

# Canals to Climate Change: What Direction for the Future?

New Mexico Water Dialogue – January 2019

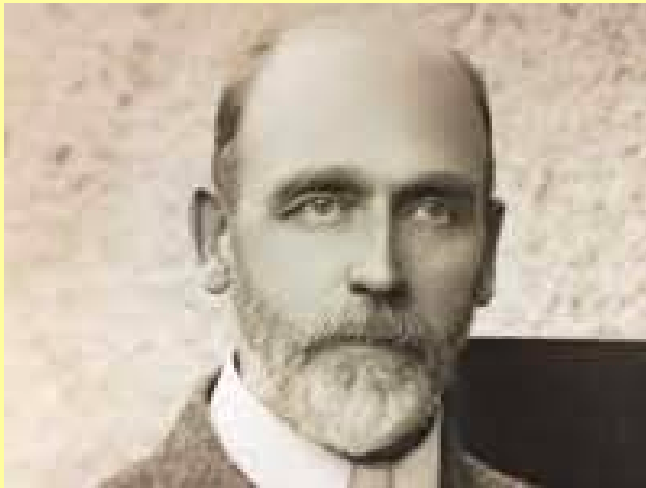
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# Let's start back in 1900

How to ensure that water from Federal irrigation projects would be developed rapidly and not sequestered by speculators?



Fredrick H. Newell



“Great” Elephant Butte Dam, authorized 1905, completed 1916

The answer was the ‘Doctrine of Prior Appropriation’

# Morris Bien, Codifier of Western Water Law



3.43. Morris Bien, the head of Reclamation's early legal efforts. *Reclamation Record*, June 1920.

## 'Prior Appropriation'

NM Territorial Law 1907

NM State Constitution 1912

- Natural water "belong[s] to the public"
- A right to use the water may be appropriated by putting it to beneficial use
- 'First in time: first in right'
  - in time of shortage junior users are cut off in reverse order

Before he studied law, Morris Bien was a **civil engineer**, with a degree from UC Berkeley

# What are the goals of Prior Appropriation?

- Encourage the rapid exploitation of water resources
- Legally protect those who took the risk of development (priority of right)
- Prevent water from being monopolized or sequestered away by speculators
- Minimize waste

# What kind of job has Prior Appropriation done?

- In many respects, prior appropriation has been very successful as a set of principles for management, but, it must be acknowledged that...
- **Prior appropriation** is also in large part a **legal fiction**. In big, multi-user drainages such as the Middle Rio Grande, priority of right is almost impossible to establish, the actual diversion of water is only vaguely related to the water right, and the enforcement system (priority administration) has never even been attempted.

## How is water distribution actually managed?

- **Shared shortage:** in time of shortage, water is proportionally divided among agricultural right holders
- **Ad-hoc regulation:** e.g., Steve Reynolds and conjunctive management
- **External authority:** e.g., silvery minnow and the Endangered Species Act
- **Negotiated agreements:** e.g., water for the silvery minnow, Navaho water rights

Let's jump 100 years forward from Morris Bien and the foundations of NM water law. What are the big changes in the State?

- Great increase in population (mostly urban or suburban)
- Large decline in the economic importance of agriculture
- Greatly increased value placed on natural environment
- Steady decline in water supply due to climate change

# Example 1: Ogallala aquifer near Clovis

Textbook example of unsustainable use, but perfectly legal under Prior Appropriation

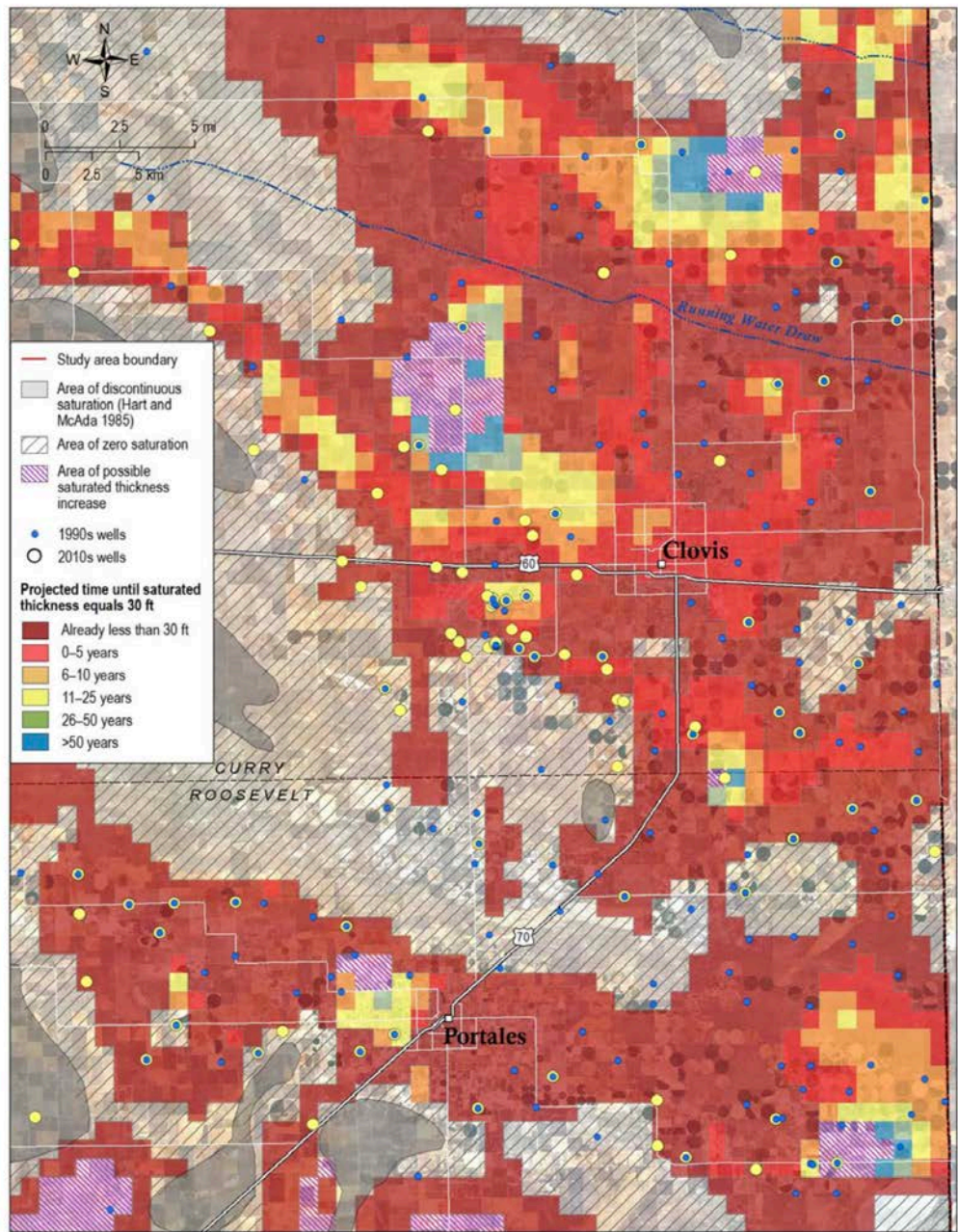
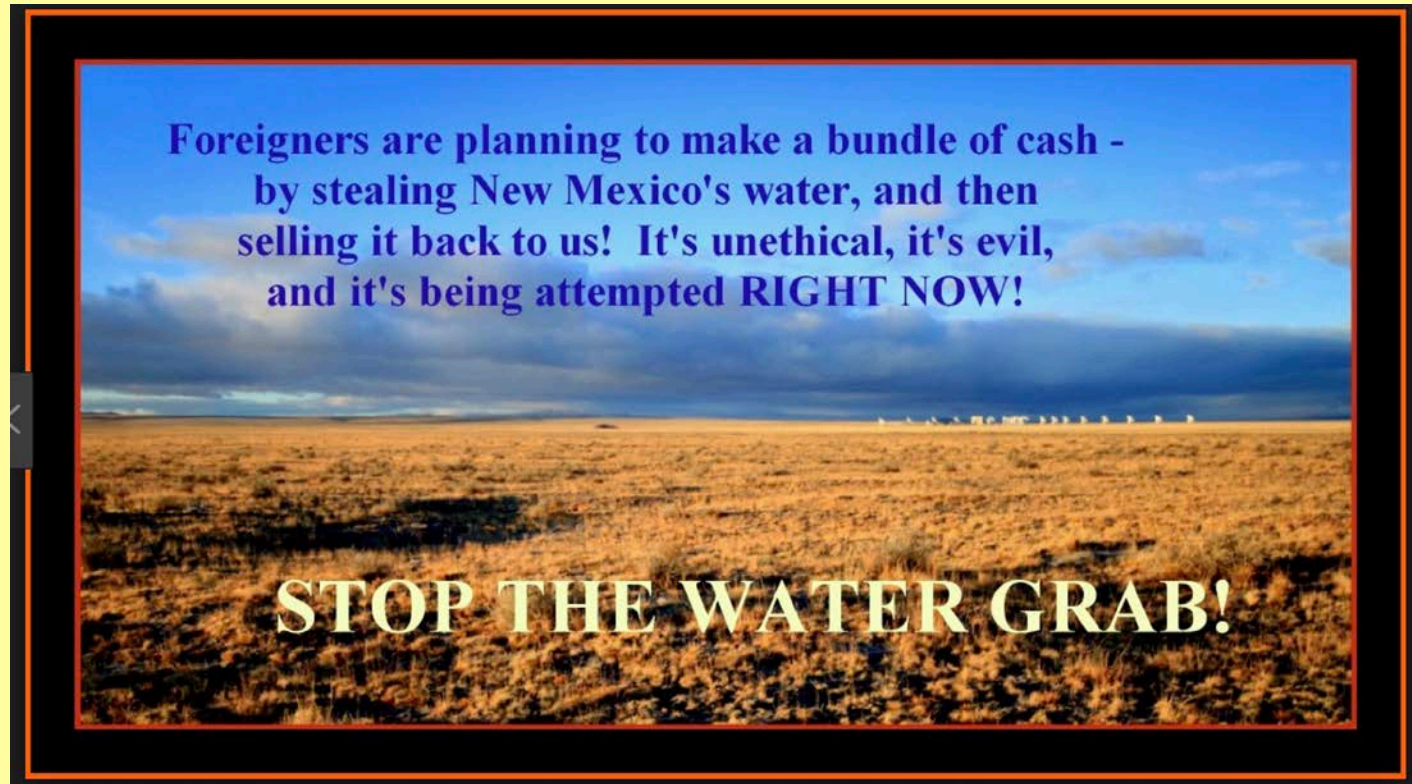


Figure 18. Projected lifetime of the High Plains aquifer until a threshold saturated thickness of 30 ft is reached, focused on the Clovis-Portales region. This represents the usable lifetime for large-scale irrigated agriculture. Map is based on water-level declines over the 20-year interval from the 1990s to 2010s decade. Background image is from the National Agriculture Imagery Program, 2009.

Rawling and Rinehart (2018)



Example 2: San  
Agustin Plains  
groundwater  
appropriation



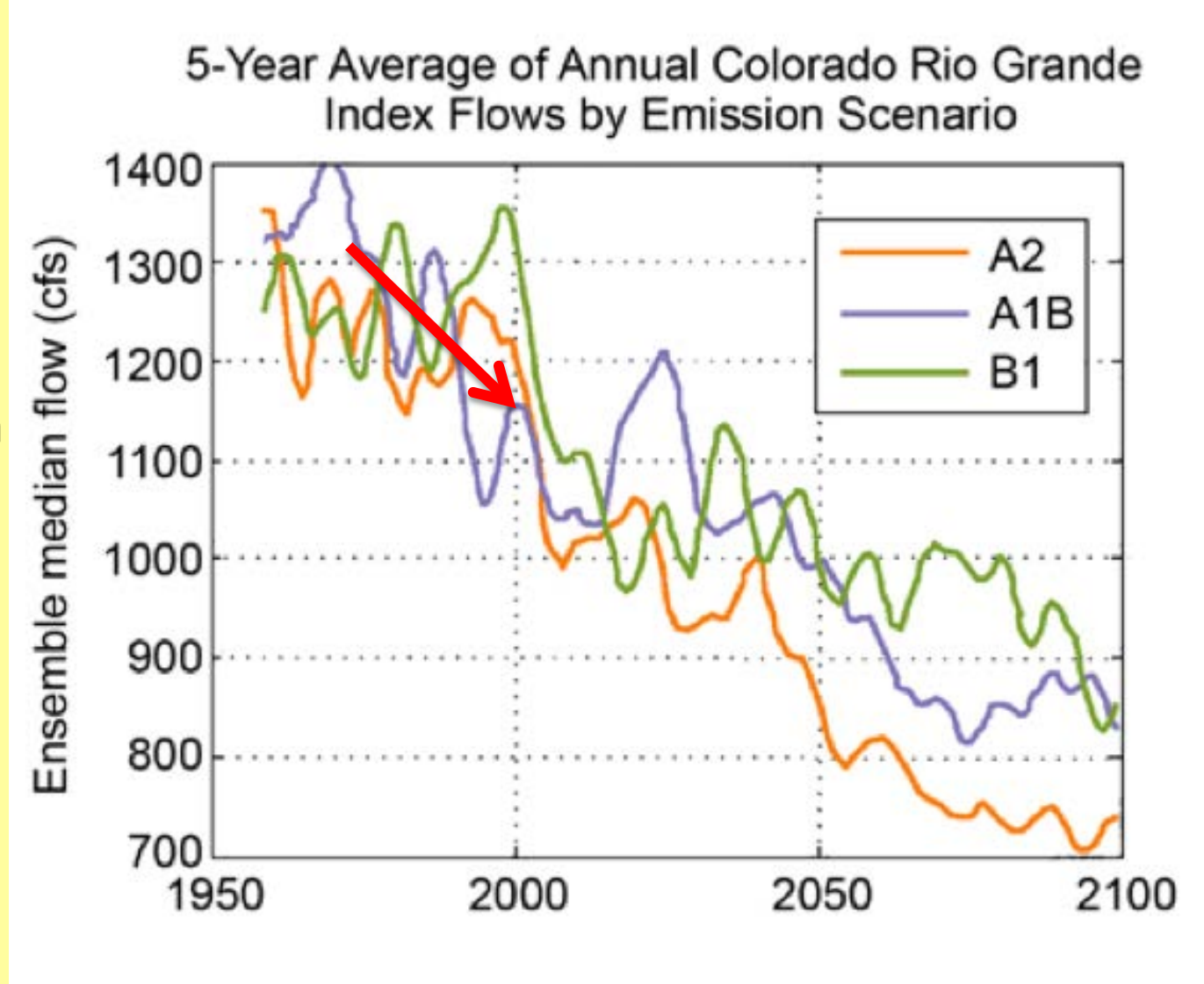
'Augustin Plains Ranch' groundwater right application denied because of lack of demonstrated beneficial use...

-but it will have to be approved if a purchaser of the water can be identified.

## Example 3: Flow of the Rio Grande

# Projections of 21<sup>st</sup> century runoff

In the absence of Priority Administration, how will this drastic reduction be dealt with?



from: Llewellyn and Vaddey (2013) West-wide climate risk assessment: Upper Rio Grande Impact Assessment: Bureau Reclamation, Albuquerque, Figure 14c.

# Is it time to consider a new water code?

Our current code was formulated in the late 19<sup>th</sup> century to meet a specific need: encouraging rapid and equitable expansion of irrigation.

Is it reasonable to expect it to solve the problems of expanding post-industrial society and global climate change in the 21<sup>st</sup> century?

Or is it time to start thinking about alternatives?

If we're going to talk about significant changes, somebody has to put some ideas on the table. So here are mine...

# Principles I would suggest

Formally recognize that water is New Mexico's limiting resource.

Money, energy, population, intellectual capital – all of these can be imported or increased. Water is a zero-sum game. Any new use of water requires taking it away from a user already here. Where the water goes determines what the State will be.

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Strengthen the principle that water is a resource owned by the public as a whole.

New Mexico's constitution recognizes public ownership of water, but is never really specific in balancing that with private "appropriation" of water. It needs to strengthen the statement of the right of the public to manage and allocate water in the public interest.

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## Principles I would suggest

Maintain private rights to water diversion and make temporary transfers (i.e., leasing) easier.

Investment in society by individuals and corporations requires water security, but temporary transfers can serve as a “safety valve” to reallocate water where it is needed in either times of excess supply or shortfall.

## Principles I would suggest

Recognizing that water is NM's limiting resource, allocate water so as to achieve the societal goals of the population.

Under the current laws, transfers of water are inevitable and invisible and will finally result in a state that most citizens probably consider undesirable. Instead, **why not allocate water to the major sectors (agriculture, municipal, industry, environment) to achieve the desired state?**

## Principles I would suggest

Explicitly recognize that water supply may decline and make provisions for dealing with that.

Don't blindly expand consumptive demand (e.g., population) without agreeing beforehand how redistributions will be made when the situation arises (which means agreeing that the losses from redistribution outweigh the gains). Priority administration generally is not workable.

Come up with new approaches to shortage administration that will achieve the desired ends.

# A Caution

We have to acknowledge that there will be a large cost (legal, personal, institutional, infrastructure...) to any substantial revision to the water code.

Perhaps the benefits of change won't justify the costs of change. That is a very real possibility.

I think it's time we at least started  
to talk about it.