flowing water in once dry arroyos that had not

[2] Beetle Outbreaks in Subalpine Forests and What They Mean for Snowmelt, May 2021. Rocky Mountain Research Station, U.S. Forest Service.

[3] Estimating Additional Water Yield From Changes in Management of National Forests in the North Platte Basin, May 12, 2000, C.A. Troendle & J.M. Nankervis (Note: This is an independent report prepared for the Platte River EIS Office).

[4] 160,000 AF of water would cover all of Chicago, Illinois with over one foot water.

been there for decades. A 2016 study[5] conducted on the San Carlos Apache Reservation showed that different vegetation types displayed various responses to water availability. This further highlights the need for individual management plans for forest and woodland, especially considering the projected drier conditions in the Western U.S.

Solutions

Regardless of the causes behind the sad state of our forests, it is our job now to look for solutions. These solutions will be applied through specific and thoughtful management. The problem involves a natural landscape, so some of the solutions will be time-tested natural processes. Others will be driven by landowners and forest managers through proactive, aggressive actions. The neglect and deterioration of our forests cannot continue. We must act now to heal them. We offer below the recipe for success.

1. Actively Manage and Restore our Federal Forests

Drought brings less snowfall in many areas. The snow that falls melts off up to 45 days earlier and runs off downstream on frozen ground. Therefore, the snowpack no longer functions as a reservoir delaying the release of water in a timely manner. However, the forest floor can be restored through thoughtful management. A responsible level of continuous fuels reduction includes a combination of robust mechanical thinning and prescribed fire. This can be employed to significantly reduce evapotranspiration, tree stress, disease, and pest infestation, preserve health forest conditions, and protect species and habitats.

This is not only good stewardship—it is good economics.

Failure to employ this approach will continue the downward, accelerating spiral of fuel accumulation, drought, disease, and invasive insects. This will lead, inevitably, to additional high-intensity and costly fire events in the future.

We believe active forest management can increase water yield, improve water quality, provide for jobs, and reduce the cost of firefighting, while increasing forest resiliency. This can be done, in part, by increasing the productivity of national forests and grasslands; employing grazing as an effective, affordable forest and grassland management tool; increasing access to national forest system lands; expediting environmental reviews to support active management; and designing West-wide studies to quantify water yield.

a. Use Controlled Fire and Grazing as Management Tools to Restore Forests

Wildlife habitat has suffered profoundly from the "pick-up-sticks" of dead trees on the forest floor, from disruption in water function, and most dramatically, from widespread hot fires. These large catastrophic fires not only eliminate habitat, but kill millions of animals, birds and insects. Controlled fire is one of the tools that can be used to improve forest grounds. However, it is not the only tool. A recent article in the Sacramento Bee ("'Self-serving garbage.' Wildfire experts escalate fight over saving California forests") does a nice job explaining this. We are seeing a major shift happening; the people who love the forest are coming together.

The Organic Administration Act of 1897 (Organic Act) addresses the role of the forests as part of a larger community—a larger and complex landscape. They do not exist in a vacuum. Forest grounds were intended to produce timber for Americans. We have seen the terrible effects of the near halting of the timber industry. Foresters know how to log in a responsible and sustainable manner. When done properly, it is one of the most effective tools to restore forest health. The alternatives are unregulated logging in other parts of the world and sky-high lumber prices. Sustainable timber management is a practice that must be encouraged and facilitated.

Likewise, the forests are part of our food production system. The grasslands existing in forest lands sustain not only grazing wildlife like deer, elk, big horn sheep, and antelope, but also forage for domestic livestock like cattle and sheep. Proper grazing improves soil through hoof actions and fertilization from manure. Grazing returns carbon to the soils and is a tool, indeed almost the only tool, for improving and restoring soils. Again, it must be properly managed, but many graziers are experts in just those practices. Narrow policy proposals that disconnect the role of responsible grazing, or even seek to eliminate this practice, from grass-

[5] Vegetative response to water availability on the San Carlos Apache Reservation, Roy Petrakis, Zhuoting Wu, Jason McVay, Barry Middleton, Dennis Dyem, John Vogel. July 2016. U.S. Geological Survey, Western Geographic Science Center, 255 North Gemini Drive, Flagstaff, AZ 86001, USA.

land function will result in cascading impacts to habitat connectivity, soil health, wildlife habitat, and carbon sequestration. These actions will also create added strain on rural communities.

b. Secure Long-Term Conditions of Water Flows

"Securing long-term conditions of water flows" is named as a top priority in the Organic Act, yet it is perhaps the most severely impacted by the deteriorated forests. The forests act as a sponge. Winter snowfall settles among the trees, and snowmelt and rainfall alike traditionally soak into the humus and healthy soils on the forest floor. Climate change and human mismanagement have disrupted this crucial cycle.

In the Intermountain West, flood-irrigated wet meadows provided by ranchers as part of their agricultural operations comprise the bulk of the wetland habitat in snowpack-driven systems. These hay meadows and irrigated pastures provide important habitat for sandhill cranes, white-faced ibis, northern pintails, and other priority waterbirds, as well as an array of ecosystem benefits. Flood irrigation naturally maintains underlying groundwater that is less vulnerable to a warming climate and key to supporting seasonally flooded wetlands on the surface. Filling these "sponges" through flood irrigation is critical to slowing the movement of water through the system and thus increasing resiliency in the face of drought. Likewise, upland watershed and forest management activities can help increase water quality and quantity, as well as mitigating the risk of catastrophic wildfire.

Restoration—utilizing what I refer to as "AgroForestry"—is very doable. It will require planning, resources, commitment and will. All of these things exist.

c. Improve Watershed Yield Through Better Forest Management

As previously discussed, there is a significant gain in water supply to streams because the consumptive use of water is reduced when the number of trees growing as forests are managed to avoid the conditions that result in catastrophic insect infestation or wildfires. We believe the North Platte River example noted above should be used as a solid starting point for a case study because of the abundance of available scientific literature, including the work already developed by the Forest Service. Improved water yields also have positive implications for downstream Platte River species protected by the Species Act. Congress could help initiate a pilot project that builds upon this work. In addition to underscoring the positive aspects of active forest management noted above, such a study could also underscore the importance of appropriately measuring any new water gained through this and other water enhancement approaches. Generating new water through landscape management practices should become a new priority in the Colorado River watershed and other parts of the American West.

d. Improve Invasive Species Management

Addressing the harmful impacts of invasive species should also be a priority. Water users confront challenges associated with invasive species across the West, where salt cedar (Tamarix), quagga mussels, and cheatgrass—just to name a few—all proliferate. For example, Tamarix species along riparian corridors or around desert springs can seriously reduce underground water tables and surface water availability, drying up wetlands, and reducing flows. Tamarix species can increase flooding in riparian areas by narrowing channel width. In addition, the plants are flammable and can introduce fire into wetland and riparian communities that are not adapted to periodic burning. While millions of dollars have already been spent on efforts to reduce the impacts of these and other non-native pests, it hasn't been enough. And more invasive species will continue to arrive.

2. Engage the U.S. Forest Service

Since the Forest Service is responsible for much of the forestland in the West, it's engagement will be critical. Bold action is required. Decision-makers must be empowered to act, rather than get bogged down in bureaucratic morass. Unfortunately, current bureaucratic practices are not equipped to fulfill the need. Upper-level policy makers and managers will need to create a plan and set an agenda that will lead to success. We must "empower the competent" to achieve scale. The areas in need of restoration encompass millions of acres; 100-acre solutions will not suffice. Legislation may be required.

Experts from the Forest Service and various affected interests must be part of the planning process. These interests would necessarily include area and state foresters, private sector forest managers, watershed experts, wildlife scientists, grazers, and

local community representatives.[6] This group should be broad enough to cover areas of concern, but nimble enough to plan quickly and set the wheels in motion. The multi-level strategy includes solutions to sustainably manage our water, which largely originates on forest landscapes and watersheds. It must consider the habitat provided, or formerly provided, by the affected forest lands, and the needs of those species whose lives depend upon those lands. Likewise, traditional forest uses that have sustained local communities must be considered both as a tool to bring about needed change, and as a part of the holistic system which includes trees, wildlife, water and people. These tools include targeted logging, particularly of dead standing trees, and grazing to restore soils and reduce fire danger.

Healthy forests provide multiple recreation, agricultural, ecological and economic benefits, and indeed the legislation that created the Forest Service, mandates this. A successful plan must direct the effective transition from the forests' present non-functioning state to a functioning state. This will take time, but a commitment to action is required to ensure long-term success.

3. Improve Federal Funding Programs and Delivery

To increase stakeholder confidence and ensure effective funding delivery, federal agencies should invite outside guidance and clearly state to the maximum extent practical, the intended impact of funds, method of distribution, and other discretionary factors. We understand that these agencies have limited influence over specific legislative prescriptions and that further direction may be provided as the legislative process unfolds. We also believe that a certain amount of discretion based on agency expertise is necessary to ensure proper allocation of funds. However, we submit that our collective on-the-ground experience can serve as a guide to ensure that such funds broadly dedicated to conservation and restoration are best utilized to the benefit of ecosystem function, local community vitality, and working lands health.

4. Remove Regulatory Barriers to Conservation

From our decades of collective expertise, we are aware of numerous barriers that prevent interested landowners and other entities from participating in programs administered by federal agencies, and ultimately, prevent funding from reaching the ground in a meaningful way. Statutory limitations such as program payment caps can create misalignment between program eligibility and conservation objectives. Regulatory hurdles, for example presented through interpretation of NEPA, can prolong agency action.

a. NEPA Concerns

The current implementation of the NEPA is reactive, cumbersome, time consuming and does not enable the Forest Service to implement forest management strategies in a timely manner. We have advocated for some key general recommendations to improve the Forest Service application of environmental laws: (1) Allow landscape-level land management plans to guide individual actions on the ground without duplicative administrative process under federal environmental laws; (2) Direct the creation and use of CEs already allowed under NEPA in preventing catastrophic wildfires and restoring forest habitat and ecosystems more effectively and on a timely basis; and (3) Use the NEPA process to consider how a robust vegetative management program could improve forest health, improve water quality and lead to increased available water supply by reducing demand from overly dense tree and vegetative cover.

We do not seek changes that waive or ignore existing federal environmental laws. Instead, we call for improvements to make those laws work for the benefit of the nation as intended. By eliminating duplicative or unnecessary processes and using streamlining tools already allowed under the law—and promoting action instead of litigation—the status quo could be changed. The proposed changes could help government agencies to use their limited resources to expeditiously implement land management actions designed to prevent wildfires and improve habitat for priority,

[6] People have different interpretations of the terms "community" and "locally led conservation." As described in a letter the Alliance signed on with the Western Landowners Alliance in September 2021, addressed to the Secretaries of Agriculture and Interior, local governments, local populations, communities of practice, and various stakeholder groups can all be counted as some form of "community." The collaborative and relationship-based structure of these groups also often leads to more durable conservation outcomes, which ultimately benefits the resource and the community and can lead to innovative multi-partner solutions. However, many of these community-based and locally led organizations lack human, technical, and financial capacity to grow and sustain these efforts over time. Leaders of collaboratives often wear multiple hats and run those efforts in addition to other full-time responsibilities.

endangered and/or threatened species. Surely that would be a dramatic improvement over spending precious time and resources on bureaucratic process and litigation. These types of critically needed procedural changes to NEPA implementation will improve our Western landscapes and protect our valuable water supplies from the devastating effects of wildfires. They will also allow agencies to improve habitat, restore ecosystems for the benefit of federally important species and allow continued agricultural use of our public lands.

The Forest Service two years ago proposed revisions to its NEPA procedures with the goal of increasing efficiency of environmental analysis while meeting NEPA's requirements. We supported these proposed changes to NEPA, many of which were based on adding or expanding existing CEs. At the time, it was estimated that on average, an environmental assessment took 687 days to complete. Average time to complete a CE was just 206 days. By using the new CEs in the proposed rule, the Forest Service could potentially complete NEPA analyses between 30 and 480 days earlier on applicable projects.

One of the ways to protect agency credibility in the use of CE's is to include an explicit provision that the agency will reopen the CE decision if changed circumstances or new information militate such an action. The Federal Energy Regulatory Commission (FERC) has had such a provision (called a "reopener" by FERC) for many years in its NEPA regulations and this has aided FERC in its administration of NEPA. Such a "reopener" provision is so attractive that the Bureau of Reclamation's similar provision prompted Congress to direct Reclamation to use its CE process in administering the 2013 *Reclamation Small Conduit Hydropower Development and Rural Jobs Act*, P.L. 113-24.

Increasing the efficiency of environmental analysis would enable the Forest Service to do more to increase the health and productivity of our national forests and grasslands and be more responsive to requests for goods and services. The Forest Service's goal should be to complete project decision making in a timelier manner, improve or eliminate inefficient processes and steps, and, where appropriate, increase the scale of analysis and the number of activities in a single analysis and decision. Improving the efficiency of environmental analysis and decision making will ensure that lands and watersheds are sustainable, healthy, and productive; mitigate wildfire risk; and contribute to the economic health of rural communities through use and access opportunities.

b. Candidate Conservation Agreements with Assurances and Safe Harbor Agreement

Federal agency staff capacity and siloed communication structures also present very tangible hindrances to effective program implementation on the ground and further complicate already complex processes. For example, Candidate Conservation Agreements with Assurances and Safe Harbor Agreements can serve as useful tools to ensure that landowners' efforts to conserve and recover at-risk and listed species do not put them in jeopardy of further regulatory restrictions as a result of their conservation actions. However, these agreements are time consuming and sometimes costly to landowners to develop. Beyond agreement development though, the cost of ongoing implementation, monitoring and reporting is largely unaccounted for and often falls on landowners, the state or other agreement holders. There are certain funds that can provide cost-share assistance in developing these agreements, but ongoing support for implementation, monitoring, management and stewardship remains a gap and presents a hurdle to the long-term success of conservation objectives.

5. Action in Congress

We are pleased that there appears to be growing recognition in Congress of the importance of active forest management. There are several bills that have been introduced this year, intended to facilitate responsible forest management.

One of those is the *Outdoor Restoration Partnership Act*, sponsored by Senator Michael Bennet (D-CO), and supported by the Family Farm Alliance. To date, Congress has failed to invest in our Western lands, undermining our economy and way of life. As a result, local governments are often left to foot the bill for conservation, restoration, and wildfire mitigation. Senator Bennet's bill would establish an Outdoor Restoration Fund to increase support for local collaborative efforts to restore forests and watersheds, reduce wildfire risk, clean up public lands, enhance wildlife habitat, remove invasive species, and expand outdoor access. It would empower local leaders by making $20 billion directly available to state and local governments, tribes, special districts, and non-profits to support restoration, resilience, and mitigation projects across public, private, and tribal lands. The bill would invest another $40 billion in targeted projects to restore wildlife.

Another bipartisan bill would provide carbon credits to companies and other non-federal partners in exchange for thinning trees on fire-prone forests. *America's Revegetation and Carbon Sequestration Act*, co-sponsored by Senators John Barrasso (R-WY) and Joe Manchin (D-WV) would encourage more intensive forest management—and reforestation—through a variety of initiatives. The carbon credit idea would allow non-federal entities to be awarded carbon credits through voluntary markets in exchange for money they provide the Forest Service for projects that increase carbon sequestration.

One more important piece of legislation is the *Resilient Federal Forests Act*, introduced by Rep. Bruce Westerman (R-AR). This bill—supported by 85 organizations, including the Family Farm Alliance—would help address the environmental and economic threats of catastrophic wildfires.

Each of these bills is important. We hope that efforts like these will build momentum toward larger forest management reforms in subsequent bipartisan legislation.

Colorado River Policy Recommendations

Before I conclude this testimony, I would like to update the Subcommittee on some work the Family Farm Alliance is doing in other Colorado River forums. The Alliance and its membership respects and participates in several Colorado River forums and processes, from the headwaters in the Rocky Mountains to the Delta. We trust that the foundation laid in past negotiations and operations will succeed in responding to the tough challenges presented by the current situation.

The Colorado River policy paper we developed in 2015 still resonates today.[7] The Alliance has always advocated that the best solutions are locally driven, coming from the ground up. The success of the Alliance has been based on our ability to deliver the message of the local water user up to policy makers in Washington, DC. The "ground up" approach we employ is foundational to our West-wide approach. In the Colorado River watershed, this approach originates at the project level with local waters and moves up the "ladder" up through decision-makers at the sub basin, state, and Lower/Upper Basins levels, before being addressed nationally.

The Alliance is currently working with agricultural water users from my headwaters ranch all the way to the international border to develop a new treatise that builds on the 2015 policy and is intended to provide further guidance to help equip today's decision-makers. Agricultural water users in the Basin believe the eight policy principles from 2015 remain fundamental to the long-term health of the Colorado River and the farms and communities it supports, and they underpin the specific outcome expectations presented in that paper. These principles include:

1. State water laws, compacts and decrees must be the foundation for dealing with shortages.
2. Water use and related beneficial use data must be accurately measured and portrayed.
3. Benefits of water use must reflect all economic/societal/environmental impacts.
4. True costs of transferring water away from irrigated farms in a managed system like the Colorado River through land fallowing must be accurately accounted for, including unintended consequences and third-party impacts. Understanding these costs will assist in determining the fair value of any land fallowing proposal.
5. Agricultural water conservation can help stretch water supplies, but has its limits.
6. Public sentiment supports water remaining with irrigated agriculture, and developing strategic water storage opportunities as insurance against shortages.
7. Technologies for water reuse and recycling are proven effective in stretching existing supplies for urban, environmental and other uses.
8. Urban growth should not be permitted in the future without locking in sustainable and diverse water supplies, and using irrigated agriculture as the reservoir of water for municipal growth is not sustainable in the long run.

The 2007 "Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead," are set to expire in 2026. We stand ready to roll up our sleeves to develop positive and sustainable outcomes in the cur-

[7] "Colorado River Basin Water Management: Principles & Recommendations", Family Farm Alliance, July 2015. 19 pp.

rent consultation of the Interim Guidelines, and intend to use our forthcoming paper as our first step in helping decision-makers in the Colorado River Basin deal with the harsh realities of current and future water shortages due to drought and over-allocation of water. To accomplish this, current Colorado Compact decision-makers must produce operating guidelines that:

1. **Recognize that Western irrigated agriculture is a strategic and irreplaceable national resource.** It must be protected by the federal government in the 21st century.
2. **Provide certainty to all users and interests with equitable apportionment decisions made from a foundation of state water law, common sense and fairness.** We all have to remember that society's lawmaking efforts do not dictate the reality of Colorado River hydrology. We must strive to develop sound long term plans that avoid unintended consequences.
3. **Address critical data gaps to facilitate the trust needed to make fair operational and legal decisions related to the next set of Interim Guidelines.** An agreed-upon, common data set will build trust and enhance the ability of negotiators to make needed difficult decisions.
4. **Manage Lake Mead to provide the Lower Basin's share of the Colorado River Compact water to Lower Basin users. Manage Lake Powell to meet both the Colorado Compact obligations to the Lower Basin and protect the Upper Colorado River Compact obligations to the four Upper Basin states.** Resolve as many of the outstanding Compact issues as possible to allow both basins to best adapt and adjust to projected volatile hydrology and diminished water supplies. The current and future water supply projections are much less than those assumed from past negotiations.
5. **Expand supply augmentation opportunities as options for meeting growing water demands, at a time when Colorado River supplies appear to be diminishing.**
6. **Emphasize that future urban growth cannot be encouraged without locking in sustainable and diverse water supplies.** Using irrigated agriculture as the reservoir of water for that growth—or for growing environmental demands—is not sustainable in the long run.

These expectations will be further detailed and justified in a white paper that we plan to release in early December.

The focus of my testimony has been on forest and watershed health, which has direct bearing on the Alliance's higher-level Colorado River policy work. Colorado River policy makers are currently seriously considering augmenting Colorado River supply to meet current water supply shortages, even from adjacent river watersheds. Augmentation concepts include ideas like developing new high mountain reservoirs and innovative new small-scale groundwater and aquifer upper watershed storage projects in the Upper Basin. While much discussion has been dedicated to the demand management ideas associated with the Federal Drought Contingency Plan (DCP), there are other ways to develop augmentation water, including through both cloudseeding and non-native riparian vegetation removal operations. In addition to reinvigorating these two alternatives, the Family Farm Alliance supports quantification of water generated on the landscape through forest restoration as a viable augmentation option. The water supply developed from these augmentation sources could easily exceed any water developed by a demand management program.

Generating new water through landscape management practices should become a new priority throughout the West, including the Colorado River Basin. Desalinization must continue to be part of potential solutions. We need to actively engage in injecting these options into the discussions to help provide a fair comparison to the negative impacts associated with reducing Colorado River agricultural water supplies.

Conclusion

The revival of Colorado River watershed forests is crucial to combating the effects of climate change. By bringing together changemakers and working collaboratively, we can change the paradigm of forest management. Success will mean healthier forests, healthier wildlife populations, more prosperous and dynamic local communities, more recreation opportunities, greater economic benefits and much-needed security in our water supplies.

Balance in production and conservation is the answer to forest health.

The epic drought we have been experiencing across the western United States, especially in the last two years, and other weather abnormalities are different than in the past. Our community has found that solutions are local. We find that solutions come from the land. Farmers, ranchers, foresters and fishers all across the West work in the extremes of elements and volatile weather, and we share a love of the land. We see the pressure on the land we manage and our water supplies. Sadly, strategies appear to be evolving to take water from Western farmers, from food production, and redirect it to other uses.

I'm very lucky to live in a ranching and farming community in a watershed on the headwaters of the distressed Colorado River. We have worked for 30 years on building resilience, leading to some of the most significant watershed restoration and agricultural productivity projects in the country, as we work with federal and state partners to manage our land for multiple outcomes-protein production, fisheries, wildlife, healthy forests and vibrant rural economies.

The key to our success has been local leadership and uncommon collaboration with diverse partners to address our unique challenges and capitalize on opportunities. Farmers must be at the center of all discussions and decision-making on the Colorado River and other Western watersheds. Significant input will be needed from a wide range of farmer and other producer organizations outside of typical policy-making structures. We all must become more adaptable and open to change. We must learn from those who have experience.

We must become more effective in communicating to the world the value of farmers and ranchers. Our societies are confused. The basic principles of existence are under pressure. The steady rhythms of food production and ecosystem services are crucial to understanding our challenges and finding solutions.

We will continue our efforts to ensure that irrigated agriculture continues to play a vital role in feeding our Nation, while keeping our rural communities and the environment healthy. At a time of unprecedented change, one certainty holds firm and true—our nation's most valuable natural resource must be preserved.

The Family Farm Alliance believes that Colorado River Basin interests can and will successfully work through future droughts and water shortages in a collaborative and effective way. The future of millions of people and millions of acres of farms and ranches and the food and fiber they produce in the Basin rest on this belief. We also believe if the Basin uses the principles and recommendations advanced in this testimony, solutions can be found that do not pit one user against another in resolving differences and complex water problems.

Thank you again for the opportunity to testify on this important issue. The Alliance looks forward to working with your Subcommittee and the many agricultural, urban, energy and environmental water users in finding these solutions so critical to the future of the Colorado River Basin.

QUESTIONS SUBMITTED FOR THE RECORD TO PATRICK O'TOOLE, PRESIDENT, FAMILY FARM ALLIANCE

Questions Submitted by Representative Costa

Question 1. In the hearing, I asked about how repairing conveyance infrastructure in other basins outside of the Colorado River could benefit management of the Colorado River but also the State Water Project and Central Valley Project. Since we had limited time in the hearing, I would like to give you the opportunity to provide written responses to this question:

Could you explain how improving or repairing conveyance infrastructure in basins outside of the Colorado River could help with regards to managing the Colorado River's demands?

Answer. Thank you for this question, Rep. Costa. We appreciate your long-time support for irrigated agriculture in the Central Valley and throughout the West.

Colorado River Basin management actions are interconnected with federal water management decisions made in both tributary and adjacent river basins. Millions of people in Southern California rely upon multiple sources for their water, including State Water Project (SWP) supplies from Northern California and surface water from the Colorado River. Restrictions on other non-connected water sources can limit opportunities to manage Colorado River water more effectively in a drought. The direct consequence of the lack of Northern California water to Metropolitan Water District of Southern California (MWD) will impact the demands

and reliance on its Colorado River supplies and is the most prominent modern-day example of this larger-scale policy influence.

Interestingly, while the linkage between California's Bay-Delta and much of the West should be obvious given daily headlines, many in California do not see the connection. To fix the larger problem facing the entire region, California has to resolve the Bay-Delta issues that impact Central Valley Project (CVP) deliveries to our agricultural water users, and SWP deliveries to customers like MWD, the largest supplier of treated water in the United States. That includes modernizing and repairing the conveyance facilities that carry SWP water to Southern California.

CVP and SWP water conveyance facilities also provide management flexibility and allow water to be transferred efficiently around the Valley and to other parts of the state. Unfortunately, subsidence caused by increased groundwater pumping has significantly impacted the carrying capacity of those conveyance systems. That additional groundwater use is happening in large part because Bay-Delta management of CVP and SWP surface water has reallocated that once-reliable supply to other uses. As water supply reliability from the Bay-Delta becomes more uncertain, Southern California municipal and industrial users will increasingly focus on the Colorado River and their other supply sources to meet their demands.

Fixing and modernizing those large CVP and SWP conveyance facilities in the San Joaquin Valley helps water users in Southern California, the Central Valley and the Colorado River Basin.

Mr. HUFFMAN. Thanks very much, Mr. O'Toole. I want to next recognize Mr. Tom Davis, President of the Agribusiness and Water Council of Arizona.

Mr. Davis, welcome to the Committee. You are recognized.

STATEMENT OF TOM DAVIS, PRESIDENT, AGRIBUSINESS & WATER COUNCIL OF ARIZONA, YUMA, ARIZONA

Mr. DAVIS. Thank you, Chairman Huffman, Ranking Member Bentz, and members of the Committee. It is my pleasure to have the opportunity to testify before you today concerning the ongoing drought on the Colorado River.

As you have stated, my name is Tom Davis. I am Manager of the Yuma County Water Users Association. I also serve as President of the Agribusiness & Water Council of Arizona, and also the Yuma County Agricultural Water Coalition.

Arizona agriculture is on the front lines of the current 21-year drought on the Colorado River. And we stand to be impacted the most from the management of this drought. As the result of the first-ever shortage declaration at Lake Mead, Arizona will face an 18 percent reduction in our annual divergence from the Colorado River in 2022. Arizona farmers who receive water from the Central Arizona Project will be hit the hardest. In places like Pinal County, irrigation districts will see a 70 percent reduction in their surface water supplies in 2022, and a 100 percent reduction in these supplies in 2023.

This will result in significant amounts of farmland being fallowed, and the trickle-down effect from reduced farm revenues, jobs, equipment, seed purchases, food production, et cetera.

In addition to major water supply concerns we have, depleted reservoirs and reduced water releases will reduce power generation on the river, reducing electricity available for states like Colorado, Arizona, Utah, and California. This reduced power production, and the need to replace it from other sources, is expected to translate into double-digit increases in electricity rates and potential brownouts during heavy electricity use periods.

Hydropower revenues are used on an annual basis to pay for numerous power costs associated with Federal endangered species programs that Taylor referenced, and other environmental requirements. However, covering these costs through power rates in future years will become a significant hardship, and we would like to work with the Subcommittee on resolving this issue.

Long term, the Agribusiness Water Council and the Coalition are both focusing on working with other water users and the Bureau of Reclamation to ensure the renegotiation of the 2007 Guidelines in managing the river, and set the stage for sustainable, predictable, equitable, and legal operations of the Colorado River system after 2026. As part of this effort, we are working with agriculture water users throughout the Upper and Lower Basin to present a unified set of outcomes we believe must be achieved by the Colorado River Compact decision makers.

These outcomes will be the core principles that underpin our efforts. They are outlined in my written testimony and will be detailed further by a white paper we plan to release later in the year.

Water from the Colorado River is the lifeblood for agriculture in Arizona and throughout the Basin. In Yuma County, water from the Colorado River fuels a $3.4 billion agriculture economy and provides for 90 percent of the U.S. production of leafy green vegetables in the winter months. The Colorado River, delivered through Central Arizona Project, is the reason Arizona is among the top national producers of vegetables, melons, milk, cattle, and other crops.

In order to stretch our water resources even further, we continue to make significant improvements in irrigation system practices and equipment. This includes an outlining using sprinkler and drip irrigation, laser leveling fields, soil moisture monitoring, and efficient water delivery methods by using SCADA, just to name a few.

Farmers are also changing cropping patterns, when economical, to save water.

The national importance of Arizona farmers and ranchers, along with decades of improvement and use efficiencies, are important to understand as we work to address the drought in future water management. This is especially in recent media coverage of the drought that seems to be pushing the narrative that water should be reduced from agricultural use, and provide more water to growing cities and environmental purposes. This is the wrong approach and the wrong solution.

We certainly don't want our food supply to be trapped in supply chain interruptions, as we are currently seeing in this country. We will be happy to work further with other water users in the Basin to develop long-term solutions.

Thank you again for the opportunity to present testimony. I will stand for questions later. Thank you, Mr. Chairman.

[The prepared statement of Mr. Davis follows:]

PREPARED STATEMENT OF MR. TOM W. DAVIS, PRESIDENT, AGRIBUSINESS & WATER COUNCIL OF ARIZONA AND YUMA COUNTY AGRICULTURE WATER COALITION

Chairman Huffman, Ranking Member Bentz and Members of the Subcommittee: Across the Western U.S., farms and communities are experiencing the impacts of severe drought conditions in 2021. For us in the Colorado River Basin (Basin), the

extremely dry conditions this year are especially troubling as they come on the heels of over two decades of below average hydrology. As you know, the Colorado River supplies water and power to over 40 million people and 5.5 million acres of agricultural lands. We appreciate the Subcommittee holding this hearing today and for the opportunity to highlight the importance of the Colorado River in providing drinking water to homes and businesses across seven states and a major component of the secure food supply for our Nation as a whole. This hearing also serves to highlight the immediate steps and long-term principles that are needed to best manage our scarce water resources in the Basin.

The Agribusiness & Water Council of Arizona (ABWC) represents the agricultural community from "ditch bank to dinner plate," in Arizona. Its members include growers, agribusinesses, irrigation and electrical districts, universities and other entities associated with Arizona's agriculture economy.

The Yuma County Agriculture Water Coalition (Coalition)[1] represents irrigated agriculture in the County on policy and budget issues related to the Colorado River Basin and the impacts of those issues on County agriculture. These issues include water supply, aging federal water infrastructure, and other irrigation water related issues of concern with respect to actions and decisions of the federal government.

I also serve as a member of the Advisory Board for the Family Farm Alliance, which advocates for the protection and enhancement of irrigated agriculture in the 17 Western states.

After 21 years of drought, including three of the driest years on record, nearly every storage reservoir in the Colorado River system is experiencing historically low water levels. In addition, Lake Mead levels have led to a shortage declaration for the first time in the Lower Colorado River Basin (Lower Basin), triggering reduced water deliveries to Central Arizona farmers.

While the current drought and future hydrologic conditions—which are expected to be warmer, with more volatility and less snowpack—are daunting, thoughtful water management and infrastructure investments can result in a Colorado River system that works better for everyone and protects U.S. food security. This type of fact-based conversation is especially important now, as recent media coverage is pushing a narrative that seems to suggest Colorado River conditions warrant a reflexive reduction to agricultural water use in order to reserve more water for cities and the environment. That is the wrong approach and the wrong solution.

The willingness by some to dismiss the importance of Western irrigated agriculture is especially troublesome at this moment, just as our country is seeing the vulnerability of our supply chains and facing shortages of goods they want or need. It is unimaginable to think about a time in the future where our food supply could also risk distribution from a pandemic, natural disaster, or at the whim on a foreign country. Yet removing water from farms in the Colorado River Basin and elsewhere in the West will be a step down that exact path. Instead, the urgent situation we currently face elevates the importance of water users coming together to get through the immediate crisis and reject the kind of zero-sum solutions that will come if we allow agriculture to be pitted against other water users over the longer-term.

Agriculture and Water Use in Yuma County and Central Arizona

Arizona agriculture is important to our Nation, providing seasonal availability of produce and significant economic contributions. Additionally, farmers throughout the state continue to improve irrigation practices and equipment. Both these factors provide important context as water users in the Basin work together to manage drought, especially as some continue to rely on old and/or discredited data regarding agricultural water use as the basis to suggest water should be reallocated away from farms.

Yuma County

Yuma County agriculture, made possible by irrigation water from the Colorado River, is important to Arizona's economy and the food supply of the United States. Agriculture contributes nearly $3.4 billion in annual economic activity to Yuma County, which is the third largest vegetable producing county in the nation.[2] During the winter months—from November through March—90% of the leafy vegetables produced in the United States is grown in the Yuma area. Nine processing facilities

[1] Yuma County Agriculture Water Coalition includes the Yuma Irrigation District, Yuma County Water Users Association, Yuma Mesa Irrigation and Drainage District , North Gila Irrigation and Drainage District, Unit B Irrigation and Drainage District, and Wellton-Mohawk Irrigation and Drainage District.

[2] https://www.yumacountyaz.gov/government/county-administrator/economic-development-plans.

prepare two million pounds of lettuce per day for market during these peak seasons. In addition to lettuce and other leafy vegetables, the Yuma area produces over 175 different crops, and is blessed with the favorable conditions that make it a world class location for seed production and other specialty crops.

Even as agricultural production in Yuma County has increased, our farmers have also improved efficiency of their water use. In fact, the rate of water diverted to farms has decreased 15 percent since 1990 and nearly 18 percent since 1975. This increased efficiency has been accomplished through improved water management and infrastructure, and a deliberate shift from perennial and summer-centric crops to winter-centric, multi-crop systems that reduce irrigation during the hottest summer months. For example, farmers and water managers have reduced water use by investing in construction of concrete lined irrigation ditches and high flow turnouts, shortening irrigation runs and installing sprinkler and drip irrigation systems. Additionally, most fields are laser leveled annually and growers utilize press wheels and other management operations to improve water flow across fields. Overall, Yuma growers' average irrigation application efficiencies in the 80–85 percent range.[3]

Central Arizona

Central Arizona has a long history of agricultural production, dating back to the 400's A.D. when the Hohokam civilization used hundreds of miles of irrigation canals to produce in the desert environment. Today, the region is among the top national producers of vegetables, melons, milk, cattle, and cotton, among others. It is also home to important nursery, greenhouse, floriculture, and sod production.[4,5]

Just as when the Hohokam civilization farmed thousands of years ago, irrigation is essential to agriculture in Central Arizona. The need for a reliable water supply for farms and cities in Central Arizona led to the development of several large-scale water projects in the region. The Central Arizona Project (CAP) was built to deliver Arizona's entitlement of Colorado River water to the interior of the state, with the preservation of irrigated farms as one of the primary goals of the project.[6]

The use of irrigation technology continues to grow in this region. For example, the use of sprinkler and microirrigation in Pinal County increased by over 26,000 acres between 2010 and 2015.[7] Additionally, some farmers are experimenting with a change cropping patterns to some less water intensive crops. Similar trends are present in other Central Arizona Counties.

Status and Impacts of Ongoing Drought

As mentioned above, the poor hydrology in the Basin and falling reservoir levels led the Bureau of Reclamation (Reclamation) to declare a shortage in the Lower Basin for the first time in history. Currently (as of September 30), water stored across the entire Colorado River system stood at 41% of total capacity. Reclamation modeling also shows an increasing likelihood that Lakes Powell and Mead will continue to drop, elevating the potential that they could reach critical levels within the next 5 years. This modeling includes a 66% chance that the Lower Basin could reach a Tier 2 shortage (Lake Mead elevation 1050) by 2023 and a 41% chance of a tier 3 shortage by 2025. Tier 3 shortage is triggered when Lake Mead reaches elevation 1025, leaving less than one year of water supply allocation in storage and the point where control and management of the system is lost. Likewise, projections show Lake Powell having a 34% chance of falling to minimum power pool by 2023.

While water cutbacks from the Tier 1 shortage will not hit Yuma County water users' senior rights in the Basin, they will result in the significant cutbacks for farmers in Central Arizona. Under the 2007 Colorado River Interim Guidelines and the 1944 Water Treaty with Mexico, Lake Mead will operate under shortage status for the entirety of calendar year 2022. This includes required reductions and contributions for each individual state forming the lower basin. These requirements include about 18 percent of Arizona's annual apportionment, 7 percent of Nevada's annual apportionment and 5 percent of Mexico's annual apportionment. The cuts will be the largest to date on the River, and will hardest hit farmers who receive water from the Central Arizona Project (CAP), who are further preparing for their supplies to be entirely shut off in 2023.

These reductions will hit growers in Pinal County especially hard. Pinal County irrigation districts will face up to 70% reductions in surface water supplies in 2022

[3] https://www.agwateryuma.com/wp-content/uploads/2018/02/ACaseStudyInEfficiency.pdf.
[4] https://economics.arizona.edu/file/1817/download?token=Qw1qWZ6A.
[5] https://economics.arizona.edu/file/1821/download?token=GCidVv9V.
[6] https://library.cap-az.com/documents/departments/finance/Agriculture_2016-10.pdf.
[7] https://economics.arizona.edu/file/1821/download?token=GCidVv9V.

and 100% reductions in 2023. Initially, excess water available in the CAP system was going to provide a lifeline until 2030, but the Tier 1 shortage declaration has accelerated the impacts which will now hit next year. The districts are intensely planning how best to deliver their remaining groundwater supplies but face challenges due to lack of adequate infrastructure and resistance from those who oppose increased groundwater pumping in the County. Significant amounts of farmland will need to be fallowed resulting in reduced farm revenues, jobs, equipment and seed purchases, and food and fiber production. This is the face of drought in the Lower Colorado River Basin.

Beyond the curtailments in 2022, the troubling projections for Lake Mead levels may accelerate actions to protect lake levels. The ABWC and Coalition are open to constructive solutions designed to protect the Colorado River system and comply with the 2019 Drought Contingency Plan (DCP) requirement for elevation 1030 consultations that were triggered by this recent modeling. Instead of looking to irrigated agriculture in the Basin as a reservoir for future municipal, industrial and environmental water supplies, we must ensure long term equitable success in these discussions by including agricultural water users at the negotiating table from the beginning.

Drought Related Power Impacts

In addition to significant water supply concerns, decreased hydropower generation and the resulting increased replacement electricity costs are compounding the impact of the ongoing and historic drought in the Basin. Depleted storage and reduced water releases continue to reduce the amount of hydropower produced at the Hoover Dam, Colorado River Storage Project (CRSP), and Parker-Davis projects, along with the revenue available to support significant non-power costs assigned to power users.

The impact of this reduced generation to our members is two-fold and will translate into sudden, double-digit percentage electricity rate increases. First, because federal hydropower customers are responsible for paying all capital and operational costs associated with generation and transmission of energy at these facilities, along with environmental and non-power expenses that have been assigned by federal statute, decreased generation means those costs are spread over fewer megawatt hours resulting in higher rates per kilowatt hour. Second, replacement power must be secured to make up for reduced hydropower generation, an impact compounded by the current high price of electricity on the open market driven by persistent heat waves, the loss of generation facilities in the region, and other factors.

The Western Area Power Administration (WAPA) has communicated that Hoover, CRSP and Parker-Davis customers should expect the cost of replacement power alone to exceed over $130 million in 2022. Colorado River project customers now will face unprecedented volatility and uncertainty that erodes the benefits of recently signed long-term power contracts (40–50 year) and threatens the economic viability of these projects.

One option to mitigate drought related hydro impacts is to temporarily provide drought relief appropriations or other funds to be used in lieu of hydropower revenues to cover non-power costs on a non-reimbursable basis. Over many years, Hoover, Parker-Davis, and CRSP hydropower ratepayers have contributed significant revenues to the Lower Colorado River Basin Development Fund and Upper Colorado River Basin Fund to cover important non-power Reclamation programs and costs. The programs funded by these revenues are fundamentally federal responsibilities and requirements, and include aid to irrigation, environmental and endangered species recovery programs, the Colorado River Salinity Control Program, and others. While these annual expenses can be absorbed in normal water years, requiring hydropower customers to pay for these federal programs while confronting the massive additional costs expected due to the extreme drought conditions and difficult power market conditions is a significant financial hardship.

Colorado River Reconsultation

At the same time we are responding to the water and power impacts of our existing drought conditions, the Basin States, irrigation managers, water agencies, Native American tribes, nongovernmental organizations, and other stakeholders are beginning the hard work of replacing the 2007 "Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead" that expire in 2026. This new set of Guidelines will largely govern how Colorado River water is managed over the coming decades and negotiations will involve many difficult decisions and creative solutions.

As these efforts get underway, members of the ABWC and Yuma County Agricultural Water Coalition are working with agricultural water users throughout

the Upper and Lower Basins to ensure that farming and ranching is properly considered in negotiations. There will inevitably be disagreements between stakeholders as reconsultation negotiations progress. However, we are we are working together to present fundamental expectations of the reconsultation and are nearing agreement on the following set of outcomes that we believe Colorado Compact decision makers must achieve in the next set of produce operating guidelines:

1. Recognize that Western irrigated agriculture is a strategic and irreplaceable national resource.
2. Provide certainty to all users and interests with equitable apportionment decisions made from a foundation of state water law, common sense and fairness.
3. Address critical data gaps to facilitate the trust needed to make fair operational and legal decisions related to the next set of Interim Guidelines.
4. Manage Lake Mead to provide the Lower Basin's share of the Colorado River Compact water to Lower Basin users. Manage Lake Powell to meet both the Colorado Compact obligations to the Lower Basin and protect the Upper Colorado River Compact obligations to the four Upper Basin states.
5. Expand supply augmentation opportunities as options for meeting growing water demands, at a time when Colorado River supplies appear to be diminishing.
6. Emphasize that future urban growth cannot be encouraged without locking in sustainable and diverse water supplies.

These outcome expectations build off the policy principles developed by Basin agriculture interests in the Family Farm Alliance's 2015 publication entitled "Colorado River Basin Water Management: Principles and Recommendation." These principles include:

1. State water laws, compacts and decrees must be the foundation for dealing with shortages.
2. Water use and related beneficial use data must be accurately measured and portrayed.
3. Benefits of water use must reflect all economic/societal/environmental impacts.
4. True costs of transferring water away from irrigated farms in a managed system like the Colorado River through land fallowing must be accurately accounted for, including unintended consequences and third-party impacts. Understanding these costs will assist in determining the fair value of any land fallowing proposal.
5. Agricultural water conservation can help stretch water supplies, but has its limits.
6. Public sentiment supports water remaining with irrigated agriculture, and developing strategic water storage opportunities as insurance against shortages.
7. Technologies for water reuse and recycling are proven effective in stretching existing supplies for urban, environmental and other uses.
8. Urban growth should not be permitted in the future without locking in sustainable and diverse water supplies, and using irrigated agriculture as the reservoir of water for municipal growth is not sustainable in the long run.

Making strategic decisions based on these outcome expectations and policy principles will prevent any systemic and permanent reallocation of irrigation water to urban or environmental use. Such a reallocation would not only harm U.S. food security and reduce the employment, cultural, and environmental values of agricultural lands and rural communities in the Basin, it would also reduce drought resilience for urban water users in the Basin. By reducing the agricultural water supply that could be made available to urban use on a temporary and voluntary basis to respond to emergency shortages and incorporating it into base supplies that are relied upon annually by growing urban populations, we will essentially harden urban demand to the point that there will be no flexibility during years of shortage. This outcome would create tensions between urban and agricultural water users ending up in a zero-sum game of urban versus rural in the Basin.

Conclusion

Thank you for holding this important hearing and for the opportunity to testimony on behalf of ABWC and the Coalition. The path out of the current drought

and long-term management challenges on the Colorado River will be a long one and will be successful if a transparent and collaborative process is undertaken. To accomplish this, Arizona agriculture—along with agricultural producers throughout the Basin—must have a place at the table from day one and the full value of irrigated agriculture for food production, responsible water management, rural economies, and the environment must be considered. The Coalition understands the growing water needs in the Basin and supports augmenting existing supplies in a strategic way that avoids targeting reallocation of low-cost sources including transfer of agricultural water without consideration of the true costs and consequences of such a reallocation.

Agricultural water users have always stepped up to work constructively with other stakeholders to find lasting solutions. We look forward to working with the Basin States and this Subcommittee to do so again in the future.

QUESTIONS SUBMITTED FOR THE RECORD TO MR. TOM DAVIS, PRESIDENT, AGRIBUSINESS & WATER COUNCIL OF ARIZONA

Questions Submitted by Representative Costa

Question 1. In the hearing, I asked about how repairing conveyance infrastructure in other basins outside of the Colorado River could benefit management of the Colorado River but also the State Water Project and Central Valley Project. Since we had limited time in the hearing, I would like to give you the opportunity to provide written responses to this question: Could you explain how improving or repairing conveyance infrastructure in basins outside of the Colorado River could help with regards to managing the Colorado River's demands?

Answer. Metropolitan Water Project of Southern California has multiple sources for its water supply. Water pumped from the Colorado River and water imported from northern CA are two of these sources. Logically the more water imported from northern CA the less Colorado River water Metropolitan would be required to pump. I understand Metropolitan is having infrastructural problems getting its water through the Sacramento River delta area. There have been designs for a tunnel transport or a bypass canal transport of moving water through the delta. If an efficient transport of Metropolitan water through the delta can be constructed, possibly less Colorado River would be required to serve its supply.

Mr. HUFFMAN. Thank you, Mr. Davis. Before we go to our next witness, let me just clean up a little housekeeping item that I had meant to address in my opening remarks.

We would like for Representative Susie Lee of Nevada and Paul Gosar of Arizona to join us today as part of the hearing to ask questions of the witnesses.

So, hearing no objection to that, it is so ordered.

We had intended to have Congressman Joe Neguse introduce our next witness, who is Ms. Anne Castle, a senior fellow at the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment at the University of Colorado.

Mr. Neguse sings your praises, Ms. Castle, and regrets that he is unable to be here for that introduction. But I want to pass along his best wishes and recognize you to testify for the next 5 minutes. Thank you, and welcome to the Committee.

STATEMENT OF ANNE CASTLE, SENIOR FELLOW, GETCHES-WILKINSON CENTER FOR NATURAL RESOURCES, ENERGY AND THE ENVIRONMENT, UNIVERSITY OF COLORADO, BOULDER, COLORADO

Ms. CASTLE. Thank you, Chairman Huffman, and good morning, Ranking Member Bentz, and members of the Subcommittee. Thanks very much for the invitation to testify.

My work focuses on western water policy issues, and particularly the Colorado River. From 2009 to 2014, I was the Assistant Secretary for Water and Science at the Department of the Interior.

The Colorado River Basin has been the lightning rod for climate change shocks to the water system. Last year, Lake Powell's water levels dropped more than 50 feet, and that represents a loss of over 4 million acre-feet of water in just 1 year. If we have another year like the one we just had, Lake Powell's level will drop below the hydropower turbines in Glen Canyon Dam. So, in less than a year from now, there wouldn't be any power generation at Lake Powell, and the Upper Basin's ability to continue to meet its obligations under the Colorado River Compact could also be in jeopardy soon after that. And even that scenario could be optimistic.

You have heard about the substantial and really exemplary efforts of the states, Interior, and the major water users in increasing their conservation, releasing water from upstream reservoirs, working on additional recycling, and a whole lot of other good work. And this Committee is funding proposals for the Salton Sea, and large-scale reuse projects will also help to bring balance to the system.

But despite all those efforts, the reservoirs continue to decline. What we have is a water imbalance—a math problem, as you put it last week, Chairman Huffman. And there is really no getting around the fact that this means that everybody has to use even less water, just as Mr. Costa said.

So, we need a plan that shares the burden of these reduced supplies, but does it in a way that promotes equity among the states, between the Upper Basin and the Lower Basin, among the various sectors of the economy, including the agricultural sector, and with the Native American tribes. And the Colorado River Basin has a history of coming together around collaborative agreements for management of the river, and the water leaders in this Basin have been rightly celebrated and admired for their collaborative efforts and the results.

If you look at those past agreements, there are two ingredients they all had in common. One was hydrology. It has to get really bad before there is sufficient motivation to act. And the other common ingredient is a directive or a deadline from the Department of the Interior. Both of those factors were critical in spurring the agreements that led to the 2007 Guidelines and the Drought Contingency Plans.

Well, we certainly have the bad hydrology right now, but there has not been a directive or a deadline from Interior, or a default plan that could go into place if the collaborative agreement that everybody wants doesn't come together quickly enough. So, the point I want to emphasize is the need for speed.

The urgency of what we are experiencing, and the rapid declines in the reservoirs mean that we need all the available tools to be deployed. And you have heard about a lot of those tools. It is just not clear that the river will allow the current pace of discussions to continue without devastating consequences.

I also want to mention the need to ensure that all tribal communities in the Colorado River Basin have clean and safe water to drink. We have a window of opportunity with the infrastructure bill to make meaningful progress. And the funding that is provided there is absolutely essential to close the gaps in drinking water infrastructure in Indian Country. We owe it to these communities to provide them with the same basic level of service that most Americans take for granted.

Thank you again for the invitation to speak today, and I look forward to your questions.

[The prepared statement of Ms. Castle follows:]

PREPARED STATEMENT OF ANNE CASTLE, SENIOR FELLOW, GETCHES-WILKINSON CENTER, UNIVERSITY OF COLORADO LAW SCHOOL

Chairman Huffman, Ranking Member Bentz, and Members of the Subcommittee, Thank you for the invitation to testify on this important subject of shrinking flows in the Colorado River and the necessary response. My name is Anne Castle and I am a Senior Fellow at the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment at the University of Colorado Law School. I am an attorney who focuses on western water policy and, from 2009 to 2014, I was the Assistant Secretary for Water and Science at the U.S. Department of the Interior.

Colorado River Declining Flow and Responses

The Colorado River is the lightning rod for climate change impacts on water resources. Impacts in this basin have been relentless and dramatic.

Since the start of the 21st century, the river's flows declined by 20 percent compared to the 20th century average. The reservoirs have dropped as a predictable result, from 95 percent full at the end of the 20th century to 32 percent full at the end of September 2021.

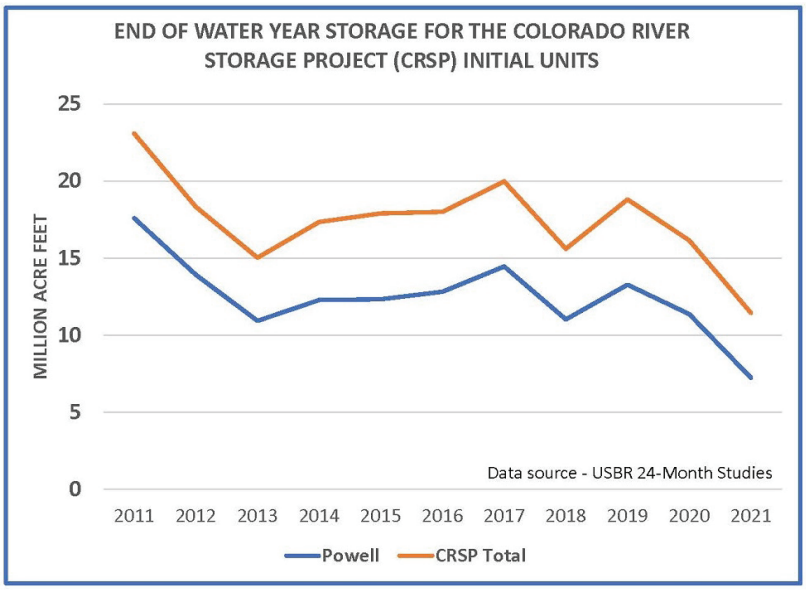
The reservoirs' declines have come despite significant reductions in water use among U.S. users in the Lower Colorado River Basin and Upper Basin users never expanding into their full legal allocation. The best available data suggests water use in the basin is declining. The 1922 Colorado River Compact and subsequent statutes and court decisions allocated 7.5 million acre feet of water each from the Colorado's mainstem for the river's Upper and Lower Basins. From 2011–2020, the Lower Basin average use was 7.2 million acre feet of water, while the Upper Basin averaged 3.9 million acre feet of use from 2009–2018.

Notwithstanding users taking less than they were originally allotted, the major reservoirs have continued to decline because of an imbalance between 20th century expectations of how much water use the river could support and the 21st century reality. Last month, the U.S. Bureau of Reclamation's projections posited a 41 percent chance that Lake Mead could drop to less than one quarter full by 2025, and a 34 percent chance that Lake Powell could drop so low that water would no longer be able to reach its power-generating turbines as soon as 2023. It is also important to note that many tribal water rights in the basin have not yet been fully developed but likely will be in the future, putting additional stress and uncertainty on an already over-allocated system. Nor have environmental or ecosystem needs been historically accounted for as part of the overall system water balance.

Hydropower generation has been and continues to be an important element of the Colorado River system of dams and reservoirs. This system can supply approximately 4,200 megawatts of energy annually, reducing the use of fossil fuels in the area. The value of the hydropower produced at Glen Canyon Dam alone has been estimated to average over $150 million annually. But hydropower production at Glen Canyon has decreased by approximately 16% since the year 2000, and further reductions across the system are anticipated because of lower inflows and releases. The loss of this power generation not only affects customer rates but also ripples through many different sectors as power revenues support the operation of and

repayment for other Reclamation water projects, environmental programs (e.g., Upper Colorado and San Juan endangered fish recovery programs and basin-wide salinity control), and the Glen Canyon Dam Adaptive Management Program.

The chart below shows the progression of storage levels in Lake Powell (in blue) and in the entire system of Colorado River Storage Projects reservoirs in the Upper Basin (in orange). The plunging levels over the last two years signal the need for rapid action to prevent further unsustainable losses in these critical water savings accounts.



Action Urgently Needed

Lake Powell dropped over 50 feet in the water year that ended three weeks ago. That represents a loss of over four million acre feet of water in just one year. If we experience another year like the one we just had, Lake Powell's level will drop below the hydropower turbine intakes. So in October 2022, there would be no hydropower generation at Lake Powell. And the Upper Basin's ability to meet its obligations under the Colorado River Compact could be jeopardized soon thereafter. That's just one year from right now, if this hydrology continues.

We should not allow that to happen.

The Colorado River Basin has a history of coming together around collaborative agreements that govern the management of the river. The basin state leaders and major water users are rightly celebrated and admired for that work and results, and the testimony of the witnesses at this hearing have emphasized that collaboration.

If you look at the agreements on river management reached collaboratively in the past, there were two ingredients they all had in common. One was hydrology—it has to get really bad before there is sufficient motivation to act. The other common ingredient is a directive or a deadline or a default plan from the Department of the Interior.

In 2004, Interior officials warned the Lower Basin states that cutbacks in deliveries would be unilaterally imposed unless the states came to agreement. In 2005, Secretary of the Interior Gale Norton directed Reclamation to develop a plan to address low reservoir conditions. A collaborative agreement came together in 2007 with the adoption of the Interim Guidelines, eliminating the need for the implementation of the federal plan.

Another example occurred in 2013, when continued low flows in the river revealed that the 2007 Interim Guidelines provisions were not sufficient to halt the declines in the reservoirs. Secretary Sally Jewel told the states to come up with additional plans to address the impacts of climate change. She stated that she had a responsi-

bility to take action if the states did not. That directive spurred the discussions that ultimately resulted in the Drought Contingency Plans.

But those plans still hadn't come together five years later. So in 2018, Commissioner of Reclamation Brenda Burman warned that unless the states were able to come to agreement by the end of January 2019, Reclamation would develop and implement a plan on its own within the year. The states cleared the way shortly thereafter and the DCPs were put in place later in 2019.

All of those previous collaborative agreements were facilitated by terrible hydrology and a directive or deadline from Interior. We certainly have the bad hydrology right now, but there has not yet been a federal directive or default plan that would go into place if the states are not able to act quickly enough.

The Basin States and Interior are certainly focused on addressing the deteriorating hydrology and rapidly declining reservoir levels. Emergency drought response operations are being implemented now in the Upper Basin to raise water levels in Lake Powell. But this effort will boost the elevation by only 3 feet at a time when the reservoir experienced a decline of 50 feet in just one year. Work is continuing on a longer-term plan for drought response operations, but it will likely not be in place for another year. Consultation is beginning between the Lower Basin states and Interior, triggered by the provisions of the Lower Basin Drought Contingency Plan and the declining levels in Lake Mead, concerning additional measures to be taken to protect against catastrophic further declines.

Interior is also devoting very substantial funding to its drought relief efforts, including payment of compensation to induce water users to forego use and allow the conserved water to remain in the system. The bipartisan Infrastructure Investment and Jobs Act, H.R. 3684, would provide the Bureau of Reclamation with tremendous additional funding of $8.3 billion to address infrastructure, conservation, drought, and climate change. This Committee's proposals in the budget reconciliation bill (Build Back Better Act) will add to Reclamation's abilities. This funding will undoubtedly assist greatly in contributing to conservation and improved infrastructure that will help the basin adjust to the new normal.

There is an ongoing healthy debate about population projections in the Colorado River basin states and the resulting water demand. Issues concerning realistic population growth, forecasts of water demand as compared to historical actual usage, and additional water development anticipated by the Colorado River Compact have all received considerable attention. But the simple fact remains that the Colorado River system is limited by supply and any additional demands imposed on the system reduce the amount available for existing uses.

The Colorado River system is in a state of imbalance. What is needed is a plan for sharing the burden of reduced supplies, one that recognizes the diverse economic and investment-backed interests at stake, but also provides equity among the Basin States, between the Upper Basin and the Lower Basin, and for the Native American tribes.

Imposition of a federally designed river management system is not a good outcome. A solution that reflects robust give and take among the states, tribes, and water users is a far better result. But state officials are challenged by their need to protect multiple interests with sometimes competing priorities, and progress toward collaborative solutions can be slow. The ongoing investigation of demand management in the Upper Basin reflects those challenges and the consequent lack of speed. It is unclear whether the river will allow the current pace to continue without devastating consequences.

The healthy and understandable dislike of unwelcome federal interference in river operations provides rich motivation to states, tribes, and water users to reach their own agreement.

Having a default alternative to work against can provide additional motivation to reach agreement on difficult compromises in a timely manner. Federal directives have been most effective when they establish explicit goals and deadlines. The point is not to determine winners or losers but to provide one option designed to address and mitigate the devastating impacts of a shrinking river. Other options may prove more acceptable to the states, tribes, and major water users and, if so, should definitely be adopted.

The urgency of reaching such an agreement cannot be overstated. The relentless declines in reservoirs levels are occurring despite heroic efforts by states, tribes, and water users to conserve, to develop alternative sources of water, and to use water more efficiently. Unfortunately, this means that the available options for addressing the deteriorating conditions are narrowing. If the storage levels decline further, the amazing resource and flexibility provided by the Colorado River's huge reservoirs as water savings accounts will disappear. Action is necessary now to maintain

equilibrium in the system and take advantage of the relatively small amount of stored water cushion that remains.

Universal Access to Clean Drinking Water for Tribal Communities

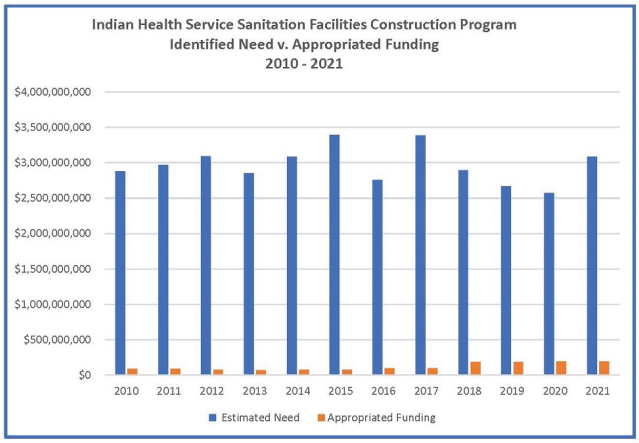
In the context of water issues in the Colorado River basin, it is critical to include the necessity of addressing the ongoing lack of access to clean and safe drinking water for Native Americans. The need and obligation to ensure that all tribal communities have clean water to drink cannot be overemphasized. We have a window of opportunity with the infrastructure bill and other funding vehicles to make meaningful progress, and we owe it to these indigenous communities to provide the same level of basic service that most Americans take for granted.

The coronavirus pandemic has tragically highlighted the vast and long-standing inequities facing Tribal communities, including disparities in water access. According to the Centers for Disease Control and Prevention (CDC), American Indians and Alaska Natives are more likely than any other ethnic or racial group to be hospitalized or die from COVID. Limited access to running water is one of the main factors contributing to this elevated rate of incidence. According to the U.S. Water Alliance, Native American households are 19 times more likely than white households to lack indoor plumbing. Without a safe, reliable, affordable, and easily accessible water supply, these households are unable to meet basic personal hygiene, food preparation, domestic cleaning, and other needs required for good health.

"Water is essential to every aspect of household and community life and the economy," as recognized by the American Society of Civil Engineers. Yet many tribal communities still do not have access to clean and safe water. This lack of access reflects historical and persisting racial inequities that have resulted in health and socio-economic disparities. "Race is the strongest predictor of water and sanitation access," with Native Americans more likely than any other group to face water access issues.

At least seven different federal agencies provide some type of funding for tribal drinking water or sanitation projects through over 20 different programs. The primary agencies involved in water related projects include: Indian Health Service through its Sanitation Facilities Construction Program; Environmental Protection Agency through its Drinking Water Infrastructure Grants—Tribal Set Aside and Clean Water Act—Tribal Set Aside programs; U.S. Department of Agriculture's Rural Development program; and U.S. Bureau of Reclamation as directed by Congress.

The Indian Health Service's Sanitation Facilities Construction Program is the effort most directly aimed at ensuring that tribes have clean drinking water infrastructure. This program, like many of the others listed above, has been historically underfunded. The chart below shows the discrepancy between the unmet need for water and sanitation facilities in Indian country as estimated by the Indian Health Service and the annual appropriations for the program.



The Tribal Access to Clean Water Act of 2021, S. 2369, would provide funding for each of the primary agency programs aimed at righting this long-standing wrong. The full current amount of estimated need for Indian Health Service construction funding, $3.5 billion, is included in the bipartisan Infrastructure Investment and Jobs Act, H.R. 3684. This funding is an absolute necessity for Indian country.

But the need doesn't stop with construction funding. These systems, whether new or existing, need to be operated by qualified personnel and maintained in a manner that preserves their functionality. Multiple tribes have attested to the desperate need for operation and maintenance support, even for new facilities, as the remote nature of many of these systems makes them expensive to maintain and the available resources within tribal communities to support ongoing costs can be lacking. Tribal communities do not have access to the same sources of funding as other municipal water providers, lacking the ability, for example, to impose property taxes on their lands for the purpose of funding and maintaining capital infrastructure.

The Indian Health Service has authority to provide O&M assistance (25 U.S.C. 1632(b)), but that authority has never received funding. The authorizing statute contemplates the need for O&M assistance "to protect the Federal investment in tribal sanitation facilities." The unprecedented amount of funding for construction and repair of these facilities through the bipartisan Infrastructure Investment and Jobs Act underscores the need to protect that investment and ensure sustainable operation of these systems. IHS technical assistance will help fill the gaps in tribal capacity to design, operate, and maintain appropriate water and wastewater disposal systems.

As provided in S. 2369, $500 million is needed to fund the IHS authority to provide operation and maintenance assistance to tribal communities for water and wastewater infrastructure. Further funding is necessary for tribal technical assistance, to allow tribes to participate in the planning of the needed systems and to ensure that tribal members are developing the technical skills required to take over the operation and maintenance of both the physical systems and the governance structures. S. 2369 would provide funding for the existing technical assistance programs in IHS and the Bureau of Reclamation in the amounts of $150 million and $90 million, respectively. These needs are not currently funded in either H.R. 3684 or the budget reconciliation (Build Back Better) bill, but they should be.

In addition to funding, it is also necessary to ensure that the work of the various federal agencies that have tribal water programs are coordinated in their approach and committed to the goal of providing universal clean water access in Indian country. The solutions for each tribal community will be site specific and a "whole of government" approach is required to take advantage of the strengths of each relevant agency. Tribes understandably lack the resources, both human and financial, necessary to navigate all the potentially applicable federal programs and access them successfully. To fully realize the goal of universal access to clean water, the federal government must internalize the responsibility of assessing the unique tribal needs, determine through consultation and recognition of tribal sovereignty which programs can provide the necessary support, assist the tribes in navigating those programs, and help to implement the infrastructure and services needed on the ground. Throughout this process, federal personnel should ensure that designated tribal members are developing the technical skills required to take over the operation and maintenance of both the physical systems and the governance structures.

Tribes have not historically been included in negotiations and agreements concerning Colorado River management. The principals in the Basin States and federal agencies have committed in good faith to correcting that omission. Ensuring that tribal communities in the Basin have universal access to clean and safe drinking water should be considered a foundation for any future agreements.

A window of opportunity has opened to address drinking water insecurity in Indian country. It is critical that action be taken before that window closes and these issues are allowed to languish for another decade or even another generation.

Thank you for the opportunity to testify before the Subcommittee on this important subject. I look forward to your questions and further discussion.

QUESTIONS SUBMITTED FOR THE RECORD TO MS. ANNE CASTLE, SENIOR FELLOW, GETCHES-WILKINSON CENTER FOR NATURAL RESOURCES, ENERGY AND THE ENVIRONMENT, UNIVERSITY OF COLORADO

Questions Submitted by Representative Napolitano

Question 1. In your testimony, you say that "ensuring that tribal communities in the Basin have universal access to clean and safe drinking water should be considered a foundation for any future Colorado River agreements."

(a) Can you explain why you recommend linking the two critical issues of: securing clean water for tribes, and creating a meaningful role for tribes in Colorado River discussions?

Answer. Because access to clean drinking water is a fundamental component of human life, it is not surprising that Colorado River Basin leadership supports achievement of the goal of universal access, as has been affirmed by the Western States Water Council and by the Governor's representatives of the Colorado River Basin States in their testimony to this Subcommittee on October 15, 2021. The Basin States and the Department of the Interior have also committed to meaningful inclusion of Tribes in discussions and negotiations concerning management and operation of the river and reservoirs. The 30 tribal nations in the Colorado River Basin will determine exactly what interests and demands they will seek to have considered in future Colorado River agreements, and I do not presume to speak for them. However, regardless of whether universal access to clean and safe drinking water is a specific point of negotiation in Colorado River management discussions, it should be considered foundational to a broader recognition of equity throughout the basin.

Questions Submitted by Representative Stansbury

Question 1. In your testimony, you noted that at least seven Federal agencies provide some type of funding for Tribal drinking water or sanitation projects through over 20 different programs. How can the Federal Government better consult with Tribes and improve programs to address Tribal water needs?

Question 2. How can Reclamation make programs such as WaterSMART more accessible to Tribes and Pueblos and small rural communities where the local cost share requirement is prohibitive?

Answer. A coordinated federal approach to deploying the unprecedented funding provided by the Infrastructure Investment and Jobs Act is essential to effective use of these resources and achieving the goal of universal access to clean drinking water in Tribal communities. A report recently released by the Water & Tribes Initiative (Admin Reform Report) describes in specific detail the barriers to optimal deployment of funding to support universal access to clean water in the programs of the Indian Health Service, EPA, USDA-Rural Development, and the Bureau of Reclamation and provides recommendations for operational, administrative, policy and regulatory reforms.

The Admin Reform recommends a "whole of government" approach to maximize the capabilities of each of these agencies and provides a roadmap for implementing that approach, including the establishment of a Cross-Agency Priority Goal by the executive branch and reinvigorating the Federal Tribal Infrastructure Task Force established in 2007 but dormant during the last Administration. Tanya Trujillo, Assistant Secretary for Water and Science at the Department of the Interior, also recommended the use of this task force in her testimony to this Subcommittee on Nov. 4. In October 2021, the EPA Office of Water issued its report on Strengthening the Nation-to-Nation Relationship with Tribes to Secure a Sustainable Water Future Action Plan, which also indicates its support for this task force (which EPA heads) and for renewing the Memorandum of Understanding that created the task force.

The Admin Reform Report provides specifics on appropriate changes to the federal agency programs that will enhance the agencies' abilities to effectively utilize the new funding made available by the IIJA and eliminate constraints on assistance that are no longer necessary. The Report also makes recommendations for the enhancement of Tribal consultation in connection with identifying appropriate solutions to lack of access to clean water in the Tribal communities and improving Tribal capacity to operate and maintain these systems over the long term.

The requirements for a local cost share in many of the federal programs addressing safe and clean drinking water have presented prohibitive barriers to Tribal use in the past. The report referenced above recommends elimination of at

least some of those cost share requirements. With respect to the WaterSMART program, authority for this program is provided by Section 9504 of P.L. 111-11, 42 U.S.C. 10364. That law provides that the federal share of the cost of any infrastructure improvement or activity supported by a WaterSMART grant may not exceed 50 percent of the cost of the infrastructure improvement or activity. Reducing the cost share requirement for WaterSMART grants to Tribes would require a statutory amendment. This should be considered as it is unfortunately true that funding available to Tribes for water infrastructure may frequently go unused because the associated cost share requirements cannot be met.

Questions Submitted by Representative Neguse

Question 1. Earlier this year, I introduced a resolution that recognizes the critical importance of access to reliable, clean drinking water for Native Americans and Alaska Natives, and confirms the responsibility of the Federal Government to ensure such water access.

(a) What are the barriers that prevent a whole of government approach to solving this tragic problem of water access for Tribal communities?

(b) What steps can Congress take to invest in universal access to clean drinking water in Indian Country?

Answer. Thank you Rep. Neguse for your introduction of House Resolution 320, recognizing the critical importance of access to reliable, clean drinking water for Native Americans and Alaska Natives and confirming the responsibility of the Federal Government to ensure such water access. All of the testimony of witnesses at the hearing of this subcommittee on November 4, 2021 supported H. Res. 320 and the concepts it propounds.

As documented in the report of the Colorado River Water and Tribes Initiative on Universal Access to Clean Water for Tribal Communities, there are at least seven different federal agencies with over twenty different programs that provide some type of drinking water or sanitation funding for Tribes. Each agency has unique strengths and challenges in effectively implementing its programs to address some or all of the forms of lack of access to clean drinking water in Indian Country. Every program provides different types of assistance and levels of funding, and has its own eligibility, cost share, and application requirements. The multiplicity of programs and requirements creates a very difficult navigational challenge for Tribal communities and water/wastewater providers. Limited historical funding for these programs has also meant that the responsible agencies have prioritized and circumscribed the projects and efforts to which agency funding will be directed. These limitations are not necessary or appropriate now with the infusion of funding for these programs in the Infrastructure Investment and Jobs Act (IIJA).

A new report released on November 16, 2021 by the Water & Tribes Initiative (Admin Reform Report) describes in specific detail the barriers to optimal deployment of funding to support universal access to clean water in the programs of the Indian Health Service, EPA, USDA-Rural Development, and the Bureau of Reclamation, and provides recommendations for operational, administrative, policy and regulatory reforms. This report recommends a "whole of government" approach to maximize the capabilities of each of these agencies and provides a roadmap for implementing that approach, including the establishment of a Cross-Agency Priority Goal by the executive branch and reinvigorating the Federal Tribal Infrastructure Task Force established in 2007 but dormant during the last Administration. Tanya Trujillo, Assistant Secretary for Water and Science at the Department of the Interior, also recommended the use of this task force in her testimony to this Subcommittee on November 4. In October 2021, the EPA Office of Water issued its report on Strengthening the Nation-to-Nation Relationship with Tribes to Secure a Sustainable Water Future Action Plan, which also indicates its support for this task force (which EPA heads) and for renewing the Memorandum of Understanding that created the task force. The Admin Reform Report provides specifics on appropriate changes to the federal agency programs that will enhance the agencies' abilities to effectively utilize the new funding made available by the IIJA and eliminate constraints on assistance that are no longer necessary.

Congress can ensure that the funding provided by the IIJA for Tribal access to clean drinking water is appropriately and expeditiously utilized and effectuates real solutions on the ground. Oversight hearings on the deployment of this funding can be useful to establish deadlines and spur progress. The House Natural Resources Committee can require accountability and request regular reporting on plans for deployment of funding and progress made. Specific milestones and metrics can be established, e.g., number of Tribal households newly provided with access to clean

water, number of households where the reliability of water supply was substantially improved, etc.

In addition, funding is required to support operation and maintenance (O&M) of clean and safe drinking water systems for Tribal communities. Multiple Tribes have attested to the desperate need for O&M support, even for new facilities, as the remote nature of many of these systems makes them expensive to maintain and the available resources within Tribal communities to support ongoing costs can be lacking. The Indian Health Service is currently authorized to directly provide O&M support for Tribal water, sewage, and solid waste systems (25 U.S.C. 1632(b)). However, Congress has never appropriated any funding for IHS to provide assistance to Tribes for the day-to-day expenses related to effectively running a drinking water system. This funding should be appropriated in the amount of $500 million, as provided in S. 2369, the Tribal Access to Clean Water Act of 2021. IHS should also develop a method of identifying any systems in service that have ongoing challenges meeting their long-term O&M costs.

Question 2. You mentioned in your testimony the existing history of officials in the Colorado River Basin and the Federal Government coming together to develop plans and address the low water levels in the basin in the past, but that there has not yet been a similar agreement reached for this year, despite the impending water cutbacks that will begin in January of next year for Lower Basin states.

(a) What additional action should the Federal Government take in order to support these collaborative efforts?

(b) How do we ensure that all states, tribes, and communities that will be impacted will be represented in those discussions?

Answer. As my testimony pointed out, directives or deadlines from the Secretary of the Interior to the Colorado River Basin States have been critical in the past to spurring agreement among the States and interested water users. In some cases, the Secretary proposed a default plan that would go into place if the collaborative agreement everybody wants did not come together quickly enough. That has not yet occurred in connection with the crisis now unfolding in the Colorado River Basin with precipitous declines in the major reservoirs and low flows in the river. The urgency of what the river basin is currently experiencing and the rapid declines in the reservoirs mean that we need all available tools to be deployed. It is simply not clear that the river will allow us to continue the current pace of discussions without devastating consequences.

There are multiple communities that are affected by agreements concerning the operation and management of the Colorado River, and the impacts on those communities must be considered in any proposed management regime. Because of the significant quantum of water owned or controlled by Tribal communities and their historical exclusion from these discussions, however, it is particularly critical that a formal process be followed to ensure Tribal participation. Daryl Vigil of the Jicarilla Apache Tribe in his testimony to this Subcommittee on Day One of this oversight hearing on Oct. 15 suggested the formation of a Sovereign Governance Team that would include the sovereigns in the Colorado River Basin (both states and Tribes) and provide a forum for substantive discussions. This or some similar type of formal structure would integrate tribes in a meaningful way into planning and problem-solving before decisions are made and provide an opportunity for all stakeholders, experts, and the public to be more meaningfully involved in an inclusive, open, and transparent process. I support this concept and the proposal for a formal structure to ensure meaningful involvement.

Mr. HUFFMAN. Thank you very much, Ms. Castle.

I want to remind Members that Committee Rule 3(d) imposes a 5-minute limit on questions, and the Chair will now recognize Members for any questions they may have.

I will start by recognizing myself for the first 5 minutes of questions.

Mr. Hagekhalil, I would like to begin with you. Thanks for your testimony, and I have appreciated the testimony we have heard about the regional recycled water project that your agency is advancing with partnerships in Nevada and Arizona. And despite the regional benefits that this project promises, it also builds on some-

thing a little different and new from Metropolitan. And I want to ask you a little about that.

We think of Metropolitan as this giant wholesaler that imports distant water supplies and wholesales them to the entire Southern California region. But in recent years, you have actually begun investing in developing local supplies. And I want you to, if you could, please talk about how this regional water recycling project fits into that strategy of local water supply development, and why that strategy is so important for reducing reliance on imported water supplies from places like the Colorado River and the Bay Delta.

Mr. HAGEKHALIL. Thank you, Chairman, for the question. Actually, I come to Metropolitan with a history of the last 32 years of integrated water solutions, and I believe strongly that for us to really meet the challenge of the changing climate, the issues with the shrinking water supply, we need a new Metropolitan, and we need what I call a new Mulholland moment for the future that is not importing water.

What I tell people, what made Southern California great is the three aqueducts we have coming in for the last 100 years. We need right now a fourth aqueduct, which is not going to be a pipeline. It is going to be a combination of a puzzle, a number of things that is really providing more local water supply.

For us to be resilient for the future, to be able to deal with the drought, which is going to be with us for the future—this is the new normal—we need to start investing in a number of things, especially recycling our water: conservation, recycling, and reuse. So, stormwater and wastewater are critical.

For the last many years, I think the last decade, we have invested in over 100 local projects that we were investing in the subsidy for agencies to build recycled water, to build more local water supplies. But Metropolitan now is in the business of providing and creating new water.

This project we have, Regional Recycled Water Project, that hopefully we will rebrand as Pure Water Metropolitan, is a partnership of recycling 150 million gallons of wastewater into clean, pure water that we can recharge our aquifers, we can reuse across the region. And this is in partnership with our partners in Arizona and Nevada.

So, investing in us here, and creating more local water supply, creating more storage, more connectivity, conserving, capturing every drop, and storing it for the future is going to help us here reduce the dependence on the imported water, and then provide this ability to put more water in Lake Mead to reduce our dependence on Colorado, allow for this ability to resolve the issues that we are negotiating right now with the seven states and the country of Mexico and the five tribes. Because I believe we need this holistic solution.

And your help at the Federal level is critical. So, really, One Water Southern California is a new thing that we are embarking on. We have finished our integrated resource plan to show the gap between demand and supply. And we are right now building the road map to really create more local water supply here, and store it together.

It is an exciting time, and this is all about One Water and collaboration.

Mr. HUFFMAN. Thank you, Mr. Hagekhalil, 150,000 acre-feet every single year, drought-proof water supply. That is a big deal. That is a lot more water than some of the large, new surface storage projects that we sometimes fight about in this Committee.

So, I think it is important for everyone to understand exactly what you are proposing here, and the possibility that it could be a model for other opportunities. And let me just ask you about that. Do you see other possibilities for large-scale water recycling as something that could be pursued by yourself and others in the West?

Mr. HAGEKHALIL. Yes. I mean, as you know, in our region, in Los Angeles, the ratepayers passed Measure W, which is stormwater capture, infiltration, and reuse program. We want to make sure that our groundwater basins are healthy and safe. So, the investments in cleaning up our groundwater is critical.

Building storage in our groundwater basins so we can store water when we have water available, and be able to use it when we have a drought, that, what I call the pieces of the puzzle, is there. We are working with San Diego. San Diego is starting their Pure Water San Diego, a program similar to what we are doing here. We have folks up in Las Virgenes, in our area, are building Pure Water Las Virgenes. This collaboration is going to be great.

And Los Angeles is building a similar project. We are partnering with the City of Los Angeles on building Operation NEXT, which is going to double this 150,000 acre-feet of water. It is going to be done also at the Hyperion plant. So, imagine now we have two rivers, two aqueducts, locally here. It is going to be great for us.

And this is not just for Southern California, this is for the entire Southwest. And to me, this is the message I am sending—investing in Southern California is investing in the entire Southwest, and your help is critical for us on the Federal level.

Mr. HUFFMAN. Well, thank you for that, because that was the last thing I was going to ask you.

You have explained why this is such a valuable part of a water supply portfolio for the region. You have talked about the broader regional benefits. But in the remaining time that we have, let's talk about why it is important for the Federal Government to be part of this partnership.

And, you know, you do have partners in this. It is not just Metropolitan going it alone. But why do we need the Federal Government to step in and to do more?

Mr. HAGEKHALIL. In 2016, as part of developing the water resiliency report for the United States, and it was critical to know that water security is a homeland security issue.

Without water, there is no business. Without water, there are no jobs. And for us to resolve the issues we have in the Bay Delta, the issues we have around the Colorado that we are talking about today, and having to get agreements around the allocation of water with the seven states and the country of Mexico and the five tribes, we need to make the pie bigger, right? We need to make the pie bigger, and we need investments in creating more local water supply.

To me, helping us—and I want to acknowledge Representative Napolitano, and her bill, H.R. 4099, on the large-scale water recycling projects and continuing to invest in Title XVI water. To me, that is essential. It is not for Southern California, as we talked about, Congressman and Chairman. This is about us resolving the issue and making the pie bigger. When you have more water—and local water supply is part of it—we can resolve the issues, and really help us put more water in Lake Mead. So, it is essential for the whole Southwest.

Mr. HUFFMAN. Thank you, Mr. Hagekhalil, for putting that in context. That is very important. And I am going to go to the Ranking Member now for his 5 minutes.

And Ranking Member Bentz, my clock was doing funny things in the middle of that last 5 minutes. I think I might have magically gotten some extra time. I didn't do it on purpose. I apologize. But we will recognize you for 5 minutes or whatever the clock may give you.

Mr. BENTZ. Mr. Chair, I am hardly one to complain about taking too much time, so I won't.

My first question is for Mr. O'Toole, and it has to do with the fact that, as a farmer/rancher myself, I often am asked how to protect the water for farmers and ranchers. And many times I will respond by saying, "Well, what, farmers and ranchers, are you doing to conserve water, to advance your, or our, conservation approaches?"

And what I am met with many times is this, "Yes, Congressman Bentz, we farmers and ranchers would love to invest big piles of money in much more refined conservation application techniques, but without the certainty of having the water, why would we ever do it?"

Can you talk about that problem, and why it might, without that type of certainty, result in a continuation of the wrong type—or perhaps not the most efficient uses of irrigation systems?

Mr. O'TOOLE. Thank you, Ranking Member Bentz, and I appreciate the question.

As I said, our family are the first irrigators off the national forest at the headwaters of the river, so we have an opportunity to use our water in an efficient way. We are actually a demonstration for the Fish and Wildlife Service on how you irrigate and meld fisheries and irrigation. So, we are, our whole community has done a series of processes throughout all the head gates to make sure that that efficiency is being done.

But if we are going to be honest with ourselves, part of the future is assessing watersheds and having small storage as part of the mix. Just like forestry is going to have to have a whole bunch of tools, the water community has to have tools based on the amount of water that could be available.

Our community is working right now on a very small storage project, which would have huge implications to us. But as the Family Farm Alliance knows, and as you know, in the Klamath Basin, the inability to have sufficient predictability is death.

And I tell people I wish bankers cared about climate and conservation, but they care about getting paid back, and they get paid back because a farmer has the predictability of the water supply.

Mr. BENTZ. There is much discussion, Mr. O'Toole, about the fact that cities can buy up ranchers' and farmers' water, because the value to people in the cities is greater, there are more people in the cities, and they can raise more money. We saw the outcome in California of that, drying up communities that surround Los Angeles, and the damage that occurs to the agricultural industry, as a result.

Do you think that, ultimately, this is going to happen in the Colorado Basin? Are we going to see the cities buy up all of the ranchers' and farmers' land?

Mr. O'TOOLE. It certainly is happening now in a way that we are watching people buy water in Colorado, for example, that they intend to turn around and use for urban growth.

And recently, Pat Mulroy, who fought as hard for water for Las Vegas as anybody, said that LA, Las Vegas, Los Angeles, and Denver or Phoenix are no longer sustainable. What that means is the only water for growth that is left is Ag. We are the reservoir for growth.

And as I mentioned earlier, we are expected to produce 50 percent more food in a world that is demanding more food and, at the same time, we are taking water away. And on the western slope of Colorado, I am on what is called the Yampa Roundtable, and we feel very strongly that more diversions away from here for an eastern slope of Colorado that wants to double their population and their growth is not sustainable.

And, I think, the cities, as I have watched over my career, have built up reserves, and they need to figure out conservation on a much bigger scale. I applaud the—we are looking at technology to develop more water, to reuse water. That is going to have to be the future. But we have to realize that the systems that we all count on are being depleted, and further depletions have an incredibly rolling thunder effect.

Mr. BENTZ. They certainly do. And Mr. Chair, I know I am growing close to the end of my time, so with that I will yield back.

Mr. HUFFMAN. Thank you, Ranking Member Bentz. The Chair now recognizes Mr. Soto of Florida for the next 5 minutes.

[Pause.]

Mr. HUFFMAN. Mr. Soto, I didn't mean to surprise you. Our batting order has been moving around a little bit, but are you ready to go?

[No response.]

Mr. HUFFMAN. All right. Since Mr. Soto may not be with us just now, we will go to Representative Lee from Nevada.

Representative Lee, are you ready to go?

[No response.]

Mr. HUFFMAN. I apologize, folks. We have had some confusion in our batting order here.

Thankfully, the Chairman of the Full Committee, Representative Grijalva, is on my screen, and he is always ready to go, spontaneously, and always ever so articulate. So, we look forward to hearing from him for the next 5 minutes.

Mr. GRIJALVA. Thank you, Mr. Chairman. A couple of quick questions. Mr. Hagekhalil—and I apologize, I really do. Having a lot of vowels in my name, it is always frustrating——

[Laughter.]

Mr. GRIJALVA. The regional recycling project that you talked about, and people have lauded, in that it is for the entire river basin—you talked about the Federal Government increasing its investment in these large-scale recycling programs, and the Chairman pointed out the net benefit at the end.

You talked about Representative Napolitano's bill. Talk a little bit about—it is overdue, and I think another panelist said there is an issue of speed being an imperative, and urgency being the imperative. How do you see, in terms of the investment, how quickly this needs to be done?

Mr. HAGEKHALIL. Chairman Grijalva, thank you very much. And thank you for your leadership on your efforts in Congress.

We all understand that for us to really deal with this changing new normal on shrinking water supplies, and where the snowpack is no longer our storage system, we are seeing very small amounts of runoff coming from the snowpack because of this extra heat. So, what we need to do is create our local water supply, and our local water supply is every drop that we can recycle is critical.

We are looking at expediting our regional recycled water project. I actually tasked my team to look for alternatives to expedite the design construction of this project. Our board, the board of Metropolitan, earlier this month authorized us to start the process of getting and approving alternative delivery methods for design build to get this going.

We are also looking for alternatives to see if we can build small, decentralized recycled water project to get going fast enough where the supply is there, the demand is there, and we can put the supply closer to the demand. So, we are moving on that one, and we are going to get——

Mr. GRIJALVA. Is that where the—if I may—that is where the investment, in terms of the Federal arm of this discussion, needs to be, right?

Mr. HAGEKHALIL. It is the money that we need—actually, we need investments, the $3 billion. And we are saying the $3 billion that needs to be invested here, it is a benefit for the entire Southwest, the entire country, and it should be helped by the Federal Government.

Mr. GRIJALVA. Thank you very much.

Ms. Castle, thank you for your testimony. States, tribes, and the Federal Government must develop and make use of the best science and climate data to inform water management along the Colorado River, and as that date of 2026 approaches, I don't think we have the luxury of time here. You said about speed, and I agree with you.

In dealing with management plans, the role of science, the role of climate data, and the role that that needs to play as we lead it into 2026, plus all the intermediate interventions that we need to do around important issues like recycling and other things—where are we at on that?

And then the second part of the question is, who is at the table? Legitimately, Indigenous people and tribes have been kept off that table, and need to be an integral part of it.

We heard from agriculture, and from Mr. Davis from Arizona, about how we need to be at the table because of the importance of the resource we bring. Urban users, conservationists, environmentalists, and other extractors in industry.

So, who has to be at the table? Because at least my experience in Arizona, that table has been unbalanced. There have been significant groups of stakeholders that have not been part of that process. And how can the Federal Government ensure that there is equity, there is balance, and we are hearing all the opinions, going forward?

Ms. CASTLE. Thank you, Chairman Grijalva, and I will try to give brief answers to your questions.

With respect to science and data, there are a number of things that we can invest in and improve our ability to manage the river. Our stream gauge networks need to have continuous investment and need to be amplified and improved.

Several of the witnesses have mentioned things like OpenET, which gives us a much better handle on the consumptive use of water throughout the entire Basin.

There are things like the Airborne Snow Observatory that tells us much more precisely how much water we can expect from runoff in these systems.

And Mr. O'Toole's testimony mentioned the need to have better quantification of the water supply benefits that come from better forest management.

And I think all of those are important. They are long-term fixes, and with respect to the participation of tribes, I will just be very brief. And I don't speak for any of the tribes, but I will note that the testimony of many of the state representatives that you heard from last Friday specifically mention their commitment to involve tribes in these river management discussions. And Daryl Vigil's testimony last week suggested the formation of a sovereign governance team to be the formal process for making that happen.

Mr. GRIJALVA. Thank you very much.

I yield back, sir. Thank you.

Mr. HUFFMAN. Thank you, Mr. Chairman. And we will now hear from Representative González-Colón for 5 minutes.

Miss GONZÁLEZ-COLÓN. Thank you, Mr. Chairman, and thank you, all the witnesses, for coming today. I have a question for Mr. Davis.

Mr. Davis, you said in your testimony there is a narrative suggesting that the current Colorado River drought conditions may require a reduction in agricultural water to relocate or reserve more water for cities and environmental uses. Can you tell me why?

And in your opinion, this will be a wrong approach, and what alternatives or solutions we should be considering instead?

Mr. DAVIS. Thank you for the question. I think that is a narrative that is being promoted not only by the folks that represent cities, but also there is a movement on the Colorado by hedge fund managers to actually purchase agricultural water along the river and transfer it to cities.

Obviously, cities in the Southwest are all growing, as we all know. They are growing like crazy. But even if all the agricultural

water is moved to cities, eventually that growth will outstrip the water that is moved there. So, again, there will be a shortage of water.

I like the approach Met is taking with re-use. I think the cities really have to look at re-use and any other method to stretch their water supplies, just like agriculture is doing. And if there is a silver lining to this drought, it is requiring us all, Ag and city users, to take a look at how we use our water and become much more efficient. I know agriculture is doing it.

Water is just another cost input that agriculture producers have to have to figure in, along with fertilizer, fuel, labor, and all the other cost inputs. So, by nature, to have a productive business, to make a profit, they have to spend less on water every year, if it is possible, and produce the same amount of yield. So, I think that we all have to look inward at our uses and become much more efficient.

Miss GONZÁLEZ-COLÓN. Thank you, Mr. Davis.

Mr. DAVIS. Just as a matter of transferring water from one use to the other certainly impairs the economy in one method or another.

Miss GONZÁLEZ-COLÓN. Thank you, Mr. Davis. I do have some questions for Mr. O'Toole, but I will yield the remaining time to Ranking Member Cliff Bentz.

Mr. BENTZ. Thank you, Congresswoman González-Colón, for your generosity.

A question for Ms. Hawes of Nature Conservancy, and the question has to do with one of the solutions that we could actually scale up, if we could get litigation out of the road, and that means getting back into the forests.

What can Nature Conservancy suggest that we might do to stop the litigation that is preventing us from repairing the watersheds that would do so much to help the Colorado system?

Ms. HAWES. Yes, thank you for the question. I understand there has been controversy in parts of California and Oregon over forest management. I think, in the Colorado River Basin, we do have a track record of working together. And I think that the last few fire seasons have really put a spotlight on this issue and our need to work together.

So, I had a fire across the valley from us just a few weeks ago. This is an issue that affects us all, and there are so many co-benefits of good forest management.

So, for right now, the Nature Conservancy is doing research to map some of these forests that really have the right combinations of benefits that could be for forest health, but also retention of snowpack. Not every forest will operate the same way, and so we first have to identify those forests that will have the greatest return on investment.

And, I think, we have a long history of working with Family Farm Alliance and others. This is the time. We need to get in the room, start figuring out where is our common ground, and how can we find these solutions together, put money on the ground, and start to treat our forests so that we can improve our watersheds.

Mr. BENTZ. Thank you so much.

And since I have, I think, used the balance of Congresswoman González-Colón's time, I want to yield back, but thank her again for her generosity. I yield back.

Mr. HUFFMAN. All right. I thank the gentleman. I will now recognize Congressman Costa for the next 5 minutes.

Mr. COSTA. Thank you very much, Mr. Chairman, and both the Subcommittee and the Full Committee. This is an important hearing. We had 3½ hours last week, and everybody is moving around with a lot of stuff going on here.

I would like to kind of talk about the inter-relationships between water and the West, where multiple sources receive water from, and then make a point.

While the hearing is focused on the Colorado River, One Water management decisions and infrastructure repairs on one basin impact water basins in another region. As an example, California, we are trying to restore our canals that will help improve our drought resistance and bring groundwater supply into balance. I am dealing with an important piece of legislation that the Chairman knows about, which is SIGMA, to get our groundwater management in place.

Given our conveyance infrastructure, and given the efforts on both the bipartisan infrastructure package and Reconciliation, where we are having funding for drought relief and for repairs and infrastructure, Mr. Hagekhalil and Mr. Davis, could you explain how improving or repairing conveyance infrastructures in basins outside the Colorado River could help, with regards to not only the Colorado River's demands, but also dependence on the CBP and the State Water Project?

Mr. Hagekhalil, welcome. I think you must be the fourth or fifth General Manager for Metropolitan Water District that I have now worked with. So, thank you.

Mr. HAGEKHALIL. Thank you for your leadership, and it is an honor to work with you.

And, really, in Southern California we have two major sources of water: the Northern California and the State Water Project.

Mr. COSTA. Right, and the Colorado.

Mr. HAGEKHALIL. So, really, the same issue we are having is shrinking water supply when it comes to the State Water Project. But the biggest issue we have is the 20 percent of the capacity of the State Water Project, we lost it because of the need for repairs.

And I think this is important, that we restore the capacity in the State Water Project, that we build storage, that we continue collaborating, and find ways to ensure——

Mr. COSTA. Well, the bottom line is we could do that, and because my time is limited to 2:30, I don't want to go into that, but the Subcommittee Chairman and I are working on that. We are working on something that will limit the transevaporation and also create more energy through a concept of the use of solar panels. And we would like you to embrace that and work with us on that effort.

Mr. HAGEKHALIL. I will.

Mr. COSTA. Mr. Davis, obviously, you are in the Arizona situation. But to the degree that we can—and Metropolitan, but frankly, California—if you look over the last 30 years—and I have been a

part of all of that, with the Quantification Agreement and other things—has gone from 30 percent state water, 30 percent Colorado River, and 40 percent local supplies. In the 1980s, local supplies for Met was zero. So, it has been a tremendous, I think, effort that has taken place here.

But Mr. Davis, do you think we have to use all of the water tools, all of the above, when we talk about the Colorado River System, Upper Basin and Lower Basin?

Mr. DAVIS. Why, certainly. And one of the things we are constantly concerned with here on the Colorado, being at the lower and the last diverter on the river——

Mr. COSTA. Right.

Mr. DAVIS. We are constantly aware of water that is transferred out of basin for Met's use, for the City of Denver's use. We are constantly hoping that they do these practices just outlined——

Mr. COSTA. And we are trying to do that. I guess I would take issue with—as a third-generation farmer, Mr. Davis, water is more than an input cost—where water flows, food grows, and without the water we don't have to worry about the other input costs.

Mr. DAVIS. Exactly. Without the water, we have a desert, right?

Mr. COSTA. Right.

Ms. Hawes, the drought continues in the Colorado River Basin, and for California. What projects is the Nature Conservancy looking at to prevent the depletion of groundwater aquifers in water-stressed areas?

And could you stress any best practices you have identified to help communities, whether it is in the Colorado River Basin? I am, obviously, concerned about the San Joaquin Valley and the extreme drought conditions we are facing.

Ms. HAWES. Thank you for the question. We do have multiple projects addressing the groundwater issues.

In California, we certainly have been working in the Central Valley to restore rice fields with additional groundwater that can be recharged, but also provide habitat for migratory birds. In those——

Mr. COSTA. And it is very important, grasslands and such.

My time has expired, but if you could provide a list for the Committee of those projects, I think that would be helpful.

Ms. HAWES. Absolutely.

Mr. COSTA. Mr. Chairman, thank you with the Subcommittee, and we will continue to work on all of the above, this hearing, and I will submit my questions that I didn't get a chance to ask.

Mr. HUFFMAN. Yes, I appreciate that. Thank you, Mr. Costa. The Chair now recognizes Mr. Gosar for 5 minutes.

Dr. GOSAR. Thank you, Mr. Chairman, and thanks for holding this important hearing.

The water on the Colorado River has been the source of ongoing challenges, near shooting battles between states, and generations of legal wrangling. The past, in many ways, is the future. We will see these fights continue, state versus state, Federal Government versus states, urban versus rural, agriculture versus household, species versus everyone. In this mix are real people, communities, tribes, and others who are working on eeking out a living from their water rights.

I have a question for Mr. O'Toole and Mr. Davis. By the way, good seeing you, Tom.

Water in the West has been a blood sport battle between layers and layers of different players. Unfortunately, water battles have reached a zero-sum game, meaning there are winners and losers. But the future appears increasingly a negative sum game, meaning there are only losers and worse losers.

While urban water agencies talk about efforts to reduce per capita consumption of water use, the fact is the regions are still growing. We heard that earlier. As a result, we see demand continue to rise. Meanwhile, drought, species conservation, and increased demand all result in agency, supports, and water masters looking to cut water allotments.

Isn't the real solution new supply things like creative desalinization, potential advances in atmospheric water generation, and other options like resettling, like the lower Santa Cruz water system with Mexico to grow our water resources, instead of finding ways to do with less?

Mr. Davis first.

Mr. DAVIS. Yes. Obviously, augmentation methods such as desal, cloud seeding, all of those should be considered.

Long term—and there is beginning to be some discussion—there needs to be probably some imported water from other watersheds. We have just outgrown the supply in the Colorado River Basin. And as growth continues to occur here, it puts more pressure on taking Ag water to other uses. And that, as you heard, impairs our food production and our food supply.

So, I think we need to look long-term into other sources that we just mentioned.

Dr. GOSAR. Yes, and I think collaboration with Mexico is a golden opportunity to win, win, win.

Mr. DAVIS. Certainly.

Dr. GOSAR. And then the second part is creating desalinization. When you look at subsurface water, particularly in southern Arizona, we have heavy metals and a lot of arsenic. So, why can't we clean water as we are utilizing water and creativity?

And if sea level is rising, why won't we take advantage of the desalinization?

Mr. DAVIS. Yes, I certainly agree with that. Desal from the Sea of Cortez, exchanging that water with Mexico for their Mead water is certainly something that is being considered and looked into. Reclaiming and cleaning underground water supplies that are somewhat contaminated, some of that is located in the western part of Maricopa County. That can be done. We have a groundwater mound here in Yuma that can be considered as a resource for the Yuma area.

We need to look at all sources, obviously, and I think the thinking has come around to do that, although that takes time and planning, and this drought bites a little harder every year. So, immediate results are needed. And sometimes those solutions are more long term.

Dr. GOSAR. Mr. O'Toole?

Mr. O'TOOLE. Thank you, Representative Gosar. It is curious you ask the question. I had people in this room at my house 2 days ago,

who are looking in the Upper Colorado River, we are taking coal bed methane water that is developed in the Upper Colorado, and injecting it to 7,000 feet, tens of thousands of acre-feet—it is good water—without a tremendous amount of intervention.

VOICE. In New Mexico, we are looking at the same thing.

Mr. O'TOOLE. Yes, there are opportunities everywhere, we just have to become more aggressive.

And, as I told you, I am humbled to be here, but I can only tell you we have to have an accelerated process to be able to get things done. So, thank you for the question.

Dr. GOSAR. Well, I think we can do two things at the same time. I think that is what the advantage is. We have to be creative about this. I have worked with the Nature Conservancy over and over again looking at the Southwest forests, particularly in Arizona.

There is a win-win situation with the replenishing of our aquifers, looking at creative solutions that help us, not divide us.

From that standpoint, Mr. Chairman, I would like to submit for the record a letter on behalf of Stephen Lewis, the Governor of the Gila River Tribe. They wanted to make sure that everyone knew that they have been participating, they are looking at solutions to try to help out. So, I would like to submit that for the record.

Mr. HUFFMAN. Without objection, that will be submitted.

[The information follows:]

GILA RIVER INDIAN COMMUNITY
SACATON, ARIZONA

October 20, 2021

Hon. Jared Huffman, Chairman,
Hon. Cliff Bentz, Ranking Member,
House Natural Resources Committee,
Water, Oceans & Wildlife Subcommittee,
1324 Longworth House Office Building,
Washington, DC 20515

Dear Chairman Huffman and Ranking Member Bentz,

I am writing on behalf of the Gila River Indian Community to commend you for holding important oversight hearings on Colorado River drought conditions and engaging with stakeholders to present the tribal, state, and federal actions around this crisis.

As a result of our 2004 water settlement, which at the time was the largest water settlement reached between the United States and a tribal nation, the Gila River Indian Community has the largest entitlement to Colorado River water delivered through the Central Arizona Project canal system. As such, the Community is keenly aware of the need for immediate action as a result of the drought crisis impacting states and tribes along the Colorado River.

The Community was a key stakeholder in the negotiations of the Drought Contingency Plan that was enacted in 2019, and we recently brought together a key group of stakeholders to coordinate a plan to bolster the supplies of water available in Lake Mead (see attached letter). Those discussions have been ongoing for the past several weeks so we have watched the subcommittee hearings with interest.

The Community will be providing a statement for the record that I hope will provide relevant information as the subcommittee considers next steps in addressing the drought. The Community would also be willing to provide a briefing for the subcommittee to understand the current state of discussions that are occurring with

the key tribal, federal, state, and other stakeholders as this may be instructive as you move forward on any congressional recommendations or actions.

Thank you again for the attention on drought conditions along the Colorado River and I look forward to discussing this important issue with you soon.

Sincerely,

STEPHEN ROE LEWIS,
Governor

Mr. HUFFMAN. Mr. Gosar, your time has expired, but thank you.

Dr. GOSAR. Thank you.

Mr. HUFFMAN. The Chair now recognizes Mr. Soto for 5 minutes.

Mr. SOTO. Thank you, Chairman. Fires, droughts, low snowpack, we see the drastic and terrible effects of global climate change deeply hurting the western United States.

The American West has a real, long-term water challenge, and we are excited that, in the bipartisan infrastructure package, that there is $50 billion for western water storage, and there is more we could do in the Build Back Better Act, as well as the legislation proposed here today, for farmers, for tribes, for so many communities, for habitat, of course.

And I am really excited about the measures that the Committee is proposing for drought response relief, for short-term Federal drought relief, for implementation of tribal water rights and settlements, for large-scale water recycling, for Federal priority stream gauges, for Drought Contingency Plan implementation funding, endangered species recovery, and conservation programs, desalinization projects, and WaterSMART.

I also wanted to see if Representative Costa or if Representative Huffman would like additional time, knowing that this is affecting your districts deeply.

Chairman, would you like some additional time?

Mr. HUFFMAN. I appreciate that. I don't see Mr. Costa right now, but I will take the gentleman up on his courtesy.

Mr. SOTO. I yield to the Chairman.

Mr. HUFFMAN. Mr. Costa, are you still there?

[No response.]

Mr. HUFFMAN. All right, well, I am going to move ahead with a question for Ms. Hawes, because I wanted to bring fish and wildlife into this conversation.

We have heard about some of the drought's impacts on fish and wildlife and the tourism industries that depend on them. But I want to ask Ms. Hawes to tell us a little bit more about why preservation and enhancement of fish and wildlife must be a key consideration now and in the upcoming negotiations over what the Colorado River is going to look like post-2026.

Ms. Hawes?

Ms. HAWES. Thank you for that question, Chairman. I think there are three different real important pieces of this.

First, is just the inherent value of our wildlife. This is an area that gets billions of dollars from tourism. So, there is an economic benefit, in addition to just protecting and preserving the species that call this area home, along with us.

We also, I think, can avoid endangered species conflicts that we have seen in other places. This Basin has a history of working together on very effective recovery programs. We are seeing downlisting of two species right now. That means our work is successful, and we want to continue that work so we can avoid conflicts.

And then lastly is the health of our river systems and our species are a canary in the coal mine. If we start seeing those species die off, the system is crashing. So, our hope would be that we can develop the interim guidelines and the next river operations to include those environmental benefits on the front end, so we don't end up with these conflicts on the back end.

Mr. HUFFMAN. Thank you very much, Ms. Hawes. And I will yield the balance of time and, again, thank the gentleman from Florida.

The Chair next recognizes the good-looking gentleman from Idaho. Please don't tell Mike Simpson I introduced him this way.

But Mr. Fulcher, you are recognized for 5 minutes.

Mr. FULCHER. Thank you, Mr. Chairman, and I appreciate those comments very much. I have a comment and a question for Mr. O'Toole.

Mr. O'Toole, I am from Idaho, and we are facing some challenges in my home state. There is a debate happening where, potentially, there could be the removal of four of the Lower Snake River dams. And the investigations continue on that.

The argument in general is, by removal of these dams, that there could be increased salmon flow, which is highly questionable. So, whatever we do with the Colorado River system has implications in the Pacific Northwest, in terms of precedent.

First of all, you mentioned, I believe, that your family had been operating on your existing farm and ranch for more than 140 years. Could you tell me if this drought that we are going through right now is an anomaly, or are you aware of drought conditions that have existed in previous decades?

Mr. O'TOOLE. Well, my lifetime has been—thank you, Representative Fulcher—but going back and forth drought. And I was asked one time, "Would you rather have drought or lots of water?" And, obviously, lots of water is better, even though it has issues, too.

This is different. And our family right now is drilling four wells, and putting pipelines for our livestock operation to replicate the springs that we have lost. So, in my view, from a personal perspective, this is an anomaly that hopefully won't be the clear future.

We did have some rains this fall that really saved us and our operation, but this is different than what we have experienced in the past.

Mr. FULCHER. And I assume part of that struggle is the increased demand on the water, correct?

Mr. O'TOOLE. Yes, sir, the demand is part of it. And, as I mentioned earlier, the trans-basin diversion from the western slope is for growth, and for example, the people in Colorado that, when they are requested to build a new subdivision, that is their legal responsibility, is to find that water. Well, what we are finding is that water only exists from agriculture.

And when you try to figure out who is driving this growth, it is the guys with the big hats with a feather that are wanting to build a subdivision, make a lot of money. But there is no understanding of the farm issues, the food issues, the wildlife issues, all the things that are co-existing with that. I think we have to have a broader view of what our society is going to be.

Mr. FULCHER. Thank you, Mr. O'Toole, and thank you to you and your family for your work and perseverance there.

Shifting to Mr. Martinez before my time is up. Mr. Martinez, there is a significant infrastructure along the Colorado, in terms of water retention systems, and irrigation retention systems, power supply systems. Does your organization view that system as a homeland security issue at all? Can you speak to that, Mr. Martinez?

Mr. MARTINEZ. Certainly. Thank you for the question, Representative Fulcher.

Yes, this infrastructure has been built over 100 years, it has been operating, basically, to provide vital water here for the district and all its farming activities, as well as to cities that we serve along the Mexico-U.S. border. Within this area we have also military installations that are vital to the United States, as well as large reserves of lithium, which is another critical element that the Nation is looking forward to produce domestically.

So, from the perspective of food supply, again, the health of the economy here, in the southern part of the state of California, and military installations, as well as new products of lithium, it is definitely a situation where we see a water being vital to maintaining those securities going forward.

Mr. FULCHER. Great. Thank you, Mr. Martinez.

Mr. Chairman, I yield back.

Mr. HUFFMAN. Thank you, Mr. Fulcher. The Chair now recognizes Representative Lee for 5 minutes.

[Pause.]

Mr. HUFFMAN. I think you may be muted.

Mrs. LEE. OK, sorry about that. Thank you, Chairman Huffman and Ranking Member Bentz, for hosting these hearings on drought conditions on the Colorado and for, once again, providing me the chance to participate.

As we discussed last week, southern Nevada and the entire desert Southwest is facing an unprecedented drought. And in my district, Congressional District 3 in Nevada, Lake Mead, which provides water for 25 million people across Nevada, Arizona, and California, is at its lowest level since its construction in the 1930s.

On Monday, I was pleased to visit with Vice President Harris and appreciated her commitment to the very issues we are discussing here.

To help address this crisis, much more must be done to accurately measure consumptive water use, including programs like OpenET, and I want to thank Ms. Hawes and Mr. Hagekhalil for recognizing this program in their testimony and supporting the passage of my bill, the Open Access Evapotranspiration Data Act, a very long name.

But I introduced this legislation with fellow colleagues on this Committee to establish a program that uses publicly available data

from satellites and water stations to provide estimates of consumptive water use. This data will support water conservation and management efforts of farmers, ranchers, and water utilities.

And I have also been working to secure Federal funding for large-scale water recycling projects. My colleagues and I have successfully secured Federal funding to advance large-scale water recycling projects in the Bipartisan Infrastructure Bill and Build Back Better.

Mr. Hagekhalil, as you mentioned in your testimony, the Metropolitan Water District of Southern California is participating with the Southern Nevada Water Authority and others to develop a multi-billion-dollar regional recycled water project. How will this project and your partnerships with Nevada and Arizona help bring water supplies in demand into better balance on the Colorado River?

Mr. HAGEKHALIL. I appreciate your leadership, Representative Lee. And one thing I want to say is you cannot manage what you don't measure, and thus appreciate your leadership on that.

This is about partnership. And I tell you, when we start now, we need to open ourselves up to look at the region as a whole. And Metropolitan is partnering with southern Nevada and Arizona on finding ways to really collaborate on generating more local water supply in Southern California, and conservation here, and partnering with the agricultural community. Because every drop we can save here, every drop we can recycle will be a drop that we can put back in the river, in Lake Mead, to help recover from this new normal.

So, to me, it is all about partnership. And without the Federal Government and your support in investing in us, we cannot do it. And this is about the Southwest, and we are meeting next week in your state, as the seven Basin states, to talk about this and how we are going to work together. But I will tell you, the collaboration and the level of collaboration from the agencies, I haven't seen more collaboration. But we can't do it alone. We need you to help at the Federal level.

Mrs. LEE. Thank you. I agree. I can't emphasize more how important these partnerships are.

Ms. Hawes, I just wanted to speak—you talked about what should be done through better forecasting and modeling, tracking water availability. How can innovative tools like OpenET, stream gauge monitoring, and other programs through the USGS and the Bureau of Reclamation help farmers, ranchers, and water utilities better manage their usage?

Ms. HAWES. Thank you very much for the question, and thank you for your leadership on that bill.

I agree, we can't manage what we can't measure. So, these tools are critical for helping everyone in the system, from a farmer on an individual farm, to an irrigation district, to the Bureau of Reclamation, to be able to get a better handle on what is actually happening on the ground.

Where is our water being used? How is it impacting a particular river system? What is happening in that sub-basin? And all of that can help us craft better decisions, better solutions, and manage this resource more carefully. Because if we have learned anything, we

are going to have to have more awareness of just how all these things interconnect. So, we are very supportive of the OpenET program and the other tools.

Mrs. LEE. Thank you. With that I am finished with my questioning.

I think a combination of both looking at innovative solutions, but also all of this data, which, to me, is surprising that we don't have it so far at this point in time. So, very important pieces of legislation.

With that, Mr. Chair, I yield back.

Mr. HUFFMAN. I thank the gentlelady. The Chair now recognizes Representative Boebert for 5 minutes.

Mrs. BOEBERT. Thank you, Mr. Chairman. It is good to see Mr. O'Toole here today, who has a lovely ranch in Craig, Colorado, which is in my district.

Thank you so much for testifying today and for all the work that you do.

The drought has forced us to start thinking long-term about the availability of water in the West. Too often, the discussion focuses on how agriculture, energy, and rural Americans must change their livelihoods, while largely neglecting the shared responsibility or urban city dwellers.

I think an important piece of this discussion needs to revolve around active forest management, especially on our Federal lands. It is no secret that our forests are not properly managed. A healthy forest is an actively managed forest. And active forest management activities, such as large-scale thinning of trees, will reduce water stress in forests, and ease the severity of droughts as more water will end up in our rivers and reservoirs.

It is by no means the end-all-be-all solution, but it is a major part of the solution. And that is why I have introduced my Active Forest Management, Wildfire Prevention, and Community Protection Act, which requires the Forest Service to harvest a minimum of 6 billion board-feet per year.

My bill also removes incentives for extremist groups to file frivolous lawsuits that slow down projects. Democrats like to pretend that climate change is to blame for everything. And, yes, the climate is changing—four times a year, in fact. But these same alarmists fail to take active measures that can address the changing climate. It is too often the case that radical environmentalist groups will sue in court to stop any active forest management activities. What is the Democrats' response to this? Nothing. They are too scared to go against these powerful special interests.

Just yesterday, the 10th Circuit ruled against a b.s. environment lawsuit trying to stop a logging project within the White River National Forest in my district. In 2015, the Forest Service began holding meetings to harvest timber and manage long-term health of the forest. Out of 2.3 million acres of the National Forest, the Forest Service allotted 1,061 acres for logging.

What were the plaintiffs alleging? Apparently, the government failed to consider the efforts of climate change on fungi in the reason. After a district court dismissed this lawsuit, the plaintiffs appealed. And, thankfully, the 10th Circuit upheld that decision.

We all know that logging on 1,000 acres in a forest that has 2.3 million isn't increasing climate change.

And if that is really our focus, then we need to start harvesting this timber. Because just one wildfire burning in Colorado alone, like we saw last year, produces more carbon emissions than all of the vehicles in the state of Colorado running 24/7 for an entire year, and that is produced in just a few days. So, if we want to stop these massive tinderboxes that we are creating with the more than 6 billion standing dead trees, we need to begin by addressing that.

Now, Mr. O'Toole, I have a question for you, and I want to talk about desalinization. In your testimony, you mentioned that it needs to become part of the discussion. It is my understanding that Israel has made large-scale investments in these operations, and currently receives roughly 80 percent of the country's drinking water from it. The technology is very popular in Saudi Arabia, where 5 million gallons are produced every day, which accounts for 50 percent of the freshwater usage. Is this a scalable technology that could be used in Colorado for agriculture or hydropower generation?

Mr. O'TOOLE. Thank you, Representative Boebert, for the question. Yes, absolutely, and I mentioned a specific project in northwest Colorado and southern Wyoming taking coal bed methane water and minimally cleaning it and putting it into the system. We have been working on that for 10 years. I actually testified to this Committee about it, with Representative Napolitano, years ago. So, yes, it is scalable.

And, obviously, the lessons are that Israel is doing some phenomenal stuff. I will tell you that the Israelis come and meet with Family Farm Alliance farmers in California about the technology they are using, also.

Mrs. BOEBERT. Thank you very much, Mr. O'Toole.

Mr. Chairman, I am running out of time, so I don't have my question for our other witness, Ms. Hawes. Maybe I will submit that to the record.

But I would like to ask for unanimous consent to add this Reuters article titled, "Desalinization Advances in California, Despite Opponents Pushing for Alternatives" to the record.

Mr. HUFFMAN. Without objection, that will be entered in the record.

Mrs. BOEBERT. Thank you.

Mr. HUFFMAN. I thank the gentlelady for expressing her concerns about extremist groups. Maybe not the right ones, but it is a good start.

Mrs. BOEBERT. Oh, shut up, Mr. Chairman.

Mr. HUFFMAN. I want to thank all the witnesses for their valuable testimony, and the Members for their questions.

The members of the Committee may have some additional questions. We will ask the witnesses to respond to those in writing.

Under Committee Rule 3(o), members of the Committee must submit witness questions within 3 business days of the hearing, and the record will be held open for 10 business days to allow for responses.

If there is no further business before the Subcommittee, then, without objection, we stand adjourned.

[Whereupon, at 12:41 p.m., the Subcommittee was adjourned.]

[ADDITIONAL MATERIALS SUBMITTED FOR THE RECORD]

Submission for the Record by Rep. Huffman

Statement for the Record

Stephen Roe Lewis
Gila River Indian Community

Chairperson Huffman, Ranking Member Bentz, and distinguished Members of the Subcommittee, I want to thank you for holding two days of oversight hearing on "Colorado River Drought Conditions and Response Measures" on October 15, 2021 and October 20, 2021.

The Gila River Indian Community's ("Community") 583.7 square mile Reservation is located along the southern boundary of the Phoenix Metropolitan Area and is home to approximately 15,000 of the Community's 23,000 members. As a result of the Community's 2004 water settlement, which at the time was the largest water settlement reached between the United States and a tribal nation, the Community has an annual entitlement of 311,800 acre-feet of Colorado River water delivered through the Central Arizona Project ("CAP"). The Community was forced as a condition of its settlement to accept this Colorado River entitlement in lieu of water from its claims to the Gila and Salt Rivers in the same way all other settling tribes in Arizona have been. The Community's entitlement to Colorado River water delivered through the CAP is held in trust by the United States on behalf of the Community and its allottees.

Water delivered through the CAP supplies many municipalities, industrial users, tribes and non-Indian farmers located in central and southern Arizona. Water delivered through the CAP has a lower priority than many other Colorado River water rights, making entitlement holders like the Community more vulnerable to drought than many other entitlement holders of Colorado River water.

Given the vulnerability of its Colorado River entitlement delivered through the CAP, the Community has closely monitored the current hydrology of the Colorado River, which, over the last two years, has been one of the worst on record. Forecasts now indicate a very real risk of Lake Mead falling below 1,025 feet in the next five years. As a result, the Community is keenly aware of the need for immediate action, and why we watched the two subcommittee hearings with interest. With this testimony, the Community seeks to make the subcommittee aware of our efforts to bring together the some of the relevant stakeholders, many of whom testified in front of the subcommittee, to create short and long-term solutions to the drought conditions on the Colorado River.

On September 29, 2021, we invited the Bureau of Reclamation, Arizona Department of Water Resources ("ADWR"), CAP and Salt River Project ("SRP") to the Community to discuss our mutual interest in developing a series of Arizona conservation agreements this year and the need to act quickly in the Lower Colorado River Basin, and the Upper Basin as well. At this meeting the Community expressed our deep concern that if Arizona, other Lower Basin States, and Mexico do not act quickly we may lose an important opportunity to galvanize action and put resources into Lake Mead in time to stave off a deeper drought in 2023 and beyond.

As a result of this meeting and subsequent conversation among Arizona stakeholders the Community has committed up to 111,000 acre-feet of its CAP water for conservation in 2023 with a similar amount in 2023 provided the Lower Basin States can avoid a Tier 2 shortage in 2023. The Community is hopeful that its actions will encourage other parties in the Basin to commit to additional conservation efforts to help reduce the future risk of extreme drought for all of those who rely on this precious resource.

The Community's participation and leadership in any Arizona plan for more conservation is guided by the same principles that drove our discussions in Arizona regarding the adoption and implementation of the Lower Basin Drought Contingency Plan:

1. Equal treatment for all parties involved in these system conservation or forbearance agreements, thereby facilitating an expeditious negotiation and ensuring parties are working for a common good and not just one-party's gain or loss;
2. Protection of existing tribal water settlements in Arizona; and
3. Voluntary limits on deliveries from Lake Mead to the greatest extent possible while we are making conservation an urgent priority overall.

The Community believes speed is important if we are to be successful, but any plan should be broadly inclusive and transparent as possible.

The Community has also been meeting with Colorado River Basin Tribes, all of whom believe that the inclusiveness and transparency in near-term actions and long-term actions, like the development of the next Colorado River operating guidelines, is something Basin Tribes will demand. On October 28 and 29 the Community hosted a meeting with a number of leaders and representatives from ten other Tribes located in the Upper and Lower Basin to discuss forming a loose ad hoc coalition to express common agreement on key issues among Basin Tribes. The participants at this meeting expressed a desire to be more involved in ongoing decisions, as well as early involvement in developing the next Colorado River operating guidelines. The participants at this meeting also agreed that federal trust responsibility requires that the United States ensure Basin Tribes are included in the development and implementation of the policies and rules that will govern how the Colorado River will be managed from this point forward.

This ad hoc group of Basin Tribes may provide a more formal position in the near future, but the subcommittee should be aware that Basin Tribes as a whole expect to be much more involved in helping find solutions to protect water supplies in the entire Colorado River Basin.