

REPUBLICAN RIVER RUMBLINGS

This photo taken August 3, 2006, of the Republican River about five miles south of the Nebraska - Kansas state line, near Republic, Kansas, shows surface water flow from Nebraska as almost completely stopped. The stream gage upstream at Hardy, Nebraska, recorded a daily flow value of 1.1 cubic feet per second (c.f.s.) that day.

Water officials from the states of Colorado, Nebraska and Kansas recently met in Lincoln, Nebraska, to discuss the Republican River and their agreement to share the water resources of the Republican River watershed. Over two days of talks, the parties offered very little (or no) information to suggest that a resolution of the existing dispute outside of court might be forthcoming.

The River has its headwaters in Colorado, but it isn't anywhere close to the mountains like the other major rivers east of the Rockies. To me, the watershed is shaped like a deep-fried, butterflied shrimp. The meaty part lies in northeast Colorado, northwest Kansas and southwest Nebraska. The tail lies in a northwest to southeast direction from southwest Nebraska to north-central Kansas. The much larger Platte River watershed is located north of the Republican and the Saline, Smoky Hill and Arkansas Rivers are to the south. The width of the watershed is approximately 125 miles at Colorado's boundary with Nebraska and Kansas. The watershed is significantly narrower between the confluence of White Rock Creek in Republic County (approximately 6 miles south of the Kansas - Nebraska boundary) and northern Clay County, where the watershed averages a width of only

25 miles or so. The lower part of the watershed is even narrower as it carries water to its confluence with the Smoky Hill River to become the Kansas River. The Republican River watershed in northwest Kansas includes the Division of Water Resources drainage basins of the Arikaree River, the South Fork of the Republican River, Driftwood Creek, Beaver Creek, Sappa Creek and Prairie Dog Creek. All or parts of 9

northwest Kansas counties have been directly affected by regulations to achieve and maintain compliance with the Compact requirements.

The geological information presented in this paragraph is from Water-Supply and Irrigation Paper No. 216 published by the United States Geologic Survey in 1907. The

report has a more specific title, *Geology and Water Resources of Republican River Valley and Adjacent Areas, Nebraska*, and was written by George E. Condra who would go on to become the Director of the Conservation and Survey Division of the University of Nebraska from 1921 to 1954. Dr. Condra reports that the river drains an area which has been uplifted by the Rocky Mountains and the slope is generally to the east. The layers of bedrock are generally level below the unconsolidated material at the surface. An arch in the bedrock, which appears to be higher in Kansas

The width of the watershed is approximately 125 miles at Colorado's boundary with Nebraska and Kansas.



This photo of the Republican River taken on September 2, 2009, east of Concordia, Kansas, shows streamflow of approximately 165 c.f.s. Mean daily flow for this date at the Concordia gage is approximately 270 c.f.s.

particularly injurious. Although some farms in the watershed had likely been abandoned in the earlier part of the Depression, I would suspect that the more productive farms in the floodplain continued to be occupied despite the state of the economy. The population within a few miles of the River was probably as high as it had ever been. With less sophisticated hydrological and meteorological tools than we have today, flood watches and warnings, if they were even in existence, were probably ineffective. The Great Plains area was becoming known as the Dust Bowl at this time as well. The rains,

than Nebraska, may have influenced the flow of the River to the north away from Kansas. The crest of this arch on the Nebraska – Kansas boundary is likely near the Norton – Decatur County line. Glacial deposits found east of the Republican River watershed along the Nebraska – Kansas boundary strongly suggest that the right-hand (south) turn of the River to its present course was formed when ice blocked the original streamcourse to the east.

regardless of their intensity, were probably a welcome sight. The residents of the valley had no idea how destructive this event would become.

From flooding – to states’ Compact

Like all rivers, the Republican River floods. Recorded history shows that major floods occurred in 1903, 1905, 1915, 1923, 1935, and 1947. The flood of 1935 was

At least 110 people lost their lives during the May 30 – June 1, 1935 event; most of the victims were in Nebraska. It is reported that another smaller flood occurred later in June, after many had attempted to replant their crops. Although the rainfall occurred in the upper reaches of the watershed, the United States Geological Survey estimated that over 84 percent of the crop damage was in Kansas. With what seemed to be a ten to twelve year cycle of flooding, with Dust Bowl conditions during the dryer times, and the federal government attempting to stimulate the economy with work



These White Pelicans and other waterfowl use Milford Reservoir and the wetlands in the area to feed and rest during migration.

projects, a dam in the valley was considered the ultimate solution.

Congress authorized the United States Army Corps of Engineers to do a study of the River in 1936. A site for a dam in Harlan County, Nebraska was recommended to create a multi-purpose reservoir. Construction was authorized in 1941. The Republican River Compact was adopted by the states in 1942, with congressional and presidential approval in 1943. Legislation to complete the project was signed in 1944 and construction began in 1946.

The Compact and the dam were a both or none package. The federal government required that the states adopt a formal agreement to share the water resources before the dam project would be allowed to move forward. Interstate water agreements are commonly called compacts. Not unlike a father buying a single car for three teenaged brothers, the details of who could use the car when, how it was to be maintained, how fuel costs would be split, and the penalties for violating the agreement are critical to any measure of success being realized. Using much of the information compiled by the Corps, the basic agreement of the Republican River Compact is that of the virgin water supply of the watershed, Colorado is entitled to approximately 11%

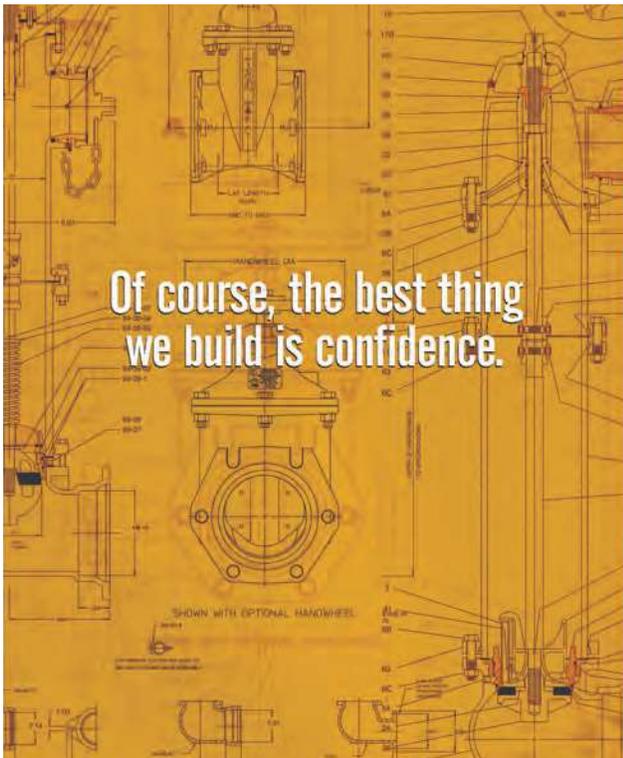
Few could have imagined what irrigation in the Midwest would become in the 1950's and again in the 1970's. The availability of better pumps and wells and the power to lift water more efficiently started the revolution.

of the total, Kansas is entitled to approximately 40% and Nebraska approximately 49%.

Few could have imagined what irrigation in the Midwest would become in the 1950's and again in the 1970's. The availability of better pumps and wells and the power to lift water more efficiently started the revolution. The availability of pipe to move water across fields instead of furrows was a major advance. Center pivot systems designed to carry the water over the crops was another leap in efficiency which helped bolster the increase of irrigated agriculture. In the early 1980's, it was recognized that the

natural surface and subsurface water so important to everyone was linked together and actually had limits. Kansas and Colorado water agencies took steps to monitor water use and to curtail the issuance of permits to use more water in areas that showed shortages. Water meters, which could be read and monitored by regulators, were being required to replace the notebook carried by the irrigator in his pocket or pickup. Kansas adopted a regulation prohibiting the overuse of water rights. Nebraska did not.

Knowing that irrigation projects were continuing to be developed in Nebraska, Kansas officials started to state their concern that Nebraska needed to find a way to control the



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2003 - 2007, Kansas accuses Nebraska of overuse by approximately 118,000 acre-feet. The settlement accounting procedures also show that Colorado exceeded their five-year allocation by 52,600 acre-feet.

For many years, Nebraska argued that groundwater was not included in the Compact. They have also stated that the state constitution prohibits the state from regulating groundwater. They have strongly encouraged the regional Natural Resource Districts to do this for them and while in recent years a well drilling moratorium has been established by the districts in the Republican River watershed, it does

nothing to control the pumping from existing wells drilled in the last 25 years.

In accordance with the Compact, Kansas notified the other states in late 2007 of the failure to comply with the settlement. Kansas also proposed a remedy to groundwater and streamflow depletions. Kansas asked for a shutdown of all wells within 2.5 miles of the Republican River and its tributaries, and the suspension of irrigation on lands added since 2000.

Colorado has proposed to buy groundwater water rights in the amount of 15,000 acre-feet per year in the North Fork of

groundwater withdrawals in the mid-1980's. In 1998, Kansas took their complaint that Nebraska was in violation of the compact to the United States Supreme Court. That case was settled in 2002, when the three states agreed to use a sophisticated computer model which used known measurements of precipitation and streamflow, assumed values for recharge from precipitation and subsurface leakage in and out of the model area, and water use by irrigators, etc. Without getting into the details, Kansas accuses Nebraska of exceeding the allowed diversion by 79,140 acre-feet in 2005 and 2006. For the 5-year period of

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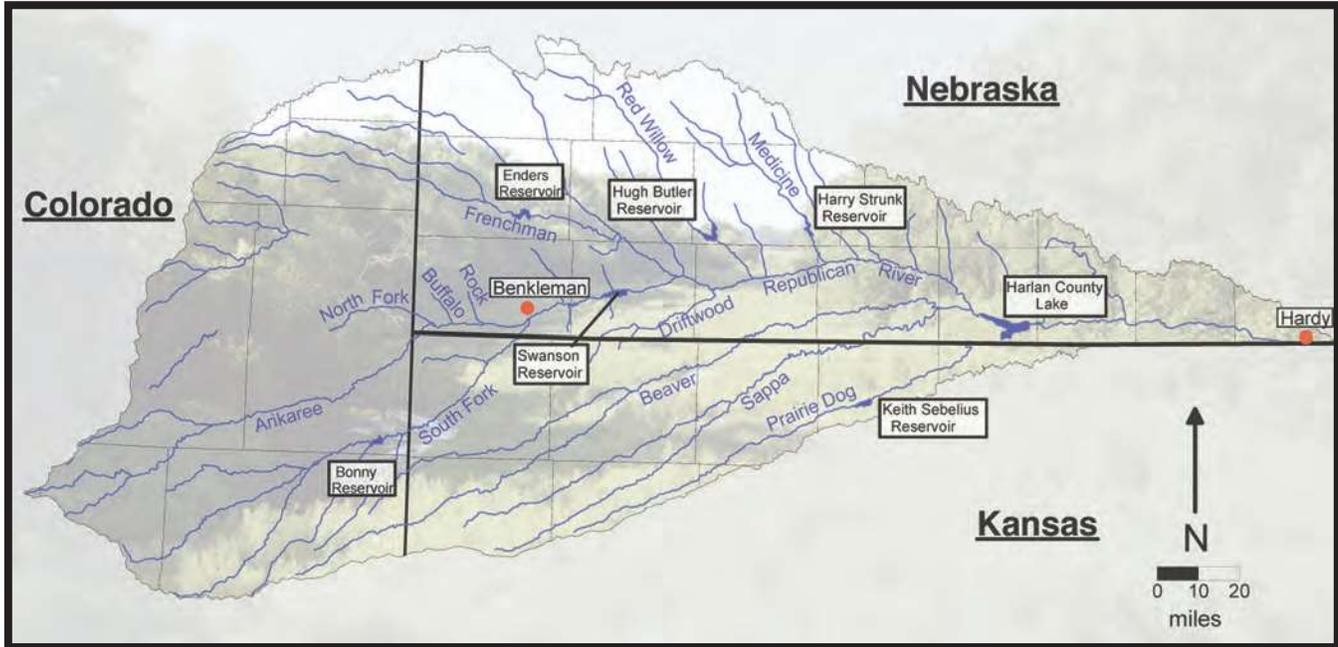
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the Republican River basin and deliver this quantity of water by a 12-mile pipeline to the River at the Colorado-Nebraska border. Kansas contends that overuse from the South Fork of the Republican River also exists and the pipeline is not a remedy.

As it became apparent that Nebraska could not or would not be able to repay this “debt” with water, Kansas asked Nebraska in an April 2008 letter for approximately

\$72,000,000, which was quantified as the greater of Nebraska’s gain or Kansas’ loss, plus interest, attorneys fees, etc. Nebraska disputes the findings and the other proposed remedies.

Many meetings have been held since this time, one of which led to an agreement to go to non-binding arbitration. The arbitrator made his final decision on June 30, 2009.

Both sides claimed that the arbitrator’s decision supported their positions in press releases. The Republican River Compact Administration met in Lincoln, Nebraska on August 11 & 12, 2009, but neither of the three states released any information, other than to say no resolution was reached.

The economics of water are staggering. The number of irrigation-related transactions that occur for the sales of seed, fertilizer and herbicides, for fuel and machinery, insurance, the sale of the grain and forage that are harvested, the storage and transportation of these goods is nearly impossible to count. And this is just the agricultural portion of the Kansas economy. The industrial, recreational and municipal components also have a strong reliance on water. The same is true for the other states.

Our ecology is also tied to the very nature of water availability. Overuse of this resource may create unintended consequences for all of us. While man’s struggle against his environment has always been part of our history, we should avoid changing the environment for the worse when we can.

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Back to Court, again?

It appears that the three states of Colorado, Nebraska and Kansas are headed for the U.S. Supreme Court, again. If they do, and if the volume of Web site information is any reflection of who will prevail, it has to be Kansas. Information from Kansas Department of Agriculture – Division of Water Resources is available at www.ksda.gov/interstate_water_issues/content/142. Colorado's Division of Water Resources has a nice summary of the 2002 - 2003 settlement at www.water.state.co.us/wateradmin/republicanriver/rr_overview.asp Nebraska has two sites; one at www.dnr.state.ne.us/Republican/RepRiverImplementation.html and another at www.dnr.state.ne.us/legal/kansasvs.html. As this conflict continues, Kansas Rural Water Association will monitor every development and post links to newspaper articles and Web site information as soon as we learn of it.

Much is at stake for individual irrigators in this dispute. While most public water systems in Kansas have the oldest, high-priority water rights, most of the irrigators came later to develop their water rights. If Kansas is unsuccessful in

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resolving the dispute with Nebraska, streamflow in the river and recharge in the associated alluvial aquifer will likely continue to decrease over time. Irrigators need to know with some accuracy how much water they will have available for their crops before purchasing seed and planting in the spring. Irrigators needing to replace flood irrigation or older center-pivot systems need to know if the investment in a new system has a reasonable chance of paying-off. If the Republican River water resources become as reliable as the weather, many farmers

may not be able to tolerate this new level of risk. Unfortunately, it appears that a large payment will need to be made on one side of the state-line or the other, to balance shrinking supply and increasing demand.

Douglas S. Helmke has been the Water Rights Tech at KRWA since June 2000, and also a Wellhead / Sourcewater Protection Tech since 2003. He holds professional geologist certification in Kansas and Missouri. Doug received a B.S. degree in geology from Kansas State University.



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