

## Update from the Office of the State Engineer



### John R. D'Antonio Jr., New Mexico Office of the State Engineer

New Mexico State Engineer John R. D'Antonio is a registered professional engineer in New Mexico with a BSCE from The University of New Mexico. He has worked for the U.S. Army Corps of Engineers as a hydraulic design engineer and as a project manager for MILCON and Civil Works projects. Recruited as a Water Resources Manager for the Office of the State Engineer (OSE) in 1998, D'Antonio managed the largest District OSE Office for the next three years. From 2001 to 2011, he served as Director of the Water Resource Allocation Program (OSE), Cabinet Secretary of the NM Environment Dept, and NM State Engineer/Secretary of the Interstate Stream Commission (ISC). During his tenure as State Engineer, D'Antonio was Secretary of the ISC, Chairman of the Water Trust Board, the Governor's Water Infrastructure

Investment Team, and the Governor's Drought Task Force. He also served as the NM Commissioner to the Rio Grande, Costilla, and Upper Colorado River Compacts.

*Editor's Note: This paper transcribes the speakers' remarks from the conference. No follow-up papers were submitted, and the remarks were edited for publication by the editor. The speaker did not review this version, and the editor assumes responsibility for any transcription or editing errors.*

This is one of my favorite conferences of the year, and even under challenging circumstances, NM WRRI has been able to set this conference up and allow everybody to participate. It's great that we are able to use technology to continue forward. I'm going to get right into my presentation to highlight a few significant developments taking place.

I want to stress early on that the Office of the State Engineer/Interstate Stream Commission (OSE/ISC) has been active and involved during this pandemic. Quite frankly, we're going through two different emergencies with respect to our staff. We are experiencing the effects of the current pandemic along with the challenges for our water supply. Water supplies have been identified as a critical component to public health and safety. We continue to service New Mexicans through our seven district offices. Operations such as issuing domestic wells or well driller permits cannot just stop because of the ongoing pandemic. We have water masters out in the field and support staff in order to examine diversions. We have other operations at various dams and facilities, such as the Los Lunas Silvery Minnow Refugium. For the most part, all of our programs including our Water Resource Allocation Program, dam safety, hydrology, litigation, adjudication, and ISC programs are all continuing their work. These programs all together involve 219 people that are now teleworking either full or part-time.

I am going to quickly go through the state budgeting process because the pandemic has created notable budget impacts. Earlier in 2020, during the special legislative

session, our office's general fund was reduced by 4 percent. OSE/ISC has been asked to cut another 5 percent from available budgets next year. A hiring freeze has been implemented and positions have been eliminated. This is a really critical point: we've had 81 vacant positions, and many of these positions have been vacant for two years, mostly due to hiring freezes. As a result, the Department of Finance and Administration has reduced our authorized positions from 342 to 317. We've dropped 25 positions, thus reducing our vacancy rate from 23.7 to 17.7 percent. That's not an ideal way to reduce vacancies, so that is a concern for our offices.

Agency trust fund solvency—or insolvency—is also a problem. We live through our administration and many of our operations rely on the Rio Grande Income Fund and the Irrigation Works Construction (IWC) Fund. The blue line in Figure 1 is the total revenue from these two funds. It goes from fiscal year (FY) 2010 to FY 2022. You can observe a gap in revenues between \$10 and \$15 million, although revenues have decreased a little bit in the past couple of years, while our expenditures have shot up. In FY 2019, there are a couple of additional hands in the cookie jar, so to speak, including the forestry fund at \$2.5 million a year, and an increase in money going to the acequia programs and infrastructure. You can see there is a drop in our trust fund balance in FY 2022.

This is a problem and the state legislature has recognized it as such. OSE/ISC have come up with a five-year plan to reduce our reliance on these trust funds. However, under the current budget cycle and the state revenues

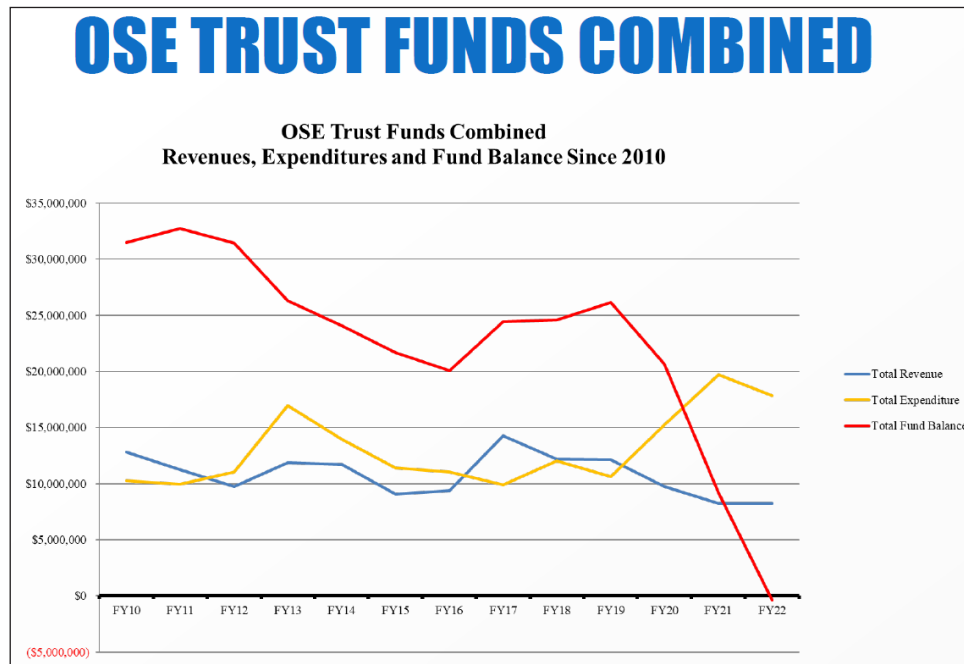


Figure 1. OSE trust funds combined, fiscal years 2010–2022.

from oil, gas, and gross receipts tax, we're not certain it's going to happen soon enough. Importantly, we're trying to get back \$9 million of general funds within the next five years and foster awareness of our fiscal needs. Along with these measures, we feel there has to be a new way of governance. OSE/ISC are becoming more entrepreneurial, and we are striving to be innovative with our use of technology and data analytics in order to solve complex problems. We're implementing additional internal performance standards which are not necessarily reported out to the Legislative Finance Committee or the Department of Finance and Administration, but help us keep track of what we're doing and the progress we're making, while establishing meaningful metrics within our agency programs. As we move forward in administering our policies, we will do so with openness and transparency. We have to identify the most high-priority issues and then reallocate some of our funding to address them. To make our work more efficient, we are also referring back to project management plans and identifying milestones and deliverables.

I mentioned issues that OSE/ISC have experienced from the pandemic, but this current drought and water emergency affects all of us in the state. The effects of the pandemic along with the current drought have been a double whammy for our agency. At the time of our Statewide Drought Task Force meeting on September 30, 2020, 67 percent of our state was in severe drought. Now 84 percent of the state is in drought. In water year 2020, precipitation has been 55 to 85 percent of normal, with half the basins receiving less than 50 percent of their

normal precipitation. Stream flows are 5 percent to 81 percent of average in 18 of 21 river basins. Additionally, 80 percent of the state received less than half its normal rainfall during the monsoon season. Our reservoirs are below 20 percent of average storage. Looking to the winter of 2021, there is a greater likelihood of drier than average conditions because of the La Niña forecast.

Looking at the U.S. Drought Monitor in Figure 2, you can see the D2 to D4 status in dark orange, which is categorized as "severe to exceptional drought." When that status is over 50 percent in the state, we engage the Drought Task Force; we were at 67 percent. Three weeks later, as of October 13, 2020, the percentage of the state in severe drought status or higher went from 67 percent to 84 percent (Figure 3). You can see these pockets of D4 status, which is categorized as "exceptional drought," developing all over the state, and it's progressively getting worse.

Worsening drought is not unique to New Mexico. Figure 4 is dated by about a month, and I expect that these conditions have worsened. You can see the entire Southwest region was in about a 72 percent drought status.

Viewing the three-month outlook in Figure 5, there is a bullseye right on New Mexico related to above average temperatures. In terms of precipitation probability, the majority of the state of New Mexico is under that B category, which is the below average precipitation outlook.

Figure 6 is the drought briefing from the Drought Task Force meeting, illustrating climate showings from mid-September to the end of December 2020. This dark brown color is concerning, as it shows drought persists in this

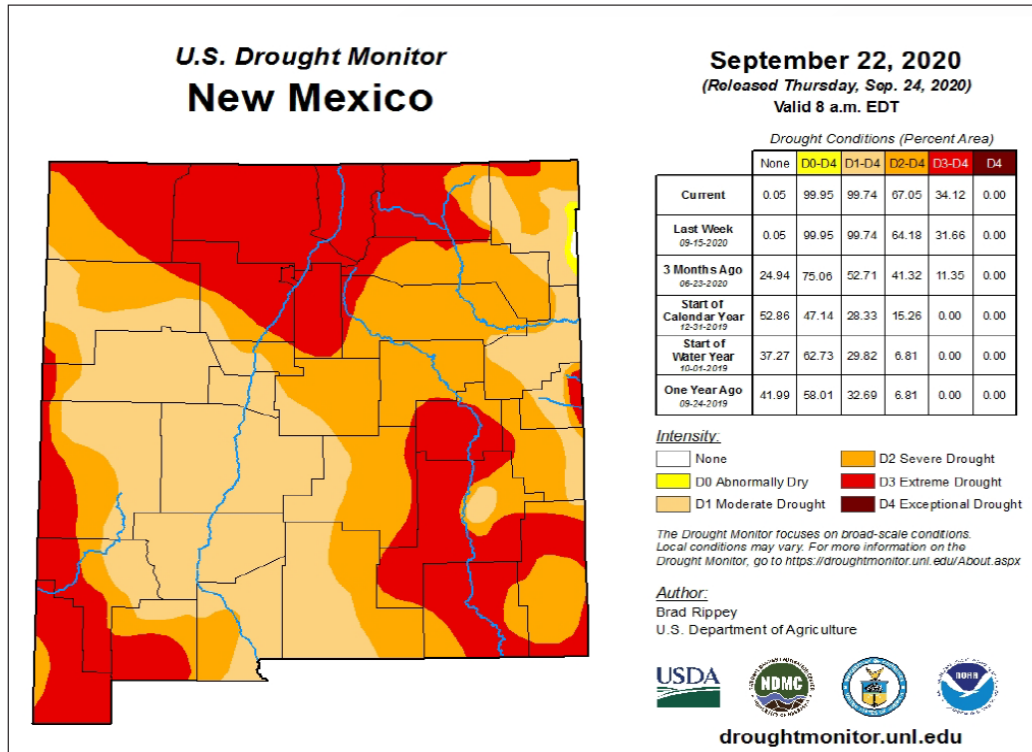


Figure 2. U.S. Drought Monitor for New Mexico, September 22, 2020.

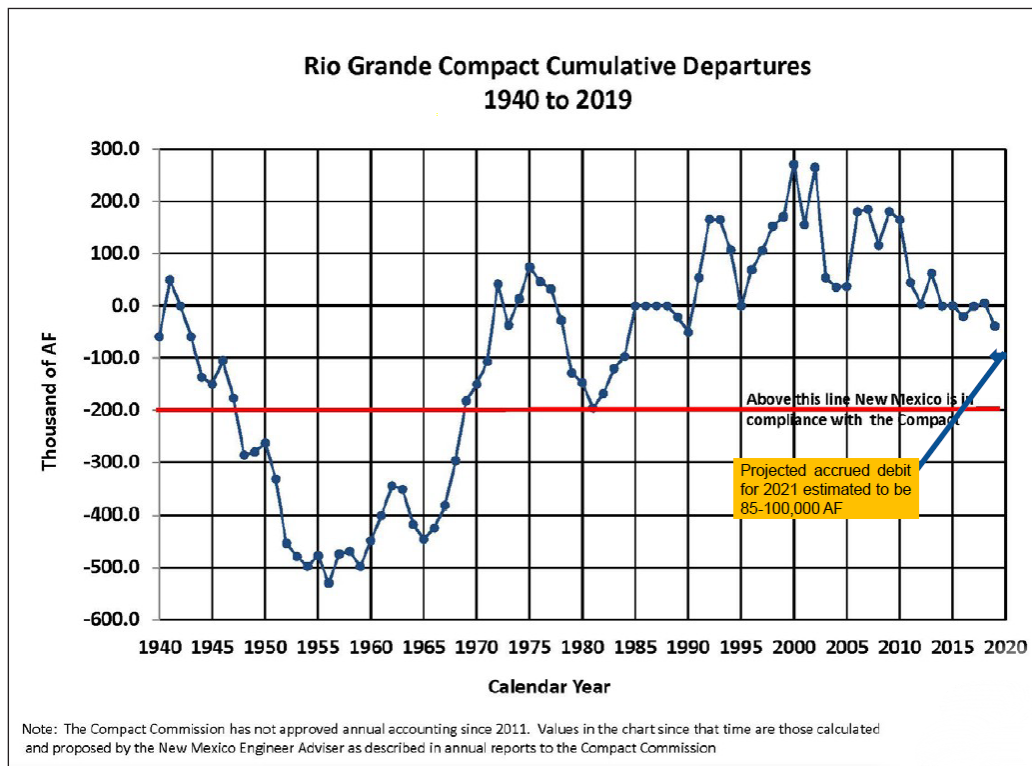


Figure 3. U.S. Drought Monitor for New Mexico, October 13, 2020.

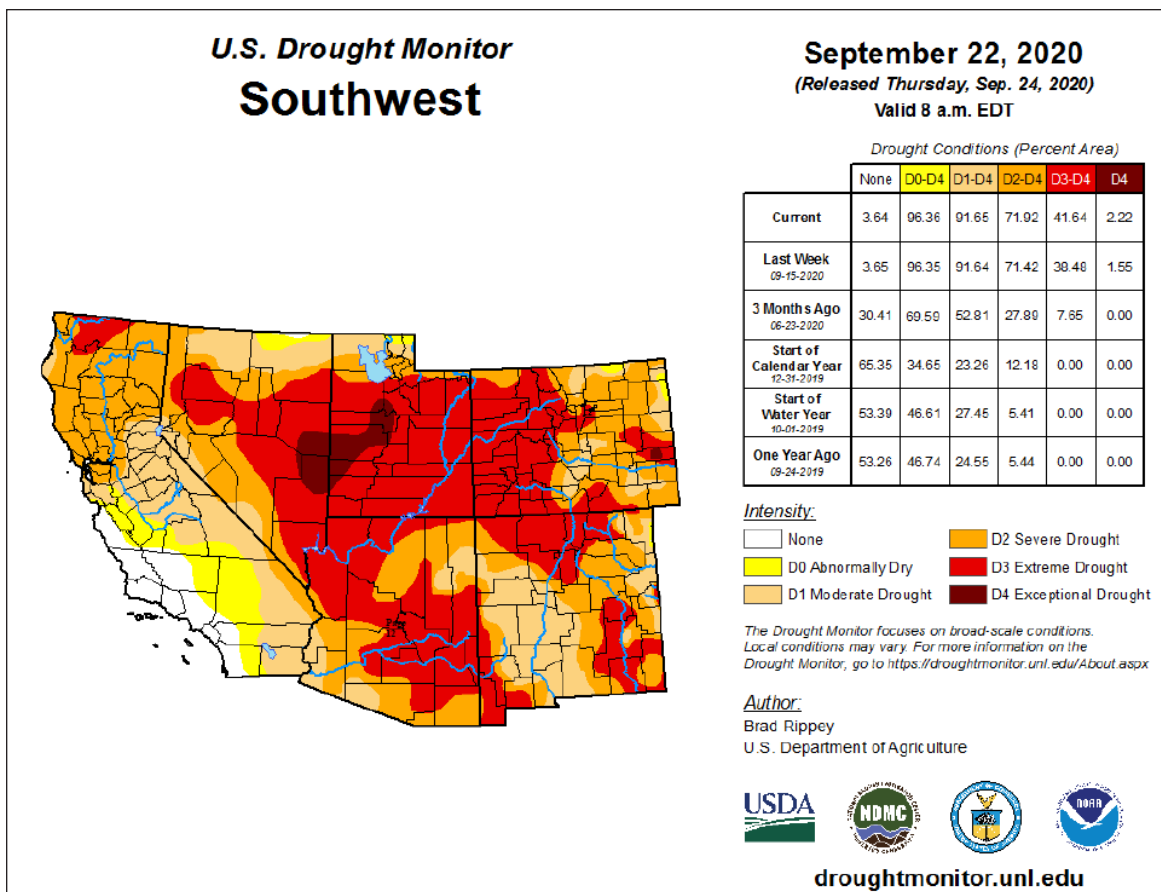


Figure 4. U.S. Drought Monitor for the Southwest, September 22, 2020.

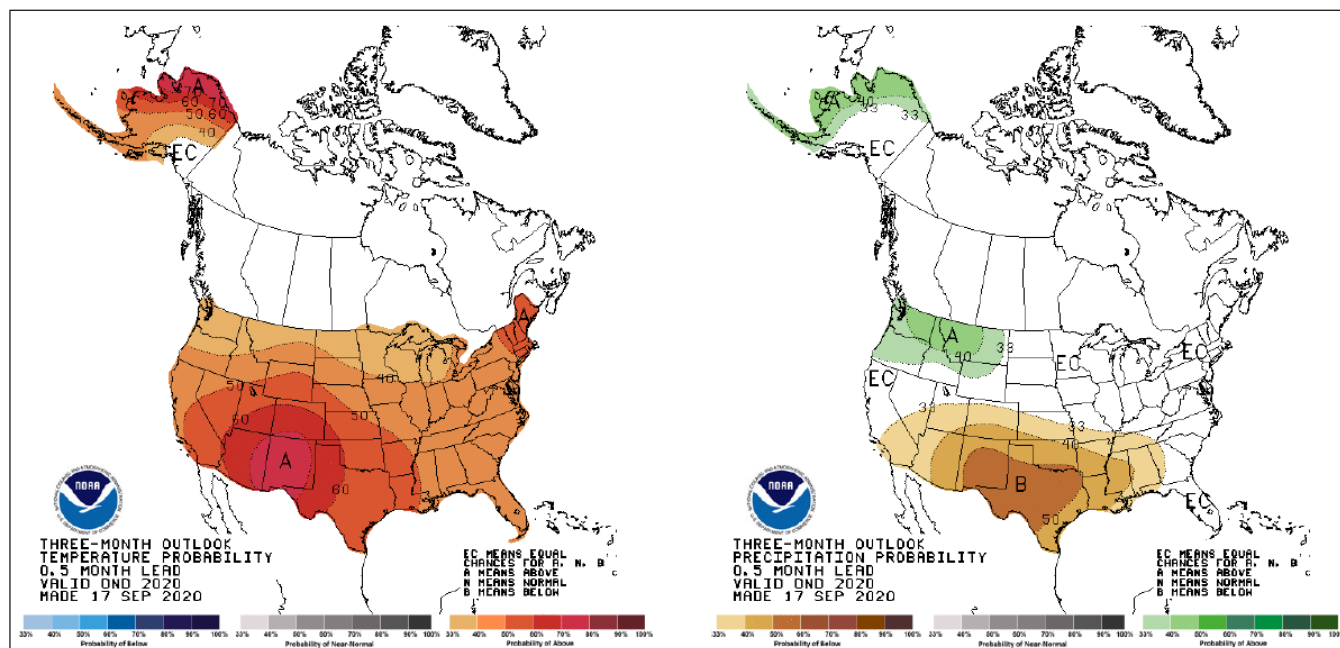


Figure 5. Three-month temperature (left) and precipitation (right) outlook.

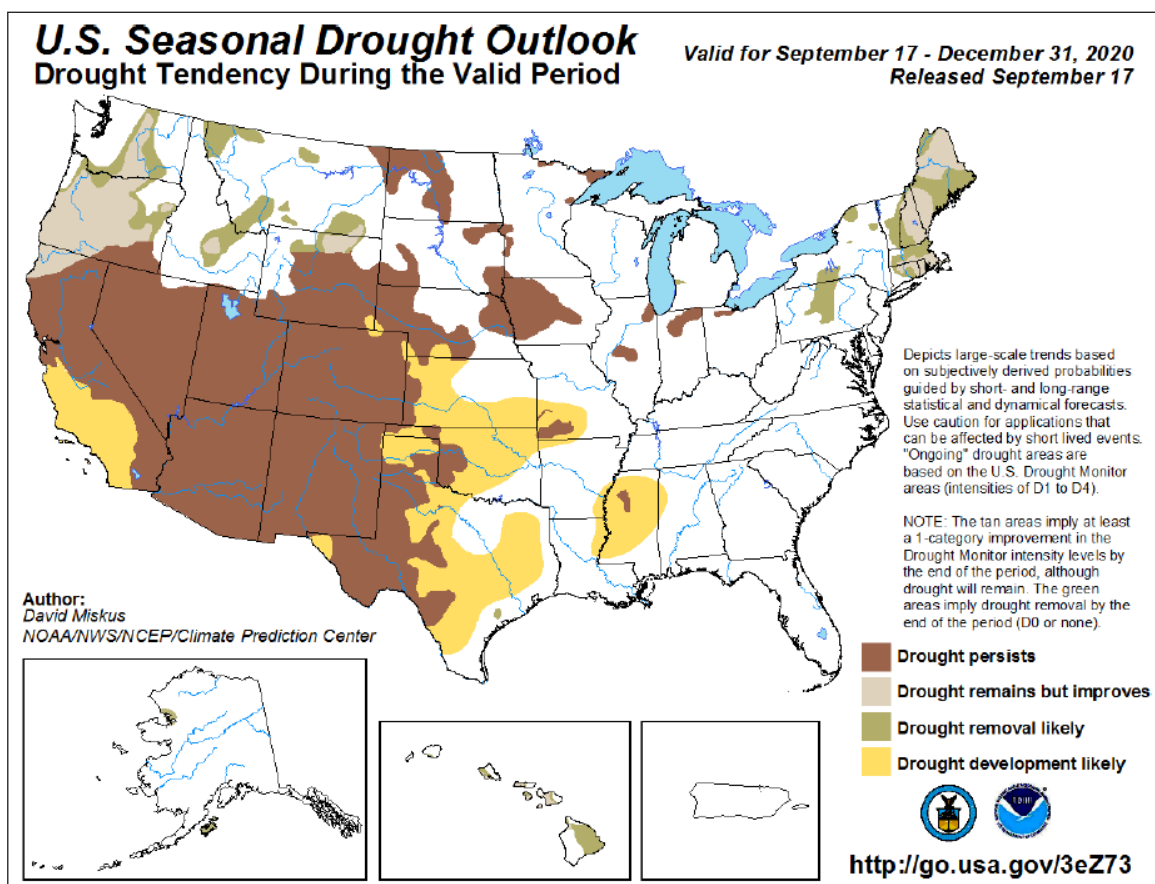


Figure 6. U.S. seasonal drought outlook for September 17-December 31, 2020.

entire area within the state of New Mexico. It also affects the Colorado water supply in our San Juan Basin.

Let me get into water planning. The governor has given us a directive on a 50-Year Water Plan. Last year, we asked the state legislature for \$750,000, which included two additional staff positions to put the plan into effect. The response relayed to our office was that no funding or staffing was appropriate. Without this requested additional support, does that mean we can't accomplish effective water planning? It doesn't mean we can't, but we will have to look at other means. The funny reality (the hiring freeze notwithstanding) is that we're going to get about half that identified amount through our IWC Fund. This is a great resource, because those exact IWC funds that I highlighted earlier will be eliminated, so it's vital that we make good use of them now. We're using them for critical items like this, but they're not being replenished to the level that we need, which remains a problem for us.

New Mexico water planning challenges include:

- Drought
- Climate change
- Growing population
- Gaps between supply and demand
- Inadequate infrastructure

- Resource constraints on water administration
- Interstate and intrastate litigation

These items are critically important within the State of New Mexico. Often drought and climate change are combined, but we're showing them as two separate issues. With the growing population, gaps between supply and demand are a serious issue. New Mexico has a lot of inadequate infrastructure, including water infrastructure, dam safety, and water conveyance structures. We have 50-, 60-, 70-year-old infrastructure that needs to be updated, but we also need new infrastructure for new water resources. The resource constraints that have been placed on water administration make it really difficult to put in place the things that we need to do. We need to fund our staff and our initiatives so that we can accomplish important water related goals. Obviously, issues connected to interstate and intrastate litigation are not helpful. We have some cases with Texas that are constraining certain resources. The 50-Year Water Plan will provide an assessment of those challenges in various sectors of the state. The plan will describe how we'll bring all New Mexico stakeholders to the table. Again, OSE/ISC want to ensure inclusive water planning. The 50-Year Water Plan will include what New Mexicans can do to assist in

creating a sustainable plan for the next 50 years that is based on reality with respect to hydrologic parameters.

The major activities supporting the development of the 50-Year Water Plan include trying to incorporate Governor Lujan Grisham's water resilience vision into relevant portions of the 2018 State Water Plan. I want to give a shout out to Lucia Sanchez, OSE's water planner. She has done a great job at bringing all these actions together. Ongoing efforts include:

- Water Data Act implementation (per 2019 HB 651)
- Forest and Watershed Advisory Board (per 2019 HB 266)
- Climate Change Task Force
- Drought Task Force
- Tribal Water Summit

Stacy Timmons is doing well with the Water Data Act implementation, an initiative by Representative Melanie Stansbury and others. It's really important for us to incorporate the Forest and Watershed Advisory Board, Climate Change Task Force, Drought Task Force, and the Tribal Water Summit. All of these initiatives can feed into activities that support the 50-Year Water Plan effort.

We want to proactively engage all water-related climate work. Because OSE is somewhat resource challenged, we don't want to duplicate efforts. We do want to study and combine technical information. There are a significant number of studies, data, and informational resources available, including:

- Water Resources Research Institute statewide efforts
- New Mexico Water Dialogue
- Santa Fe Basin study and City of Santa Fe long-range planning
- Albuquerque 100-Year Plan
- Pecos River Basin study
- San Juan watershed climate change assessment
- Rio Grande Basin Study
- Regional water plans
- Previous state water planning documents

We are trying to bring everybody together so that we're not all doing our own stovepipe analysis and plan. We are bringing everybody together in order to come up with an all-inclusive state water plan that leverages efforts that are already taking place. Selecting the best and most relevant information from all of these other plans and incorporating them into our water plan will help reduce the cost of putting a plan in place.

We have a new initiative that we think will also be a major support for the water plan. We have titled the initiative "pivot and leap ahead." We will use the experience of selected New Mexico water and climate experts to look ahead 50 years and describe how water resources will change in various sections of the state and across the state as a whole. Up to eight New Mexico water resource and climate experts will be convened to

make the leap ahead analysis. Both the current water resource situation and expected challenges in 2070 will be examined and assessed, while ensuring inclusive participation of all stakeholders from all New Mexico watersheds. Our preliminary approach has four phases over 18 months. Hopefully the plan will be in place by April or May of 2022. The phases are:

- Phase 1: Developing the Approach: Improving Resilience and Reducing the Risk
- Phase 2: Perform Leap Ahead Analysis: Assessment of Current and Future Water Resource Conditions at Risk
- Phase 3: Outreach and Creation of Strategies to Achieve Resilience
- Phase 4: Produce Draft, Review, and Finalize Plan

I will now quickly go through some basins. We have had such a dry water year in the Rio Grande Basin. Our office has had to curtail diversions by acequias with water rights dating back to 1600, if you can believe that. Those are the oldest water rights in the entire western United States. There was so little direct flow in the middle valley that the river would have dried naturally upstream of Albuquerque in July of 2020. The Rio Chama went into strict priority administration starting on July 16, 2020. There happens to be a shortage-sharing agreement in that area, but there were still ditches with very senior priorities that had to shut off. After the Middle Rio Grande Conservancy District (MRGCD) runs out of their water supply, the only water left for the Rio Chama is the available native flow. There are prior and paramount rights for the six middle Rio Grande pueblos that have to be accounted for that are taken off the top, a supplemental release of San Juan-Chama Project water by the Bureau of Reclamation for endangered species, and some of the San Juan-Chama Project water for the City of Santa Fe. That accounts for the only available water within the system.

Figure 7 is a graphic detailing the diversion rotation on the Rio Chama, with the Pueblo of Ohkay Owingeh taking water for three days and the other senior ditches, with 1600 priority dates, taking water the other three days. Therefore, only one day was available for these other acequia users that have priority dates as early as 1750. This day of usage was dependent on the availability of water.

These are highly problematic water conditions, so much so that an emergency storage release had to be done. I emphasize that it was necessary to do this release. New Mexico is in an accrued-debit status of almost 39,000 acre-feet in the Rio Grande. Under Article VI of the Rio Grande Compact, the state has to retain water in storage to the extent of that accrued debit. So, if we're going to store any water in El Vado or Santa Fe reservoirs, we need to store 38,800 acre-feet immediately to make sure that we have water in the bank for Texas downstream.

The Compact Commission by unanimous action could authorize the release of storage of any amount of water

RIO CHAMA

| 2020 RCAA ALTERNATIVE ADMINISTRATION ROTATION SCHEDULE                                                                             |        |          |                                           |                         |
|------------------------------------------------------------------------------------------------------------------------------------|--------|----------|-------------------------------------------|-------------------------|
| Available Flow=Average Daily Reading at USGS La Puente Gage - Set Transit Loss*+ Any Local Inflow Measured Above Abiquiu Reservoir |        |          |                                           |                         |
| Ditch Name                                                                                                                         | Group  | Priority | Schedule                                  | Diversion (cfs)         |
| CHAMITA (PUEBLO)                                                                                                                   | Senior |          | On @ Monday, 7 AM Off @ Thursday, 7 AM    | Available Flow          |
| HERNANDEZ                                                                                                                          | Senior | 1600     | On @ Thursday, 7 AM Off @ Monday, 7 AM    | Available Flow          |
| CHAMITA (NON PUEBLO)                                                                                                               |        | 1600     |                                           |                         |
| SALAZAR                                                                                                                            |        | 1600     |                                           |                         |
| CHILI                                                                                                                              |        | 1715     | ON @ Monday, 7 AM OFF @ Tuesday, 7 AM     | When water is available |
| RIO DE CHAMA                                                                                                                       |        | 1724     |                                           |                         |
| MARTINEZ Y DURANES                                                                                                                 |        | 1724     |                                           |                         |
| MANZANARES y MONTOYA                                                                                                               |        | 1724     |                                           |                         |
| GONZALES                                                                                                                           |        | 1724     | ON @ Tuesday, 7 AM OFF @Wednesday, 7 AM   | When water is available |
| LA PUENTE                                                                                                                          |        | 1724     |                                           |                         |
| QUINTANA                                                                                                                           |        | 1724     |                                           |                         |
| VALENTINE MARTINEZ                                                                                                                 |        | 1724     |                                           |                         |
| TIERRA AZUL                                                                                                                        |        | 1724     |                                           |                         |
| MARIANO                                                                                                                            |        | 1724     | ON @ Wednesday, 7 AM OFF @ Thursday, 7 AM | When water is available |
| FERRAN                                                                                                                             |        | 1724     |                                           |                         |
| JV MARTINEZ                                                                                                                        |        | 1735     |                                           |                         |
| JP GONZALES                                                                                                                        |        | 1735     |                                           |                         |
| ABEYTA TRUJILLO                                                                                                                    |        | 1735     |                                           |                         |
|                                                                                                                                    |        | 1735     |                                           |                         |
| * Set transit losses of 13.4 cfs for July, 12.5 cfs for August, 8.5 cfs for September, or 3.6 cfs for October.                     |        |          |                                           |                         |

Figure 7. 2020 Rio Chama alternative administration rotation schedule.

that is being held, which is a pretty bold action to take in these current conditions. Water was retained in storage in El Vado, Nichols, and McClure reservoirs, which are post-1929 reservoirs, to the extent that they had accrued debit. That is water in El Vado reservoir for MRGCD's use, and in Nichols and McClure reservoirs for the City of Santa Fe. When they started storing water last spring, they stored water in those amounts.

Figure 8 shows Rio Grande Compact (Article VI) cumulative departures from 1940 to 2019. Years are on the x-axis. Interestingly the red line on the y-axis is not at the zero demarcation line. The way the compact is written, above the -200,000 acre-foot line, New Mexico is following the compact. As you can see in 2020, there is an almost 39,000-acre-foot debit status. The state is projected to be in a debit status of somewhere between 80,000 and 100,000 acre-feet in 2021.

Due to extreme drought conditions, MRGCD requested through me as New Mexico's Compact Commissioner to allow an emergency release of debit water retained in El Vado. Earlier, I mentioned that we needed commissioners from Colorado and Texas to agree unanimously to that release. The goal for this release was to prevent significant economic harm to farmers that were in the middle of their irrigation season and to sustain habitat for endangered species. I was really surprised that with the *Texas v. New*

Mexico litigation ongoing, the Texas commissioner was willing to allow us to go ahead and release that debit water. An agreement was made within a day and a half of the river going dry in mid-July. As soon as we had that agreement, I issued a State Engineer order, directing how the debit water would be used, for 38,000 acre-feet on the 17<sup>th</sup> of July. Water was released to try to get us through Labor Day in order to reduce economic harm to those farmers and to sustain the habitat for the endangered silvery minnow. The release would give the farmers in the middle Rio Grande and the endangered species another 60 days. The debit operations also preserved recreational and aesthetic benefits for the Rio Grande and assisted water users upstream of the middle valley on the Rio Chama and in the Rio Grande downstream of Ohkay Owingeh. We had to put conditions on the 38,000 acre-feet emergency debit release. The average of 300 cubic feet per second (CFS) released per day would satisfy area needs through Labor Day. We allowed for a maximum release of 400 CFS under certain circumstances. Overall, MRGCD did really well with those set conditions. The first couple of weeks didn't rain, so they asked for a variance to get them up to that 400 CFS.

The emergency release reduced the water that would reach Elephant Butte in 2020, and also reduced the Rio Grande Project supply for 2021, putting the state into a

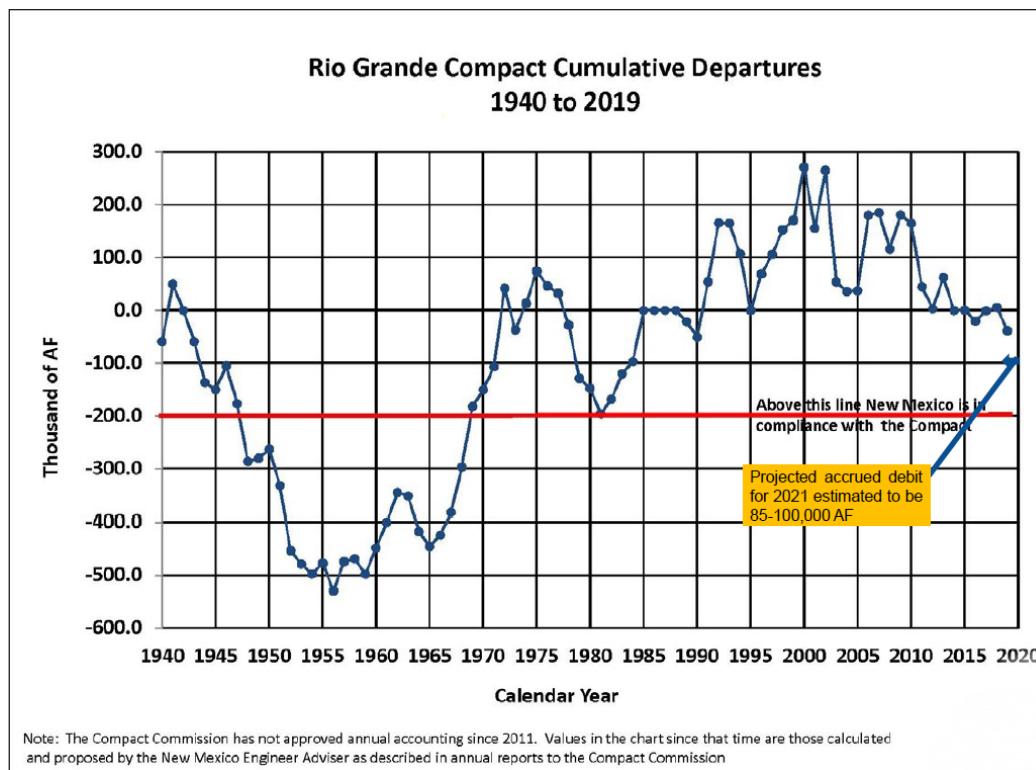


**Figure 8. Rio Grande Compact cumulative departures, 1940–2019.**

further accrued debit status. We're anticipating a very tough water year in 2021. There is the likelihood of very minimal runoff that could potentially end in May 2021. I spoke earlier about the projected compact debit for 2021. Currently, there are going to be storage restrictions in El Vado. Because of the structural issues there, about 120,000 acre-feet is all that can be stored. If better than anticipated runoff occurs, we're still going to have to require that most of the stored water be tied up for the prior and paramount reserve, which is necessary every year, as well as under

Article VI, which means the water has to go down to Texas. We're going to be working closely with MRGCD on options, which will be evaluated based on hydrologic conditions and compact considerations.

I'm going to have to stop there, though there is much more that can be talked about. There are challenges all over the State of New Mexico. I highlighted just the pressing water-related issues that affect the middle Rio Grande.