

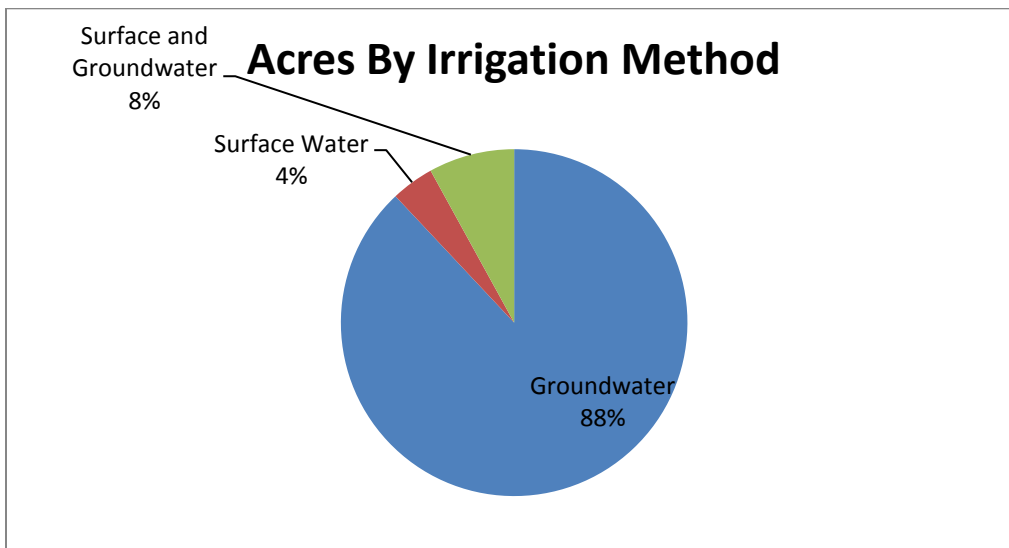


Planning for Balance: Republican Basin Water Management for Resource and Economic Sustainability

The Republican Basin NRDs in cooperation with the state have developed Integrated Management Plans that call for reductions in pumping over the mid and long term to stabilize impacts that pumping has on stream flow. This stabilization will make compliance with the Republican River Compact through the use of projects including stream flow augmentation sufficient in very dry years. It has the added benefit of preserving groundwater for future use and supplementing surface water supplies.

Maintaining compliance solely through regulation of groundwater use in exceptionally dry years would require complete irrigation shutdowns on hundreds of thousands of irrigated acres in the Basin and increased regulation on surface water users. The action plans outlined in the IMPs require all shortfalls under the surface water compact to be made up by the NRDs. The only volume of water not available to surface water use is the water provided by the NRDs to make up the shortfall forecast by DNR. **Without augmentation surface water users would have less water available for use - as much as 16,000 acre feet less in 2013.**

Management Acres by Irrigation Type

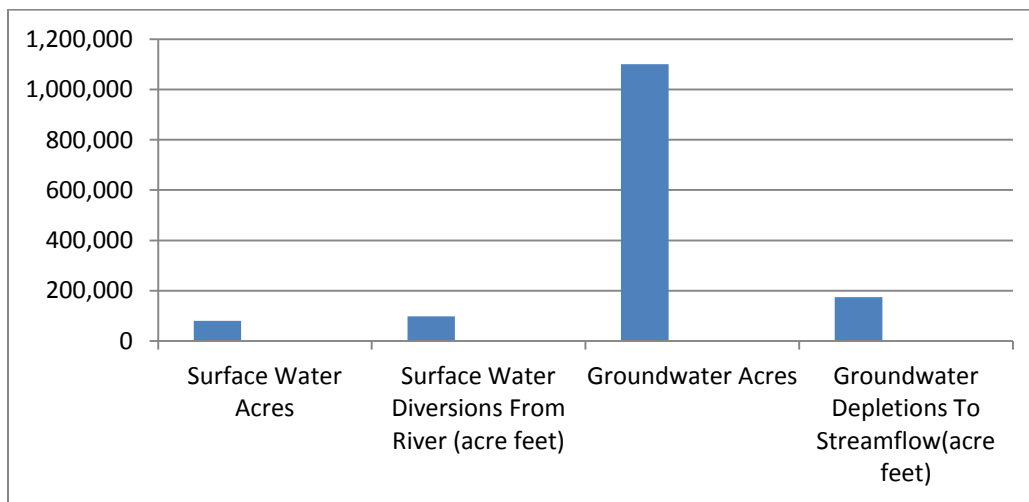


- ✓ **There are a total of 1.1 million groundwater irrigated acres in the Republican Basin with an assessed value of more than \$2 billion, approximately one-fourth of the total assessed property value in the Basin.**

Why Augmentation?

- **Kansas wants to permanently shut down 300,000 irrigated acres in the Basin**
- **Without augmentation NRDs would have to shut down 100,000-200,000 acres**
- **Under the NCORPE augmentation project, less than 16,000 acres will be retired**

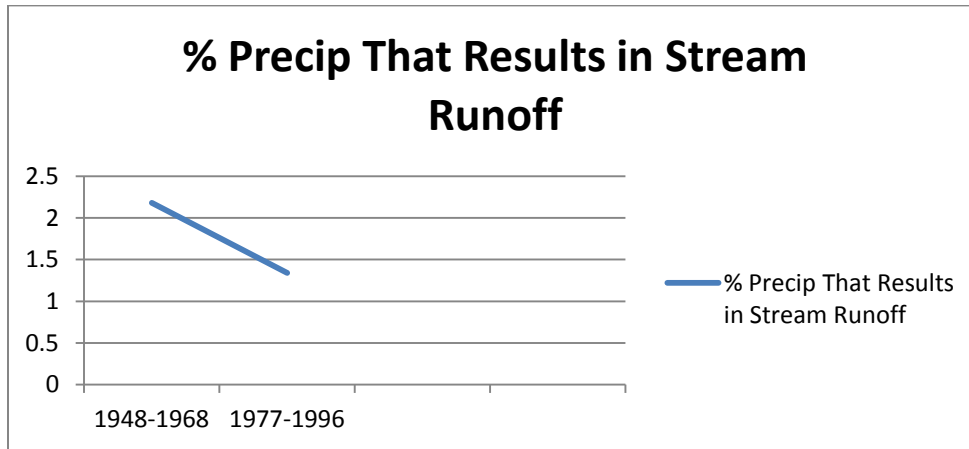
What is “Taking” Water From the River?



**Source: Department of Natural Resources, 2011 and 2012 Data*

- ✓ **In 2012, depletions to Republican River stream flow caused by groundwater pumping equaled 13% of all groundwater pumped for irrigation in the Basin. Comparatively, the number of acre feet of water diverted directly from the river by surface water irrigation districts often meets or exceeds the total number of acres served by the irrigation districts.**

Effects of Modern Farming Practices on Stream Flow

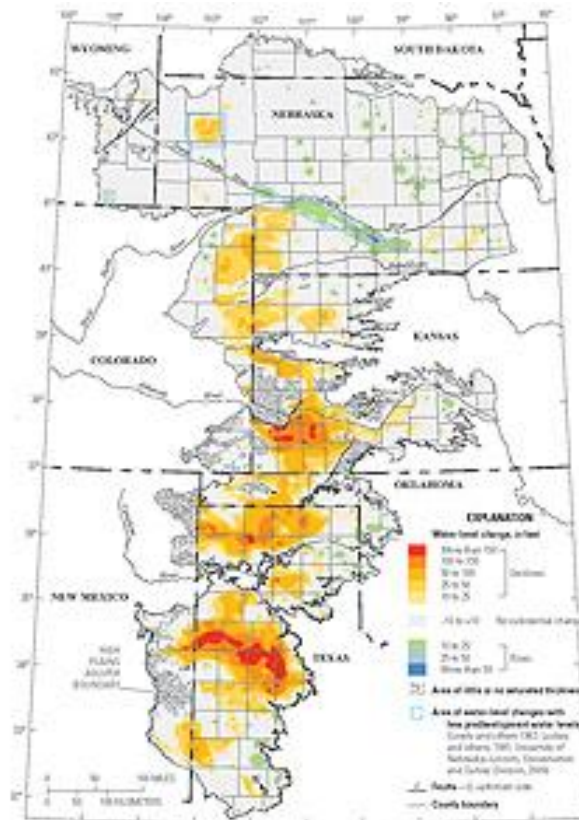
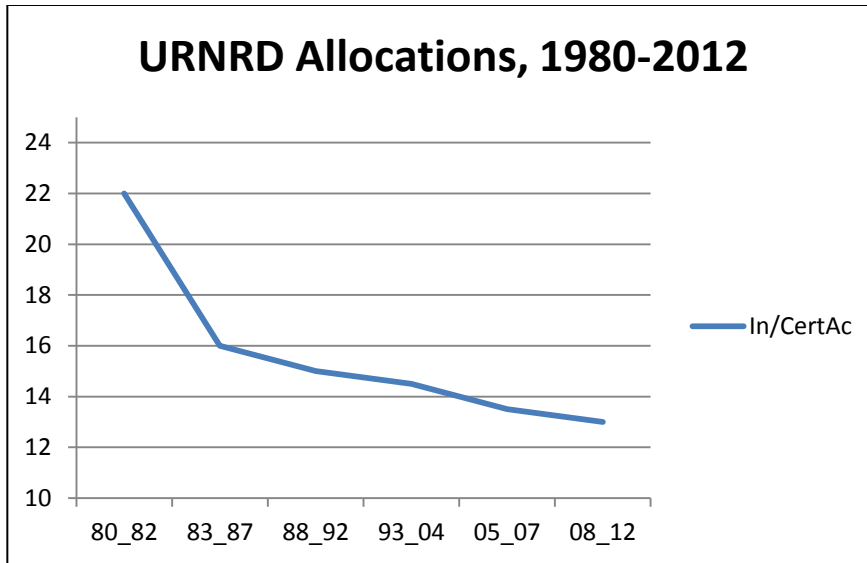


Source: "Identifying Cause of Declining Flow in the Republican River," Jozsef Szilagyi, 2001, *Journal of Water Resources Planning and Management*

- ✓ **The percentage of precipitation that results in runoff that increases stream flow in the Republican River has declined by at least 40%.**
- ✓ **USGS reports historically, approximately 2/3 of Republican stream flow was from precipitation runoff.**
- ✓ **A recent study commissioned by the Republican River Compact Administration found that non-federal reservoirs and land terraces decrease Republican stream flow 63,000 acre feet annually, on average. The broad based conservation practices of no-till or minimum tillage remain unquantified, but are thought to have a much larger impact than terraces and small reservoirs, as it applies to a much larger number of acres.**

NRD Water Use Compared to Adjoining States

The Republican Basin is believed to be the largest and most heavily regulated groundwater-use area not only in Nebraska, but the entire 8-state region that overlies the Ogallala Aquifer. In western Kansas, groundwater use in most areas is restricted to 18"-24" annually and users largely self-report their use to the state. Water use in some areas of eastern Colorado is limited to 30". Restrictions in Texas are largely nonexistent. By comparison, allocations in Nebraska's Republican Basin currently range between 9" and 13". The largest groundwater declines in Nebraska are *half* of the largest declines in other states including Kansas. Other states have looked to the Basin for ideas on how to better manage water. The Upper Republican NRD is believed to be the first entity in the country to restrict agricultural water use:



Source: U.S. Geological Survey, Ogallala Aquifer Groundwater Declines Predevelopment-2011

- ✓ **The red in the above map denotes areas in the Ogallala Aquifer with groundwater declines of more than 150 feet. The lighter colors represent smaller declines.**

Assuring Compliance: DNR's Compact Forecasting

Nebraska's Department of Natural Resources, working in conjunction with the NRDs, has a zero-tolerance policy when it comes to noncompliance with the Republican River Compact. To assure compliance, DNR at the end of each year analyzes water supply conditions and usage for the year, projects the same for the following year, and determines whether the NRDs and state will need to take action to maintain compliance. This preliminary forecast is normally done in November, and a final forecast is done in January.

If a shortfall is projected a compact call year is declared and the NRDs must submit written plans to the state by the end of January detailing their plans to reduce depletions to stream flow or offset the depletions to maintain compliance. In order to ensure compliance and Kansas is not deprived of its compact water, the State requires surface water users to forgo the use of the volume of water the NRDs are required to put in the stream through management.

In 2013 for instance, the Upper Republican NRD will add 16,000 acre-feet through augmentation, and the Middle and Lower Republican NRDs added 3,800 acre-feet by retiring surface water irrigation. That volume of water will not be available for use, as it was water for compact compliance.

The volume of water that was forecast to be available for use by surface water appropriators, absent the NRDs' actions, will still be available for use by surface water appropriators based on regulation under prior appropriation. Thus, the volume of surface water available for diversion is unaffected by the current compact call, as the compact call only protects the volume of water necessary for compliance that the NRDs are required to provide.

For more information, contact Nate Jenkins at the Upper Republican NRD.

Nate Jenkins
Upper Republican NRD
511 East 5th Street
P.O. Box 1140
Imperial, Nebraska 69033
(308) 882-5173
NateJenkins@urnrd.org