Republican River Basin NRDs

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Sustainability Steps – Previous and Planned Actions in the Republican Basin to Preserve Water

Upper, Middle and Lower Republican NRDs

Highlights

- Allocations in the Lower, Middle and Upper Republican NRDs have dropped an average of 25%
- Rules and regulations have helped produce rising aquifer levels in some regions, stabilized levels in others and significantly slowed rates of decline in other areas.
- Regulated water use in the Basin and elsewhere help make Nebraska the only state above a significant portion of the Ogallala Aquifer where USGS estimates there is more groundwater than in the 1950's.

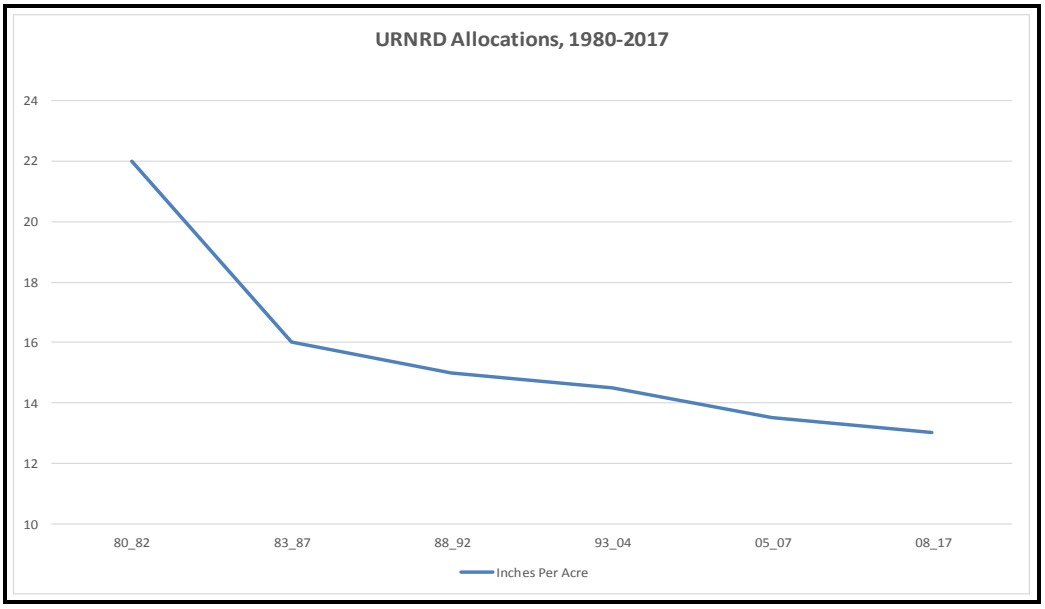
Regional Comparison: The approximately 1.1 million irrigated acres in Nebraska's portion of the Republican Basin represent what is believed to be the largest area of regulated groundwater use not only in Nebraska, but the eight-state region that overlies the Ogallala Aquifer. The first control area, the first and second special protection areas, the first three integrated management plans and the only joint action plan in Nebraska have all been in the Republican Basin. The first allocations, the first temporary suspension of drilling, and the first moratorium on drilling occurred in the Republican Basin and it's the only basin in the state to have all high capacity ground water wells metered. The Republican Basin has also been a national leader utilizing federal programs and partnerships to conserve water: The Basin was the first in the nation to utilize the federal Conservation Reserve Enhancement Program to temporarily retire irrigated acres, and approximately 40,000 acres have been enrolled in the program for that purpose in the Basin.

The regulations that have been imposed in all or parts of the Basin since 1979 are also more stringent than those regulations enacted in other states. Groundwater levels and estimated volumes of groundwater underlying states above the Ogallala reflect management efforts in Nebraska, including the Republican Basin. According to a USGS report released in 2014, the volume of water in the Ogallala underlying Nebraska is essentially the same as it was before groundwater irrigation began in the 1950's, compared to significant declines in all other states that overlie a significant portion of the aquifer.

Allocations in Nebraska's Republican Basin currently range between 9" and 13", and water use is verified by NRD technicians annually. The history of groundwater regulations in Nebraska's Republican Basin has produced substantially lower rates of aquifer declines and, in some cases, rising groundwater levels. In Kansas and Texas, aquifer declines of 150-170 feet have occurred under their respective management schemes. The most significant declines in Nebraska's Republican Basin are less than half of what has occurred in those states. Nebraska's water management scheme that empowers NRDs to regulate water use and, in fully and over-appropriated regions, develop mid and long-term water management goals in conjunction with the State, is considered a model to some of who have studied water-management frameworks. In 2011, the Environmental Defense Fund's former senior attorney for rivers and deltas concluded in a study that Nebraska's system was preferable to other states'. "Local interests may be more aggressive than state policy makers in protecting their resources," Mary Kelly, the attorney, concluded.

Republican Basin Actions and Plans

Upper Republican NRD: The Upper Republican NRD established a system of groundwater allocations in 1979, making it the first NRD in the state, and possibly the first entity in the country, to impose water-use restrictions on agricultural groundwater use. Allocations have been reduced by approximately 41% since that time in an effort to preserve groundwater resources. The effects of the allocation system are quantifiable: The average change in groundwater levels has been approximately 60% less than what was predicted would occur since the 1970's without restrictions. The most significant groundwater declines are approximately half of the 1970's estimates. Most notably, approximately half of the average groundwater decline in the District occurred in the 10 years before allocations were established. Additionally, the URNRD was the first district in the state to impose a well-drilling moratorium, doing so in 1997. Well-spacing rules imposed in the 1980's substantially reduced well drilling from that period to the time the moratorium was established.



Allocations and the utilization of water-saving technological advances that allocations have incentivized irrigators to use have produced progressively less pumping during some weather conditions. From Spring 2009 to Spring 2012, groundwater levels rose an average of 1.3 feet in the District, the largest increase in groundwater levels during a period with consecutive increases. Precipitation levels from 1980-1983 were similar to 2009-Spring 2012, yet the average amount of water applied per acre was approximately10% less than the early 1980's. Despite reduced water applications, irrigated corn yields during the recent period were approximately 25% higher, on average, than the early 1980's.

The District in 2013 approved some of the most significant rules changes in its history expected to reduce water use by thousands of acre feet in coming years. The change limits to 7.5 inches the amount of unused allocation from previous allocation periods that can be used in a current allocation period without incurring a penalty. Also, the new rules changes essentially prohibit borrowing allocation from an upcoming allocation period. It is estimated that the new rules could reduce water use by approximately 90,000 acre feet over the allocation period.

Besides regulatory actions, the District has spent a significant amount of money in recent years retiring acres from irrigated production to help preserve groundwater. The focus has been on retiring acres close to streams to reduce depletions to streams caused by groundwater pumping. In the first two years of its partnership with the Natural Resources Conservation Service's Agricultural Water Enhancement Program, the District has spent $2.1 million to purchase from willing sellers easements on 1,546 acres that prohibit land from being irrigated. The land in the program has a history of substantial irrigation applications and an average 50-year stream flow depletion factor of more than 85%. A stream flow depletion factor is the percentage of water pumped for irrigation that otherwise would have resulted in stream flow over a time period.

The District has also implemented programs using District funds and grants, including from the Nebraska Environmental Trust, that provide farmers with cost-share for using soil moisture probes that can reduce water use. Under the programs, more than 160 probes have been installed on approximately 26,000 acres. Approximately 100 probes are expected to be installed under the 2015 cost-share program.

Middle Republican NRD: The MRNRD Board of Directors has proactively approved groundwater management rules designed to aid Republican River Compact compliance and preserve groundwater. In 2014 and in 2015, the District established a 15" hard cap on groundwater pumping.

Ground water declines have never been a significant issue in the Middle Republican. While there are some areas with declines of 15 feet, the average decline is less than 4 feet. Prior to the drought at the end of the 1990's the decline was only about 2 feet. Pumping restrictions imposed in recent years should stabilize static water levels for the future.

In 2012, the district completed purchase of the Riverside Irrigation Company, freeing up nearly 2,000 acre feet to be used for meeting Compact compliance standards. The company irrigated 672 acres and purchasing the irrigation company has generated 2,400 acre feet of benefit. The district has also enrolled 13,000 acres in CREP and another 3,420 acres in EQIP, AWEP and ARP. The District's AWEP program, which is a partnership between the federal government and local government entities designed to conserve water, was among the first AWEP programs in the country. In the current Compact Call Year, the MRNRD does not need to add water more to the river in 2013. In 2014, the District bought 4,000 acre feet of water from Frenchman Valley Irrigation District that was released from Enders Reservoir

Lower Republican NRD: As with the other NRDs, the LRNRD had made significant progress reducing groundwater pumping. For 2015, the District implemented an 13" hard cap, which includes the use of carry-forward, on groundwater pumping for ground that isn't pooled.

Since 2005, when the District first established water allocations, the allocation has been reduced by approximately 25%. In 2005, the allocation in the District east of Highway 183 was 11 inches, and 12 inches west of Highway 183. The current allocation across the whole District is 9 inches.

The District has aggressively promoted a cost-share program to encourage the use of water-saving soil-moisture probes. In the last two years, probes have been installed on 60,000 acres in the District and the District plans to continue the program. Its participation in federal and state programs designed to reduce water use has increased significantly in recent years. Since 2005, 16,698 acres have been permanently or temporarily retired with enrollments in several conservation programs. This represents over 5% of the total irrigated acres in the LRNRD. In December 2012, the LRNRD board approved incentive payments to landowners for 4,100 acres to not irrigate in 2013. The retired acres are estimated to add roughly 1,000 acre feet of water to the river in 2013. Like the other NRDs, the LRNRD has had an AWEP partnership with the federal government to retire irrigated acres. More than 2,300 acres have been retired in the LRNRD under the program.