

AG TECH IN THE REPUBLICAN BASIN



REPUBLICAN BASIN COMPACT

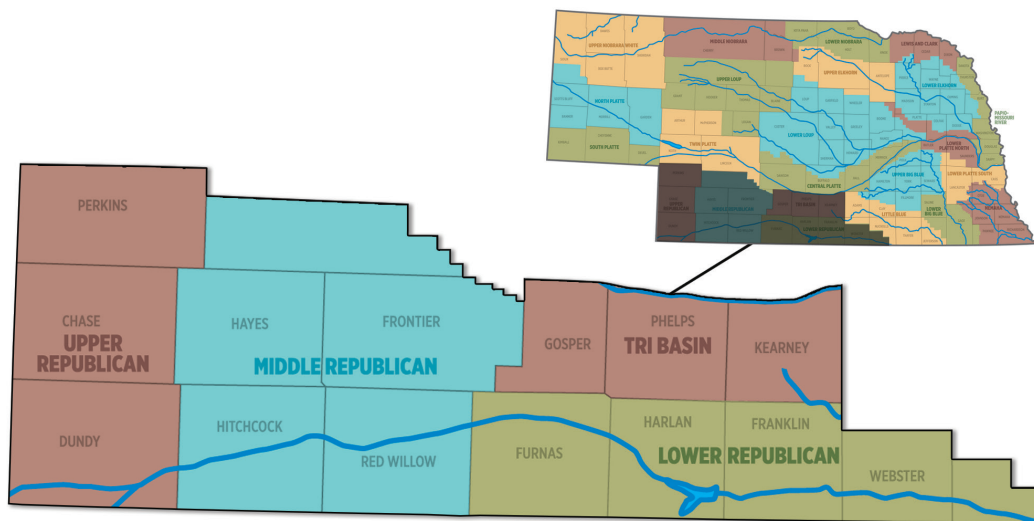
The Republican River flows from Colorado through Southwest Nebraska into Kansas, covering about 24,900 square miles, with Nebraska having approximately 9,500 square miles in the basin.

Compromising an equal mix of cropland and rangeland, the basin operates under the governance of an 80-year-old interstate compact involving Kansas, Nebraska and Colorado. Use of the Republican River is determined through a settlement agreement with the state collectively employing a model to allocate consumption of water on an annual basis.

In order to meet compact compliance, Nebraska's NRDs work with producers by reducing water use through allocations, prohibiting new irrigated acres, and monitoring irrigation wells with metering and annual compliance checks.

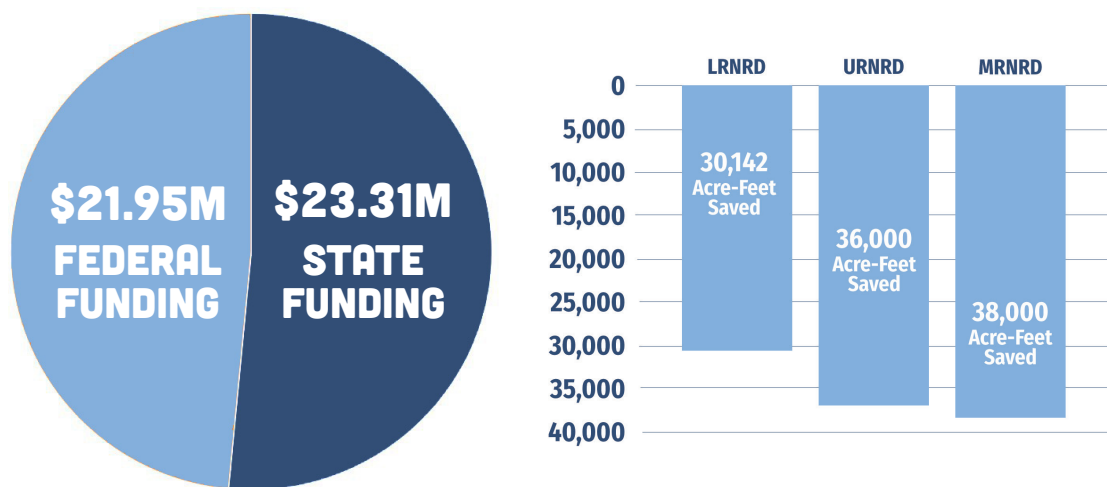
Additionally, basin producers are leveraging cutting-edge technology to reduce groundwater usage and enhance ag production.

In Nebraska's Republican River Basin, producers irrigate more than 1.2 million acres, constituting nearly 15% of the state's total irrigated acres. To maintain robust water supplies in one of the most-productive regions of the state and meet compact compliance, the Natural Resources Districts (NRDs) alongside the Nebraska Department of Natural Resources (NeDNR) have leveraged local, state, and federal funding to enhance technology accessibility to maximize irrigation efficiency. The investments primarily focus on equipping producers with real-time telemetry meters, soil moisture probes, and data dashboards. Currently, 44% of irrigation wells in the Republican Basin are equipped with telemetry. In the next 3-5 years, the technology will expand to include all irrigation wells in the basin.



BASIN WATER SUSTAINABILITY INVESTMENTS

Leveraging funding to conserve Nebraska's water resources



In addition to local funding and implementation of the telemetry meters and soil moisture probes, NRDs have leveraged their efforts with state and federal funds. State monies have included the Water Sustainability Fund and Water Resources Cash Fund, while federal monies include grants from the U.S. Bureau of Reclamation and U.S. Department of Agriculture.

These investments promote the sustainable use of limited aquifer and stream resources aiming to enhance operational certainty and sustained profitability for Nebraska's agriculture producers.

PRODUCERS ADOPT WATER CONSERVATION TECHNOLOGY

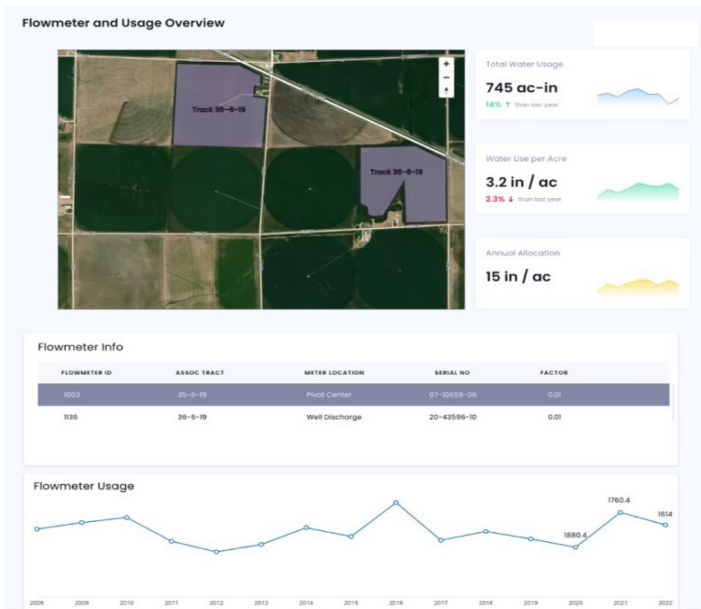
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Once fully implemented, these technologies will save over 104,000 acre-feet of water annually in the Republican Basin.

REPUBLICAN BASIN TECHNOLOGY IMPROVES IRRIGATION EFFICIENCY

Equipping producers with cutting-edge technology has shown an increase in irrigation efficiency. Evidence suggests that when producers have access to real-time meters and soil moisture probes, their irrigation practices led to a reduction in pumping by 1-3 inches per acre compared to those without such technology. Extrapolating this data across the entire Republican River Basin suggests an annual reduction of more than 104,000 acre-feet once full implementation is accomplished.

An acre-foot is the amount of water needed to cover an acre of land to a depth of one foot and is equivalent to 325,851 gallons.



Producer Connect, a web and mobile application suite, allows producers to access their crop and water-use data. This collaborative effort aims to empower agriculture producers to optimize inputs for agricultural profitability, water quality and irrigation efficiency. This dashboard technology is in development and will be available for producers at no-cost in all participating NRDs.

WHAT IS TELEMETRY?

Telemetry is the automatic measurement and wireless transmission of data from remote sensors.

Telemetry can be used on wells to measure real-time water use and on soil moisture probes to help with irrigation management decisions.

Nebraska's NRDs often have cost-share programs for producers to add telemetry technology to their operation.

FAST FACTS

As of February 2024, more than 44% of irrigation wells in the Republican Basin have telemetry meters.

In 3-5 years, all Republican Basin irrigation wells (8,620) will have telemetry meters.

The Republican Basin NRDs have cost-shared with producers on soil moisture probes covering nearly 350,000 acres.

The 104,000 acre-feet of water savings means that 104,000 acres of farmland can continue to be irrigated in the Republican Basin.

HOW DOES THE REPUBLICAN BASIN MEASURE UP?

In Nebraska's Republican Basin, annual water allocations currently range from 9-12.5 inches, with NRD technicians verifying water use annually.

Adoption of best management practices by producers and a history of effective groundwater management is leading toward groundwater stability in Nebraska's Republican Basin. Notably, while Kansas and Texas have seen declines of 150-170 feet under their management approaches, Nebraska's Republican Basin shows a much more positive trend due to management actions that have resulted in more stable groundwater levels.

Furthermore, NRDs and the Department of Natural Resources have strategically invested in these initiatives paving the way for other regions of the state to follow suit. This enables other districts to implement similar strategies and tools with their producers, expanding efforts to reduce groundwater pumping and increase profits for producers.

REACH OUT TO LEARN MORE ABOUT THIS!

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