



Bringing Accountability To Water Planning: Does It Take A Crisis?

Key Challenges Panel: The Consequences of Being Overdrawn

- Economic:* Lee Brown, Ph.D., principal, H2O Economics
- Interstate Stream Compact Compliance:* Kevin Flanigan, hydrologist, ISC
- Environment:* Alan Hamilton, Ph.D., Conservation Director New Mexico Wildlife Federation

Kevin Flanigan, Interstate Stream Commission: For those of you who do not know me, I'm a senior hydrologist with the Rio Grande Bureau of the Interstate Stream Commission. I've been with the ISC for about ten years, working exclusively on Rio Grande issues.

Rio Grande Compact Compliance Presentation Overview

- Rio Grande Compact basics
- Compliance to date
- Future Compact compliance
- Consequences of non-compliance

Here's an outline of my presentation this morning. I'm going to give a very brief overview of the Rio Grande Compact; discuss some of the factors in why we have been successfully complying with that Compact in recent decades; and talk about some future threats to that compliance; and wrap it up with a brief discussion of the consequences of being overdrawn in the Rio Grande Basin.

Upper Rio Grande Basin

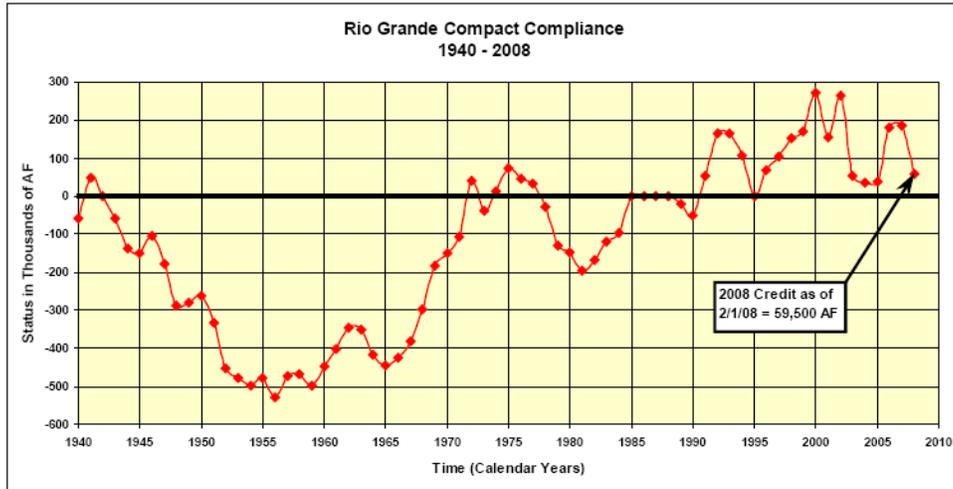
- Upper Rio Grande Basin
- Headwaters of Rio Grande in Colorado to Fort Quitman, Texas
- A negotiated agreement between Colorado, New Mexico and Texas apportioning the waters of the Rio Grande basin signed in 1938.

This is the Rio Grande Basin that the Compact covers, from the headwaters in southern Colorado, down to Fort Quitman, in Texas. Compacts are essentially

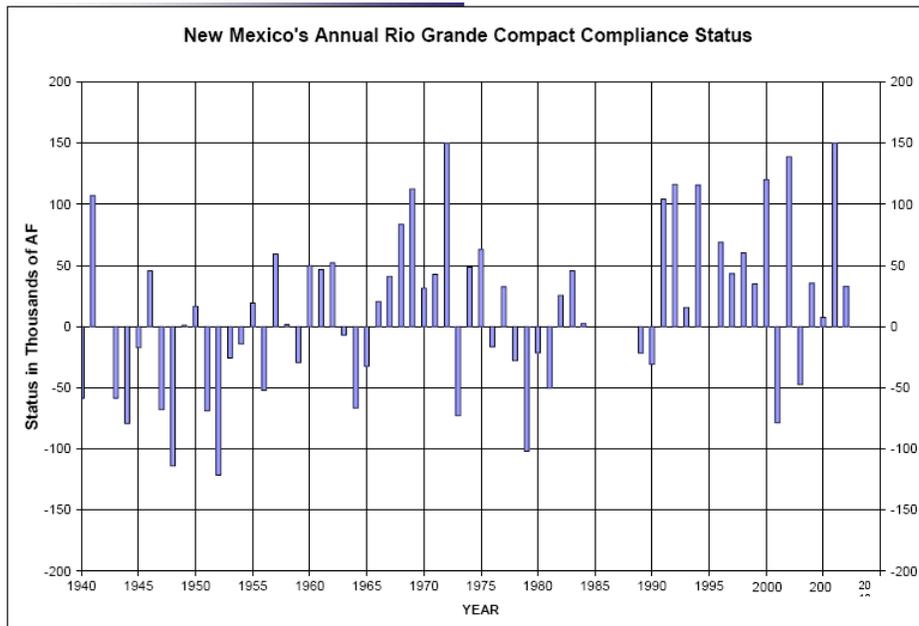


agreements between states that are entered into pursuant to Section X or Article I of the Constitution of the United States. The Rio Grande Compact was signed in 1938 in Santa Fe, between the three states of Colorado, New Mexico and Texas, apportioning the waters of the basin.

New Mexico's Accrued Compact Compliance



Under the Compact, Colorado is required to deliver a certain amount of flow in the river that originates in Colorado, deliver it to New Mexico at the Colorado/New Mexico state line, and New Mexico is required to deliver a certain amount of the flow, as measured at the Otowi stream gauge, to Texas at Elephant Butte Reservoir. Now this slide shows our history of compliance with the Compact, our annual end-of-the-year accounting balance under the Compact. You can see we started out okay but then things went rapidly downhill right after that, for a period of about twenty years or so. We managed to turn things around in about 1955, and have actually been doing okay since then.



This is, in a sense, the same slide on an annual basis, and in the interest of time, I'll just ask Bob to go on to the next one.

Factors in Maintaining Compliance

- Reclamation's Middle Rio Grande river system maintenance and LFCC
- Elephant Butte delta pilot channels
- MRGCD infrastructure improvements
- MRGCD diversion reductions
- Lucky monsoon patterns

These are some of the factors that I believe have played a roll in why New Mexico has been in compliance with the Rio Grande Compact over the last several decades. In 1950, Congress authorized the Middle Rio Grande Project, and as a result, reclamation essentially channelized the river from Velarde to San Acacia in order to move water and sediment through the system. Of course, that has resulted in some of the problems we find ourselves in today with endangered species.

The ISC cooperates with the Bureau of Reclamation on the maintenance of what we call pilot channels through sediment areas as they develop on the river, or in the upper end of Elephant Butte Reservoir as the active pool of the reservoir has receded due to longterm drought that started in 1996.

MRGCD has become incredibly efficient over the last ten years or so. Prior to 2003, they were diverting—withdrawing from the river—on average, about 600,000 acre-feet per year. Over the last five years or so, they've gotten that down to an average of about 360,000 afy. And please do not confuse *withdrawals* with *consumption*—their crop consumption has essentially stayed the same within that time period, but what has resulted from this increase in efficiency is a savings in incidental depletions that result from moving all that water through their system.

And finally, lucky monsoon patterns have played a role in our Compact compliance in recent years. We saw this particularly last year, and in 2006, when the monsoon was centered below the Otowi gauge. That's essentially pure gravy, water that flows in the river down to Elephant Butte and meets Compact delivery requirements.

Future Compact Compliance - Uncertain Water Rights Situation

- Unknown quantity of pre-1907 surface water rights (best estimates are on the order of about 100,000 acre-feet).
- Unquantified known MRGCD rights (permits 0620 and 1690).
- Unquantified and uncharacterized Pueblo rights.
- Ground-water pumping impacts on stream flows (~230,000 acre-feet of yet to be exercised permitted pumping).

I want to go through several factors that I believe are potentially a threat to New Mexico's future compliance with the Compact. Because of time constraints, I won't be able to go into them in great detail. The first is the murky water rights situation in the middle valley. The number of pre-

1907 surface water rights that exist—there is no real handle on that number. The best estimates are that there are roughly 100,000 acre-feet or so. The surface water rights of the Middle Rio Grande Conservancy District have not been quantified under State Engineer permits 0620 and 1690, and although I'm sure there are some people in the room that have very strong opinions about this, the senior water rights of the Six Middle Rio Grande Pueblos have not been quantified or characterized as to their exact nature. And finally, the State Engineer has issued groundwater-pumping permits for up to 230,000 acre-feet per year. Currently, I believe, on the order of 140,000 acre-feet per year of pumping is going on. What will happen if and when all those permits are fully exercised? The point of this is it's hard to administer a basin for Compact compliance when the water rights situation in that basin is so murky.

Future Compact Compliance - Un-Administered Water Use

- Domestic wells: Estimates range as high 20,000 to 30,000 acre-feet per year of withdrawals within the valley bottom.
- Deep wells: Since 2006, six Notices of Intention to appropriate deep groundwater on the west mesa of Albuquerque have been filed totaling almost 210,000 acre-feet.

This has two categories of what I'm calling 'un-administered water.' Domestic wells out there, the best estimates are maybe 20,000 to 30,000 acre-feet from domestic wells in the valley bottom, up and down the valley. All of that has a direct impact on flow in the river. And, over the last two years, six Notices of Intention have been filed to appropriate deep saline groundwater on the western side of Albuquerque, totaling up to 210,000 acre-feet per year. If all that deep pumping were exercised, would there be impacts on the Rio Grande, or the Puerco, or the Rio Jemez? That is something no one knows, and something that the Interstate Stream Commission is very concerned about.

Future Compact Compliance - Climate Change

- How will climate change impact New Mexico's ability to comply with the Rio Grande Compact?
 - Less precipitation?
 - Less snowpack?
 - Earlier snowmelt runoff?
 - Greater evaporation due to higher temperatures?

We also have uncertain climate change. All the long-term climate models seem to be showing that the southwest will be hit hard by climate change with respect to changes in the amount of precipitation, and the timing of that precipitation. Will that impact New Mexico's ability to comply with the Compact?

Future Compact Compliance - Endangered Species

- Two endangered species impacting water resources: Rio Grande silvery minnow, Southwest willow flycatcher.
- ESA litigation (Minnow v Martinez) ongoing since 1999.
- New Biological Opinion scheduled to be issued in 2010.

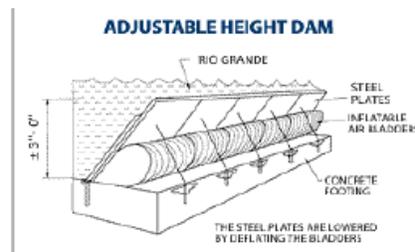
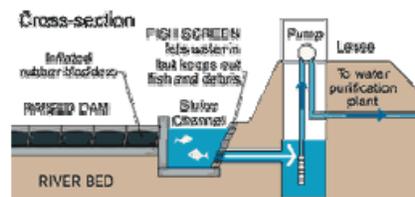
We also have two endangered species on the Rio Grande that have caused, or resulted in, significant changes in water management in recent years: the Rio Grande silvery minnow and the southwestern willow flycatcher. Litigation over those species has been ongoing since 1999, and we're currently awaiting a decision from the 10th Circuit Court of Appeals on arguments that were heard in the spring of 2007. Will this litigation ever result in a direct face-off between the Rio Grande Compact and the Endangered Species Act? I don't know, and no one really knows what that outcome might be if and when it occurs.

Future Compact Compliance - Growth in Demand

- The three planning regions in the Middle Rio Grande basin estimate an increase in municipal consumption over the next 50 years that is two to three times that of current levels.
- Can the basin absorb this growth? What are the implications for Compact compliance of all this growth?

Now on top of all that, you add in the projected growth and demand that is expected to occur in the basin over the next fifty years—something like two-to-three times the amount of current municipal demand...can the basin really accommodate all this demand? Can the *Compact* survive all this demand is the question.

Future Compact Compliance - ABCWUA Surface Water Diversion

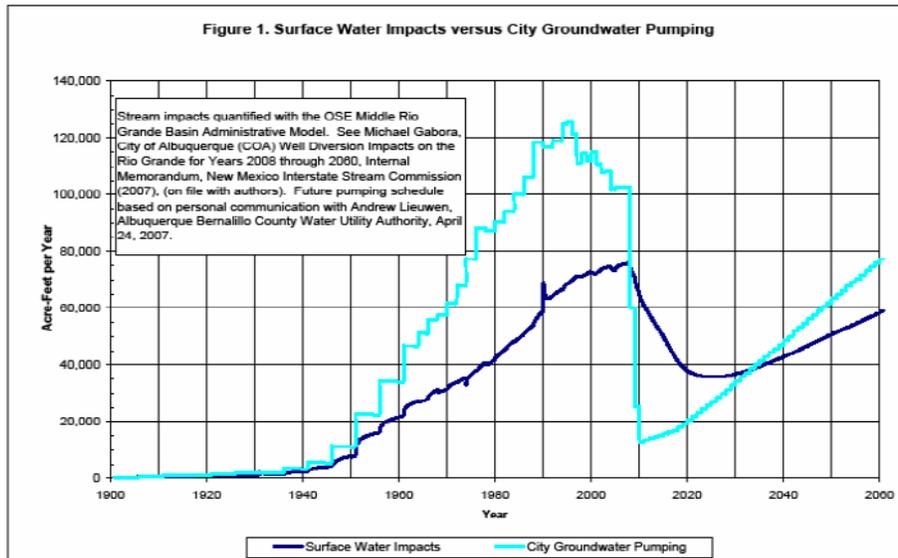


And I do want to say a few words about a project that came on line last month, the Albuquerque/Bernalillo County Water Utility Authority's—which I'll call 'the city' for short—their San Juan-Chama Drinking Water Project. I know a lot of people think this project will result in New Mexico's non-compliance with the Compact, and I can assure you that it will not.

The Impact of Full Beneficial Use of San Juan-Chama Project Water by the City of Albuquerque on New Mexico's Rio Grande Compact Obligations

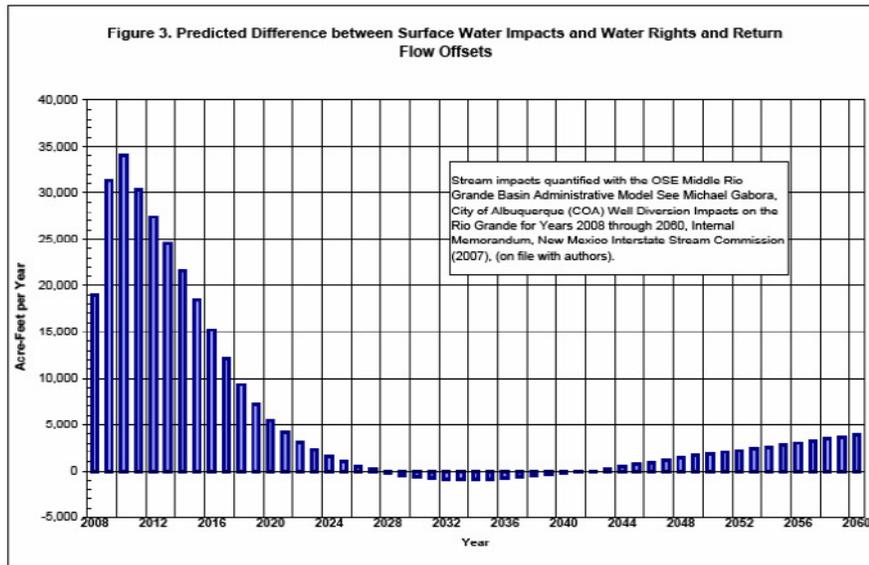
I've looked into this in great detail, and at this point I'd like to put forth a shameless, self-promotional plug: there's a paper that will be coming out in the next issue of the Natural Resources Journal of the University of New Mexico School of Law that goes into this in great detail. I'd also like to acknowledge my co-author, Amy Haas, who is the Middle Rio Grande attorney for the Interstate Stream Commission.

The ABCWUA Surface Water Diversion



This figure shows both the historic and projected groundwater pumping by the City of Albuquerque—that's the upper light blue curve—and it shows the historical and projected streamflow impacts that have resulted and will result from that pumping. You can see that the effect of the city's conservation program kicked in there, about 2000 or so, and they made some strides in lowering their pumping, and when the project comes on line as it has, (they'll be up to full capacity on their Drinking Water Project probably about 2010) groundwater pumping will drop off significantly in the short term, as will stream depletion impacts. Now at the end of 2006, stream depletion impacts from the city's pumping totaled roughly 75,000 acre-feet per year. That was 75,000 acre-feet of water coming out of the river as a result of the historical pumping. At the same time, the city was returning wastewater through its wastewater treatment plant, groundwater that was pumped and not consumed, and that was a return flow credit that in part offsets those stream depletion impacts. Now the impacts were greater in that time-frame than the return flow credits, and the remainder of the offset was made up by retired pre-1907 surface rights that the city has acquired, as well as its vested groundwater rights. The point I want to make here is there's a perception out there that the city has been pumping all this groundwater, consuming half of it and putting the other half in the river and by doing so, has been augmenting the river historically. That is not the case. The depletions on the river have always been greater than the return flow to the river, with an exception of a short time period during the 1970s.

The ABCWUA Surface Water Diversion



This slide shows the stream depletion impacts that will *not* be offset by return flow credits of the city’s retired surface water rights or groundwater rights. This is what is referred to as ‘the hump.’ There’s maybe as many as 30,000 acre-feet of un-offset impacts that will occur in two or three years once the city is up to full capacity on the Drinking Water Project. These will be offset by the 170,000 acre-feet of San Juan-Chama water that the city has in storage in Abiquiu Reservoir at the end of last year, as well as approximately 110,000 acre-feet owed to the city by MRGCD and the Bureau of Reclamation. If you add up all the volume of requiring offset between now and twenty-five years out, it roughly equals the amount of water in storage and the amount owed to Albuquerque.

Consequences of Non-Compliance

Partial List of New Mexico Compact Litigation

- Texas v New Mexico, 1988 -Pecos River Compact
- Oklahoma and Texas v New Mexico, 1993 -Canadian River Compact
- Texas v New Mexico, 1957 –Rio Grande Compact

I did want to go into the consequences of non-compliance. Lee earlier covered the Pecos River situation pretty thoroughly, so I don’t need to go into that. Oklahoma and Texas sued New Mexico in the Supreme Court over the Canadian River Compact, and in 1993, the court issued an opinion, which prevented New Mexico from—I should say limited New Mexico to utilizing only 200,000 acre-feet of the storage capacity of Ute Reservoir. The reservoir holds something like 275,000 acre-feet. That’s not necessarily an extremely adverse ruling, but what it does is prevent New Mexico from fully utilizing that reservoir to manage the water resources of the basin.

In 1951, if you recall about the third slide I put up, that showed the history of compliance with the [RG] Compact, we had a huge debit, on the order of 600,000 acre-feet. Texas sued us over that debit, and fortunately, the case was dismissed in 1957, due to a technicality—the absence of the United States as an indispensable party in the suit on behalf of Pueblo irrigators.

I did want to say a few words about what would happen if we were to suffer a future adverse ruling on the Rio Grande Compact, but I think Lee actually stole that from me, and he did a very good job. The situation would not be pretty; \$2.4 billion is a lot of money, and I think all New Mexicans can agree that is something that we should strive to avoid on the Rio Grande. Thank you.

The following was the last question asked of the Lee/Kevin/Alan panel, and the only one aimed at Kevin:

Randy Kirkpatrick: I'm Director of the San Juan Water Commission, and Kevin, I think this question's mostly to you. You mentioned three compacts. There's a fourth compact that's certainly going to affect in the future the Middle Rio Grande corridor, which is the Colorado River Compact. In 2007, we had the Seven States Agreement. The San Juan-Chama water supply is a *junior* water supply under that agreement. In other words, it will be curtailed at some level if there's a call on the Lower Colorado. Has that been factored in, and is that not going to be a crisis if we get back to about a 2007 situation?

Kevin Flanigan: I'm not sure how well I can answer your question since I work primarily on the Rio Grande. I'm vaguely aware of the process that the parties underwent on the San Juan River and the Colorado side. I do know that yes, there are projections that the San Juan-Chama Project could be implicated by, especially, climate change, forthcoming climate change, but I think your question is best directed to people at the Interstate Stream Commission that are familiar with the Colorado, particularly John Whipple. I'm sorry to have to punt like that, Randy.

Lee Brown: I just want to ask Randy, since this is a dialogue, the shortage sharing agreements that exist there in the San Juan, would they allow side agreements between two other parties, so that one that's going to be shorted could in fact agree with some other party to buy the water that they're still going to get—the San Juan-Chama Project could buy water from an irrigator to make up for whatever they would be shorted?

Randy Kirkpatrick: I would assume that the most likely potential would certainly be with the Navajo Nation, since the settlement seems to be nearing approval, but the concern I have is that *our* economy is based on—the San Juan Basin's economic basis is about the same quantity of water that we transfer through the San Juan-Chama. We certainly can't afford to allow Albuquerque to hurt our economic base, any better than we can allow anyone else to do so. My concern is if we get to that situation...we've got Las Vegas...