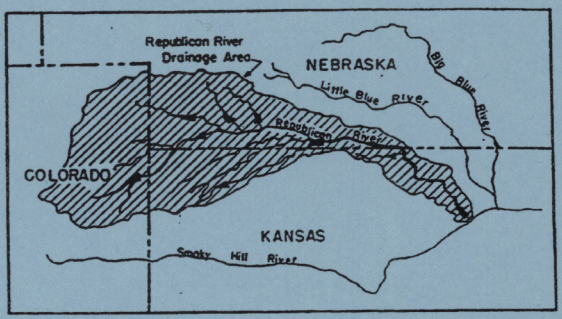
REPUBLICAN RIVER COMPACT ADMINISTRATION

THIRTY-FIFTH ANNUAL REPORT



FOR THE YEAR 1994

Lincoln, Nebraska

June 8, 1995

(Includes Special Meeting Minutes for September 28, 1994
and January 19, 1995 meetings)

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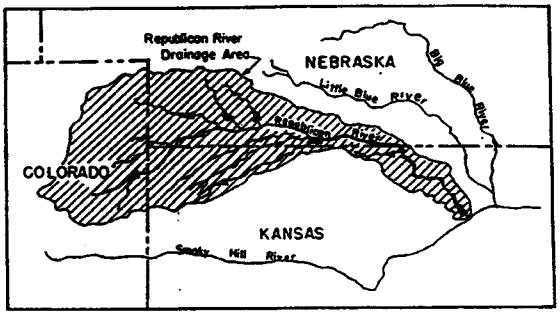

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MINUTES
36th Annual Meeting
REPUBLICAN RIVER COMPACT ADMINISTRATION

The meeting was called to order by Chairman Jess at 9:02 a.m., June 8, 1995, in Room 1520, State Capitol, Lincoln, Nebraska.

Those in attendance were:

NAME	REPRESENTING	STATE
J. Michael Jess	NE Commissioner, Chairman	NE
Ann Bleed	NE Dept. Of Water Resources	NE
David Barfield	KS Division of Water Resources	KS
David Pope	KS Commissioner	KS
Don Blankenau	NE Dept. Of Water Resources	NE
Hal Simpson	CO Commissioner	CO
Cliff Seigneur	CO Attorney General's Office	CO
Bill McIntyre	CO State Engineer's Office	CO
Wayne Heather	Middle Republican NRD	NE
Leland Rolfs	KS Div. Of Water Resources	KS
Marv Swanda	Bureau of Reclamation	NE
Dennis Allacher	Bureau of Reclamation	NE
Jill Manring	Bureau of Reclamation	NE
Mark Phillips	Bureau of Reclamation	NE
Linda Weiss	U.S. Geological Survey	NE
Glenn Engel	U.S. Geological Survey	NE
Don McCabe	NE Farmer Magazine	NE
Judy Zauha	NE Water Resources	NE
Norma Sitzman	Richland Valley & H & RW ID	NE
Roy Patterson	Frenchman/Cambridge ID	NE
Ralph Best	Frenchman/Cambridge ID	NE
Frances Ohmstede	Farmer	NE
Mary Yelken	Graduate student	NE
Bryce Ohmstede	Farmer	NE
Jerry Buehre	Corps of Engineers	KS
Leif Holliday	KS Div. Of Water Resources	KS
Bob Bishop	Lincoln resident	NE
Kenny Nelson	KS Bostwick Irrigation District	KS
Brad Edgerton	NE Dept. Of Water Resources	NE
Mele Koneya	NE Dept. Of Water Resources	NE
Russ Oaklund	NE Dept. Of Water Resources	NE
LeRoy Sievers	NE Dept. Of Water Resources	NE
Mike Thompson	NE Dept. Of Water Resources	NE
Keith Paulsen	NE Dept. Of Water Resources	NE
R.E. Pelton	KS River Water Assurance	KS
Bill Head	Governor Nelson's Office	NE
Tom Schwartz	NE Water Users	NE
Tom Knutson	Loup Basin Reclamation District	NE
Mike Avery	NE Senate	NE

Mike Delka	Bostwick Irrigation District	NE
Al LeDoux	KS Governor's Office	NE
Don Sallee	KS Senate	KS
Bill Fuller	KS Farm Bureau	KS
David Leib	KS Water Office	KS
Christine Hansen	U.S. Geological Survey	KS
Jerry Wallin	NE Natural Resources Commission	NE
Sara Kay	NE Water Resources	NE
Bryan Lubeck	Lower Republican NRD	NE
Ron Milner	Upper Republican NRD	NE
Steve Grasz	NE Attorney General's Office	NE
Marie Pawol	NE Attorney General's Office	NE
Nate Donovan	NE Legislature, Natural Res. Committee	NE
Dean Edson	NE Farm Bureau	NE
Lee Orton	Irrigation Projects Reauth. Council	NE

APPROVAL OF MINUTES

The minutes of the 35th Annual Meeting stood as previously circulated, approved, and published in the 34th Annual Report.

REPORT OF THE CHAIRMAN

Chairman Jess, reporting as the Nebraska Commissioner introduced Governor E. Benjamin Nelson of Nebraska.

Governor E. Benjamin Nelson

Governor Nelson stated that the Republican River basin represents a significant interest to the State of Nebraska, not only a personal interest to himself, but an economic, agricultural and environmental interest for all. "It is our objective to cooperate, to collaborate, to work together to make sure that we deal with the interests of everybody who enjoys the opportunities that this river represents," he said.

"Today the Compact Administration confronts the challenges of defining the relationship of ground water to surface water, to surface flows; control of ground water pumping; resolutions to change provisions in Article III; and issues

related to accounting methodologies. These disputes will affect the Compact and the future relationship of the States of Nebraska, Colorado and Kansas." Responding to these issues, the Governor spoke about the need to examine the Compact with respect to possible amendments and clarify provisions where necessary in order to protect the interests of all three States.

He said current Legislative bills responding to these issues include LB871, which allows Natural Resources Districts (NRD) to collect data on ground water pumping. This bill also prohibits the Nebraska Department of Water Resources (DWR) from granting any surface water rights until January 1, 1997, allowing the Legislature the necessary time to consider conjunctive use legislation.

Commissioner Jess

Commissioner Jess reported the Upper Republican NRD revised rules and regulations concerning its Ground Water Control Area. The NRD board manages all large-capacity wells through a permit system. It also manages the volumes of water pumped by wells on a multi-year basis. Limits on an acre-inch basis for the various tracts are set by the NRD.

A Legislative deadline for NRDs to submit Ground Water Management Plans to the Department of Water Resources was extended to January 1, 1997. Many of the districts experienced difficulty in meeting the earlier July 1, 1994, deadline.

Regarding the Governor's Water Council, Jess reported activities concluded in November 1994. At that time, a Special Report was prepared for the Governor with a proposed Legislative bill which became LB108.

Jess requested Don Blankenau to report on legislative activities.

Don Blankenau

Blankenau stated that several pieces of legislation have been introduced:

LB108 - This bill was recommended by the Nebraska Water Council. This bill's primary purpose is to give authority to NRDs to regulate ground water to serve surface water concerns. It provides for regulation only in locations where problems are evident and an hydrologic linkage can be established. The bill allows intervention by the state where interstate compacts or decrees are involved and when NRDs are unable or unwilling to regulate. So that the public would have an opportunity to fully comment, LB108 was set aside and will be addressed next session.

LB99- This legislation outlines a new process for irrigation districts, reclamation districts and water delivery companies to use to transfer water appropriations.

LB871 - LB871, previously discussed by Governor Nelson, allows NRD's to require metering where appropriate.

LB251- This bill has passed and changes Nebraska Common law dating back to the 1930's. Unless limited by other requirements, LB251 permits ground water to be transferred to various locations unless injury is alleged by a neighboring well owner. At that point in time, an NRD is empowered to conduct an investigation to determine whether injury can be established.

LR218 - (Attachment 1) Is a Legislative Resolution directing Commissioner Jess to appear at the Republican River Compact meeting and to make recommendations to try to resolve the ongoing Compact dispute.

Regarding budgetary matters, 1995 is a year the Legislature appropriated funds for a two year period. The Legislature fully funded operations for the Department, and it should function as usual, Blankenau said.

Jess next requested Russ Oaklund to report on water rights administration and adjudication of unused water rights.

Russ Oaklund

The following projects were investigated and adjudicated since the last Compact meeting: Champion Canal; Cruise Canal; Cruise Ditch No. 2; Haigler Canal (portion that lies in NE), and four Elk Creek permits north of Arapahoe.

It is expected the following will be canceled for non-use: Champion Canal project, 500 acres; Cruise Canal project, 40 acres; 60 percent of Cruise Ditch No. 2 project, 110 acres; 60 percent of Haigler Canal project, 3,400 acres; 75 percent of Elk Creek lands, 190 acres.

Administration for last year: Thirty-eight permits on Frenchman Creek above the Culbertson Canal headgate were closed June 17th. These permits were opened August 15th, after the irrigation districts involved completed their season. On June 21st, 23 junior permits were closed and 10 senior permits were regulated on Red Willow Creek. On June 28th, Harry Strunk Lake dropped out of the flood pool prompting the following: 14 senior permits on Medicine Creek were regulated; 42 junior permits on Medicine Creek were regulated; 14 junior permits on the main stem from the mouth of Medicine Creek to Cambridge diversion dam were closed; and the senior Cambridge Canal permit was regulated. On July 7th, Swanson Lake dropped out of the flood pool prompting the closing of eight junior permits on the main stem from Trenton Dam to the mouth of Medicine Creek. The senior Bartley Canal permit was also regulated on that date. The restrictions noted above on Red Willow Creek, Medicine Creek and the main stem from Swanson Lake to the Cambridge Diversion Dam remained in effect until September 2nd. On July 26th, Harlan County Lake dropped out of the flood pool. Regulation of the 106 main stem permits, which include both private and district permits from Harlan County Dam to the Guide Rock Diversion Dam, went into effect on that date.

Of the five reservoirs monitored by the Cambridge office, all have water in the flood pool, with the exception of Enders. The water supply is good with irrigation probably starting later due to the wet spring.

Jess introduced Nate Donovan, Committee Counsel for the Legislature's Natural Resources Committee.

Nate Donovan

Commissioner Pope asked if LB108 has a good chance of passing. Donovan responded that LB108 is anticipated to be on the floor of the Legislature next year and will be heavily debated. Donovan stated that there will be several hearings of the Natural Resources Committee across the State to gather more input and suggestions for improving the bill.

REPORT OF THE COMMISSIONER FROM COLORADO

Commissioner Simpson reported there have been no significant changes in statutes regarding ground water or surface water this year. Regarding the budget, the Engineer's Office was authorized for four and one-half additional staff members to be assigned to the Arkansas River basin for enforcement of rules dealing with the interstate litigation between Kansas and Colorado.

Hog raising facility numbers are increasing. Colorado has had a number of hog raising facilities try to obtain small-capacity wells because they don't have to buy or acquire irrigation rights and convert them to commercial use. A lot of local opposition is starting to develop regarding the granting of these permits. Also, quality issues are starting to be raised concerning the effluent being pumped onto irrigated fields. Over-application can result in a nitrogen buildup or nitrate buildup in the ground water table, Simpson said. The Colorado Cattle Feeders Association has created a working group to provide guidance to Simpson's office and the Legislature to deal with the issue of granting these facilities small capacity well permits. There is some anticipation that a volumetric limit rule will be the outcome.

The U.S. Supreme Court has endorsed a Special Master's report in the litigation between Kansas and Colorado regarding the Arkansas River. As a result, post-Compact wells, constructed after 1948, will have to replace state line depletions or not pump. The Legislature has approved making low-interest loans available to water users to acquire augmentation water.

Rules requiring measurement of water use in the Arkansas basin were protested by a number of parties. Hearings were held before the Water Court in July, and the judge endorsed orders as they were proposed. These orders require the owners of all non-domestic wells, pumping tributary ground water in the entire Arkansas basin to install measuring devices. As an alternative, electric energy meter records can be utilized after developing a relationship between the amount of water pumped and kilowatt hours used. About 600 wells out of 2,000 wells did not come into compliance by the end of 1994. Orders have been issued against the owners of these wells. He said only about 100 were not in compliance at the time of this meeting.

Simpson explained that the first part of the litigation was to determine if there was a Compact violation by the pumping of post-Compact wells, and it was determined that there was a violation. The next step is to determine what injury occurred to the State of Kansas from 1950 until the current time and determine a monetary value or amount to which Kansas is entitled.

He encouraged "the State of Nebraska to listen and observe what does happen in interstate litigation. The cost by the State of Colorado could exceed 30 or 40 million dollars before we're done, including payment of past damages. So, if you have the opportunity to cooperate, the opportunity to deal with the issue through non-litigating ways, I suggest you give it some serious consideration because it's time consuming and it is expensive and the end result may be much less favorable than just trying to sit down and negotiate a reasonable way to move forward."

REPORT OF THE COMMISSIONER FROM KANSAS

Pope stated that Kansas had record rainfall so far in 1995. In the month of May the rainfall exceeded some records dating back to the turn of the century. Many reservoirs stood at flood capacity, he said.

In discussing administrative issues, Pope mentioned new rules were promulgated to regulate hog raising facilities. Other water right rule changes relate to criteria employed when reviewing changes in the type of use and the place of use. The large hog operations which are coming into Kansas are purchasing irrigated farms with senior water rights and are converting irrigation water rights to stock watering rights. Many of the areas the operations are moving into are fully appropriated and closed to new permits. There is some opposition in the local areas to these operations largely based on air and water quality concerns.

New rules and regulations, for newly sought ground water rights, are aimed at changes in water rights. These changes are primarily concerned with type of use or place of use even if for the same type of use. The intent is to prevent impairment of other existing rights through the limiting or preventing increases in consumptive use.

Kansas has also adopted rules and regulations that implement a "safe yield" philosophy. When a new application for a permit is filed, "we examine existing appropriations in the area affected and tabulate the existing appropriations," Pope said. "We then compare that to the average annual recharge to that area, allowing some portion of recharge to be credited to the stream and to satisfy senior downstream rights." Then only the remaining water may be appropriated. In more extreme situations the rules ratify the closing of geographic areas previously identified as being fully appropriated. The rules address aquifer yield in parts of the Republican River basin.

Pope reported that Governor Graves took office in January 1995. The Governor asked all state agencies to conduct a comprehensive review of all existing rules and regulations and determine if they were current and useful. In review of

his agency's rules and regulations, it was determined all the rules and regulations were in good form.

In a recent decision in the Kansas v. Colorado litigation, Pope also said the Special Master's report and recommendations to the U.S. Supreme Court were upheld by the Court. The principal issue decided was the violation of the Arkansas River Compact due to excessive post-Compact ground water uses that depleted stream flows into Kansas. The opinion of the U.S. Supreme Court that ratified the Special Master has additional items of interest and applicable to concerns in the Republican River Basin. One of the provisions is:

"Colorado allowed hundreds of wells to be constructed in the river alluvium, without regard to impact on the surface flows of the Arkansas River either in Colorado or Kansas. Data on the number of wells and magnitude of their pumping were not generally known until studies in the mid- to late 1960's, yet post-Compact pumping in Colorado clearly depletes the surface flows of the Arkansas River. While many of the studies showing such depletions covered the river from Pueblo to the state line, it is difficult to conceive that flows across the state line were also not depleted. Colorado's efforts to regulate pumping were heavily tempered by its own economic considerations, but the adopted concept of obtaining maximum use of the waters of the State through pumping of the ground water ignored the downstream impact in Kansas and the rights of Kansas under the Compact.

The Court, relying upon the case of Texas v. New Mexico, noted that "good faith differences about the scope of contractual undertakings do not relieve either party from performance. A court should provide a remedy if the parties intended to make a contract and the contract's terms provide a sufficiently certain basis for determining both that breach has in fact occurred and the nature of the remedy called for. There is often a retroactive impact when courts resolve contract disputes about the scope of a promiser's undertaking. Parties must perform today or pay damages for what a court decides they promised to do yesterday and did not. In our view, (New Mexico) cannot escape liability for

what has adjudicated to be past failures to perform its duties under the Compact."

The 1994 Legislative session took up few water-related issues. A notable exception concerned Board member representation for the Division of Water Resources' parent agency. Pope recalled a previous federal district court decision that concluded the method of selecting members of the State Board of Agriculture was unconstitutional. Senate bill No. 2588 created the new Department of Agriculture, which replaced the previous Board of Agriculture. Other bills passed included the Kansas Private Property Protection Act and a bill dealing with sand and gravel operations.

Pope introduced Senator Don Sallee, who is chairman of Kansas Senate Energy and Natural Resources Committee.

Senator Don Sallee

The Senator reported the Department of Health and Environment was given the task of writing rules and regulations to protect and ensure water quality from landfill contamination. Some of the rules and regulations are expected to be more stringent than federal requirements, he said. Efforts will also be made to search for and plug abandoned wells located in southern Kansas.

REPORT FROM BUREAU OF RECLAMATION

Dennis Allacher

Allacher reported the following personnel changes: Robert Kutz retired, Bob Prouty will retire in August 1995, Roger Andrews retired and Bob Gyllenborg was selected as the new area manager. It was said Bill Rohr would replace Roger Andrews as planning officer and Jill Manring and himself were assigned to lead

contract renewal efforts in the Republican River basin. Marv Swanda was reassigned to Chief of Water Control.

The Courtland Canal lining project has been completed. It consisted of lining four and one-half miles of canal near the Nebraska/Kansas state line. The North Loup Division construction work is almost complete. Transfer of the facilities to the non-federal irrigation district is scheduled for January, 1997.

Ongoing investigations mentioned by Allacher include an ethanol injection project intended to remediate nitrate contamination of ground water. Also ongoing is a research project to determine farm strategies in water-short situations. Test plots will be located in the Republican River basin, he said. Rounding out the list, Allacher mentioned a water supply study to determine ground water quality trends, the High Plains Recharge projects in Wood River and York, Nebraska, and the Prairie Bend unit completion report is due October, 1995.

An initiative of the Bureau is the title transfer initiative. The driving force behind efforts to transfer facilities is the recognition that many facilities are operated for the benefit of users in one state or locality and that the transfer of local control may achieve better water management. The Bureau is interested in proposals for transfers, but is not ready to move forward with any transfers at this time. It is the opinion of the Bureau that all transfers will require an act of Congress.

Marv Swanda

Information was handed out (Exhibit 2) covering the operations for 1994 and current 1995. Swanda noted that all of the dams except Enders and Keith Sebelius (Norton Dam) are at varying stages of the flood pool. Bonny, Harry Strunk, Harlan County and Lovewell are releasing water.

Swanda stated all of the dams in the Republican River do not meet federal dam safety requirements because they cannot pass the probable maximum flood. The installation of a toe drain at Bonny has taken care of any seepage, and it is

expected that the toe drain to be installed at Enders will solve that problem. In the meantime, the seepage at Enders and Red Willow is likely to trigger operating restrictions soon. Increased emphasis has been put on emergency management activities at all Bureau dams, Swanda said. Meetings with local officials will be arranged. Swanda finished by saying a review of operation and maintenance was done last year, and no major concerns were noted.

In reply to a question from Simpson, Swanda told him that the Bureau anticipated more than adequate water for Nebraska and Kansas Bostwick Irrigation Districts.

Jill Manring

The formal comment period for the proposed acreage limitation and water conservation rules and regulations and the Bureau's draft Environmental Impact Statement has been extended to June 26, 1995. Interim rules would be published in July or August. It was said a new policy concerning water spreading, defined as the unauthorized use of Reclamation water, was being formulated.

Manring reported water service contracts for five irrigation districts in the Republican River Basin will soon be up for renewal. The Bureau team mentioned by Allacher is charged with preparing a Resource Management Assessment (RMA); an Environmental Impact Statement (EIS) and new water service contracts for the districts. Several public meetings have been held in Nebraska and Kansas to provide the opportunity for public comment and education.

She explained the RMA is not intended to be a decision document. Instead, it is intended to be a document used to define the existing needs and suggest how the Bureau might assist in meeting those needs. The draft RMA should be available in October, 1995 for public comment with the final draft expected in December of 1995. Aquatic and riparian studies are to be included in the RMA. Preparation of the EIS has been delayed, although the NEPA process is scheduled to begin officially in October of 1995. The current schedule calls for its completion by July 1997. Manring also invited members of the Commission to a cooperating agency meeting on June 22nd in Grand Island. The purpose of the meeting is to

solicit information from state and federal agencies and other interested individuals that will help formulate alternatives for the RMA, and ultimately, the EIS. She also said that the registered well data which has been requested from each State will be used to represent irrigation development in the basin.

Simpson questioned Manring regarding the RMA. He asked who decided the priorities and what needs are met first. Manring responded by saying the intent of the document is to examine aquatic and terrestrial related needs as well as economic and social needs. Constraints such as individual state water rights and the Compact will not be applied during the RMA process. Manring said the Bureau "will apply all the constraints that we have to deal with at the appropriate time. All we're looking for at this point in time is a range of management opportunities from all interested parties. From there we can then carry forward and start looking to see if we can meet those needs." The constraints will be included in the EIS.

Also in reply to Simpson, Manring said the Bureau is trying to develop a series of alternatives ranging from original and current hydrologic conditions to a full water supply and any alternatives between. The importance and value of return flows to wildlife, vegetation, and aquatic needs would also be included. The model is the OP-study model which was originally used in the mid 1980's. It does not include ground water as a component.

REPORT FROM CORPS OF ENGINEERS

Jerry Buehre

Buehre, Chief of the Water Control Division, Kansas City District, reported that copies of the 1993 flood report were available from the Corps. He said it was put together by the Upper Missouri River Division and the Kansas City District offices.

In 1994, Corps projects were credited with 1.46 billion dollars worth of damages prevented. The figure includes flood control projects within the Republican

River Basin, he said. Harlan County and Trenton were credited with preventing 2.4 million dollars worth of damages.

Lastly, Buehre said operation guidelines for the Kansas River basin projects are currently being evaluated. Prior to the 1995 flood, the Corps had found the criteria used for flood control operations on the Missouri River to be rather restrictive. The amount of water impounded at Tuttle Creek and Milford during the 1993 flood, particularly, will be examined. Navigation impacts on the Kansas basin reservoirs will not be included in this study.

The Harlan County lake study has been delayed pending receipt of the revised inflow analysis and operation studies by the Bureau of Reclamation for its water service renewal studies. The earliest expected date to resume the study is approximately December of 1995 with a draft report to be out November of 1996.

REPORT FROM U.S. GEOLOGICAL SURVEY

Glenn Engel

Engel reminded those in attendance that the USGS receives funding through its federal collection of basic records program and thereby supports the Compact for ten stream flow stations. The records are obtained and analyzed in cooperation with the Nebraska Department of Water Resources. The federal/state Cooperative Program supports 12 other gaging stations, he said. The Corps of Engineers fund four gauging stations in the basin and also fund the operation of seven data collection platforms which are real-time data collection sites. These records for 1994 were provided to the Engineering Committee.

According to Engel stream flows in 1994 were generally less than the long-term average at most sites. Rock Creek at Parks had the lowest flow (10.1 cfs) for the period of record. The statistical mean for stations below Harlan County Reservoir were generally above the long-term mean for the period of record.

Simpson asked for clarification regarding the ten gages used in the Engineering Committee computation. Engel replied that they weren't part of the Cooperative Program. The 12 stations mentioned are part of the Cooperative Program with the Nebraska Department of Water Resources. Pope asked if the 12 other stations Engel mentioned will be continued as Cooperative Stations in the future. Engel replied negatively and said the USGS will continue with only three.

Pope questioned the availability of records in published form. He inquired if any stations were being dropped that are used in the computations of the Engineering Committee. Bleed replied saying two stations are no longer operated by USGS but are being operated by Nebraska Department of Water Resources. The stations are along Beaver Creek and Medicine Creek. In additional conversation, Bleed indicated the Nebraska Department of Water Resources will maintain support for these Beaver Creek and Medicine Creek stations as well as the 12 gages originally discussed by Engel.

Pope expressed displeasure over obtaining data from different sources. He asked Nebraska to provide Kansas with a copy of the hydrologic data. Jess assured him Nebraska would provide the Department of Water Resources Hydrographic Reports.

Bleed indicated all of the gages have been operated as if they were included in the Cooperative Program. It was said she did not believe there is any difference in measurements or record work done for Compact stations or for others included in the Cooperative Program. It was noted the USGS employs a six-week measuring schedule while the Nebraska Department of Water Resources maintains a four-week basis schedule.

Pope asked Engel if having federal employees do field work is optional. Could federal employees be limited to records review, quality check, and publishing of the information?, he asked. Engel replied that USGS has situations where its employees are not doing all the field work. Limiting federal involvement to the review and publishing of records is a less expensive alternative.

ENGINEERING COMMITTEE REPORT

Ann Bleed

Engineering Committee Chairperson Bleed distributed Exhibit 3 and reported on three projects assigned to the Committee. The first was the usual assignment of computing virgin water supplies and tabulating consumptive uses for 1994. According to those calculations, all three States were in compliance with provisions of the Compact on a basin-wide basis. Colorado was also in compliance for all sub-basins. The calculations indicated Kansas was out of compliance for Prairie Dog Creek, and Nebraska was out of compliance for the sub-basins of Sappa Creek, Beaver Creek, Medicine Creek, Red Willow Creek and Driftwood Creek.

The second assignment was for the Committee to review and develop comments for the Compact Commission regarding the Army Corps of Engineers' Harlan County Reservoir study. Because the study was not complete, the Committee did not complete its assigned task.

Bleed indicated the third assignment was to investigate what data were used to calculate virgin water supplies by the original Compact Commission. The Committee was also instructed to review the 1987 Engineering Committee study and to make recommendations regarding what revisions should be made in computing the virgin water supply. The Committee developed a draft report in March and exchanged final comments the week previous to the annual meeting, she said. (Exhibit 4).

It was reported the Committee concluded the original virgin water supply estimate was the equivalent of the average stream flow in the basin. The point of reference was the downstream gage in each sub-basin and in the basin as a whole. To those amounts estimated quantities of water consumed in the basin were added, Bleed said. Further adjustments for the 1935 flood were made also. After reviewing the 1987 Engineering report, it was said no reasons were advanced for altering its conclusion.

In reviewing which components should be included in their computations, the Committee discussed the hydrologic importance of watershed treatment measures, withdrawals from the Ogallala aquifer and the growth of phreatophytes within the context of "activities of man." The Committee tabulated a listing of potential components and made a preliminary assessment of their significance and the difficulty in estimating the components. Bleed noted the Committee did not consider the impact of estimating or not estimating these factors nor the legal question of whether the Compact requires all the variables to be considered. Barfield noted his letter suggested that the change in ground water storage was "possibly significant" rather than "insignificant."

Pope moved to accept the Committee report. Simpson seconded the motion. A vote was taken, and the Chairman declared the motion passed.

Nebraska Senator Elmer

The Senator reported LB871 was a priority bill this year. He said it takes a first step toward addressing a problem of recognizing the legal relationship between surface and ground water in Nebraska. LB871 holds in abeyance any issuing of appropriations of surface water until January, 1997.

Senator Elmer urged the Commissioners to explore methods that would allow the Compact to accurately measure water use so that the amount of available water supplies can be planned on. Each State can devise plans for managing available supplies.

Pope asked Senator Elmer if a hold on the registration of new wells would be addressed as well. Simpson also encouraged the Senator to support a moratorium on ground water development as the problem will only be worse if something isn't done. Senator Elmer concurred with Simpson. He said Nebraska has "a bad enough problem already." At this point forecasting the likelihood of success due to current legislative initiatives would be premature, he said.

Pope moved to accept the Engineering Committee report. Simpson seconded that motion. Jess declared the motion approved.

Pope recognized Al LeDoux from the Office of the Governor in Kansas. The meeting was then recessed for lunch until 12:45.

LEGAL COMMITTEE REPORT

Blankenau, Hupe Seib and Seigneur reminded those in attendance that a brief report discussing the scope of Commission rule making was made previously. It can be found within the September 1994 Special Meeting minutes (Exhibits 5a and 5b). It was agreed the report would be attached to the September meeting minutes.

OLD BUSINESS

Jess inquired about minutes for the two Special Meetings (September 1994 and January 1995) which were under review by Kansas and Colorado. He asked whether the other Commissioners wished for them to be published separately or included with the minutes of 1995 Annual Meeting. Pope replied that they could be circulated with the Annual Meeting minutes and published along with those for the Annual Report. The Chairman agreed to Pope's request. (Exhibits 5 and 6)

Jess recalled a previous discussion about sharing of historical information the States might have. In particular, Jess referenced the findings by Douglas Littlefield. Citing the possibility of litigation, Pope replied that Kansas might not share all of Littlefield's work. The documents are not in our possession yet, he added. Kansas would be willing to discuss sharing those

documents with Nebraska if there was a way to cost-share the retrieval of those documents with Nebraska.

Hupe Seib informed the Commission that Kansas has provided each State every document which Kansas has in its possession. Blankenau urged Kansas to share all information especially if it might reveal something that would be helpful in aiding the Commissioners in resolving disputes.

NEW BUSINESS

Kansas Proposal

A proposal was presented by Kansas, (Exhibit 7). Pope discussed the proposed changes to the rules and regulations of the Republican River Compact Administration (RRCA). Pope referenced the annual records prepared by the Engineering Committee. Colorado's reported use has not exceeded her original allocations; Kansas' use is in compliance with her original allocations in all but one or two drainage basins; and Nebraska has a consistent pattern of over-use in five or six drainage basins, he said. For the past year, Kansas' uses exceeded its allocation in the Prairie Dog Creek sub-basin and Nebraska was over its allocations in Beaver Creek, Driftwood Creek, Medicine Creek, Red Willow, Sappa Creek and the main stem.

Pope stated Kansas incurred significant shortages within the lower basin during 1989 through 1992. It is believed the shortages were aggravated by Nebraska's over-use of her allocations. That over-use resulted in the failure to meet Kansas' minimum desirable stream flow targets in 1992.

Referring to Kansas Resolution A, Pope reported Kansas had heard no other comments beyond those stated at the two Special Meetings. The purpose of the Resolution, he said, was to address Kansas' concerns regarding the after-the-fact accounting problems of the current administration of the Compact. The resolution was crafted in a manner to provide each State the opportunity to choose how it

will bring itself into compliance. It is Kansas' hope that through adoption of Resolution A, or some modification of it, Kansas' concerns would be addressed within the provisions of the Compact administration. Costly legal battles, Kansas' only other recourse, will be avoided, Pope said. The proposal, he continued, would have the States use the original allocations by drainage basin as provided for in the Compact until the three member States agree on whether and how the allocations should be adjusted. This would allow each State to know in advance its allocation and could adjust its consumptive use accordingly.

Pope noted that fluctuations in water supply occur from year to year, but it has not been demonstrated that the true water supply has changed long-term in the basin. Kansas, he said, does not feel the Compact Administration is legally obligated to adjust the allocations until an agreement on methodology is reached.

The resolution, he continued, would obligate each State to declare a moratorium on new uses of surface water and hydraulically connected ground water in those drainage basins where a State's use in or after 1994 is over its original allocation. Additionally, each State would require that all consumptive uses which are counted under current procedures be metered within three years in any drainage basin which exceeds its allocation. At this time, Ogallala well pumping would not be included unless certain Ogallala wells are included under current procedures.

Pope said that the determination of the impact, if any, of the depletions due to pumping from Ogallala aquifer on the virgin water supply in each drainage basin is an unresolved concern which the three States will need to deal with in the future.

Additionally, each State shall act to reduce beneficial consumptive use within any drainage basin which exceeds its original Compact allocation to bring it within the original Compact allocation for that specific drainage basin. The method of achieving compliance shall be of each State's choosing.

The resolution also specifically stated that the official in each State charged with the duty to administer the public water supply shall have the authority and responsibility to carry out the terms of the rules and regulations.

He then moved adoption of Resolution A, paragraphs 14 through 20 as rules and regulations of the Republican River Compact Administration. Simpson seconded the motion.

During discussion that followed, Jess called attention to an apparent error in one of Kansas' handouts. By way of background he referred to Engineering Committee reports prepared since 1980. In that year, Nebraska urged the Committee to tabulate water uses in a fashion to distinguish ground water and surface water sources. Nebraska continues to believe ground water uses are not included within the limitations established by the Compact, he said. The Committee tabulations permit readers to view the allocations and water uses in each State from that perspective.

Jess stated Kansas' Resolution A effectively asks the Commissioners to do something which they were not authorized to do. Only the Legislature of each State and the Congress can make explicit changes to terms of the Compact. Jess requested Blankenau to speak further about the ultra vires nature of the Kansas resolution.

Blankenau called attention to his memo, (Exhibit 8). As a body, the Compact Commission has broad rulemaking authority but its authority is limited by the content of the Compact. Interpreting Resolution A through guidance by the United States Supreme Court, led him to conclude paragraphs 14 and 15 go beyond the rulemaking authority of the Commission. It is for this reason that Nebraska prepared a separate resolution (Exhibit 9). It would assure the States their full apportionments, but in a manner consistent with authorities given the Commissioners, he said.

Simpson said he viewed paragraph 14 in Resolution A, as an opportunity to better comply with the Compact because it is tied to original allocations and probably

more correct than the method currently used. Adjustments would not be made until sufficient data indicates the virgin water supply has actually changed, he said. Year-to-year adjustments were said to place everyone in jeopardy. Simpson urged Nebraska consider the benefit of what was being offered in Resolution A.

Jess called for the motion to approve Kansas' Resolution A. Simpson voted yes. Pope voted yes. Jess voted no. Jess declared the motion failed.

Nebraska Proposal

Jess presented Nebraska's Resolution (Exhibit 9) and moved for its adoption. Simpson seconded it.

Jess referred to Legislative Resolution 218 (Exhibit 1), previously discussed by Blankenau. Blankenau characterized Jess' Compact proposal as an attempt to track the thrust of LR218. If adopted, the motion would unquestionably authorize Compact officials to renegotiate provisions of the Compact. To give the Compact greater utility, provisions could be adopted. Jess cited other interstate Compacts where specified flows are required to pass from one state into the other state. A daily, weekly or monthly flow schedule could be developed, he said. The Kansas/Nebraska Big Blue River Compact was mentioned as an example. Jess proposed the Commissioners ask their respective State Legislatures for authority to negotiate new terms. A federal representative should also be present to aid in revising the Compact.

Citing time constraints, Simpson replied he would not support the Nebraska proposal. Colorado, where streams are often dry, would be opposed to state line target flows and virtually unable to achieve those targets. He went on to say that terms of the current Compact are "administrable." He pointed out that the Colorado River Basin Compact is tied to an allocation based on consumptive use. In comparison, the U.S. Supreme Court Decree for the North Platte River is based on allocation of acres irrigated, acre feet stored or acre feet exported, and it is tied to a level of consumption. The La Plata River Compact which operates within the framework of the Colorado River Compact is tied to gage flows, and

Colorado delivers one-half of the upper gage flow to the state line. He noted that there are opportunities to consider other solutions without opening up the Republican River Compact.

Blankenau stated that adopting the Nebraska proposal would not set aside the existing Compact. It would remain in full force and effect with renegotiation targeted to certain specific issues. The existing Compact would remain in full force and effect until the time a revised agreement was reached between the States' Legislatures and Congress.

Pope asked that Nebraska come forth with an enforcement mechanism proposal before talking about an amendment to the Compact. Either directly or indirectly, Kansas is not interested in a reallocation of the waters of the Republican River Basin, he said. The States could have additional special meetings to consider this proposal, one which would be "do-able" and within the framework of the Compact, he suggested. Further, he believed that the call for an amendment was premature and unnecessary, would result in needless delays while obtaining the authority to negotiate or the appointment of various representatives. In response to Jess, Pope denied that an unwillingness to renegotiate the Compact indicated a lack of willingness to resolve the dispute.

Jess called for the vote on the Nebraska proposal. Simpson voted no. Pope voted no. Chairman Jess voted yes and declared the motion had failed.

Jess introduced Mr. Lee Orton, legal representative for Republican valley irrigation interests in Kansas and Nebraska.

OTHER MATTERS

Orton stated his purpose in appearing was to request the Compact Commission support the Irrigation Projects Reauthorization Council (IPRC). The Council was formed in 1994 by ten irrigation and reclamation districts located in Kansas and Nebraska. The commonality of purpose was in renewing contracts with the Bureau of Reclamation. Some of the contracts terminate at the end of 1996. Efforts are

being directed at producing legislation to be introduced in Congress in 1995, he reported. This legislation would provide for title transfer of federal assets to Orton's district clients.

Orton also mentioned the possibility of forming a basin authority. The basin authority would be a governmental entity holding title to reservoir facilities and providing irrigation water to his clients' districts.

Simpson inquired if the IPRC wanted total ownership. Orton replied that transfers were desired as a means to avoid additional federal regulatory controls. He mentioned federal reclamation reform and other requirements. Blankenau asked whether the basin authority could resolve allegations of over use. Orton replied affirmatively.

Jess asked if IPRC was seeking the Commissioners' support for yet-to-be-developed administrative policies. Orton generally reacted positively but reminded his listeners that no reclamation projects existing in the Colorado portion of the Republican River basin. As a result the level of support from Colorado could understandably be less.

COMMITTEE ASSIGNMENTS

Legal Committee

Jess suggested Orton's description of IPRC objectives was a possible committee assignment. Simpson and Pope generally agreed.

Jess asked the Legal Committee to work and lend appropriate assistance to Orton. Seigneur did not commit, but Blankenau and Hupe Seib agreed to assist.

Engineering Committee

Jess gave a summary of assignments. Tables 1, 2, and 3 should be included in the annual report. Table 3 will be the 5 and 10 year average virgin water supply estimates. It was agreed that this would be published in the annual report for 1994. The Committee shall do its routine assignment of computing the virgin water supply and the allocations; to explore with Engel the possibility of publishing some aspect of the records; to engage in a review of the Bureau's regression analysis being done as part of contract renewals; and to review the reports on Republican River computer models. The Committee will concentrate on the inter-relationship between ground water and surface water in regard to the Republican River basin reports.

A brief summary of their understanding will be drawn from the conclusions of the basin reports.

SETTING OF 1996 ANNUAL COMPACT MEETING

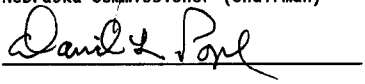
The Compact Administration selected June 6, 1996 for its next Annual Meeting in Nebraska.

ADJOURNMENT

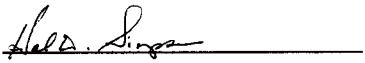
Jess asked the audience if anyone had anything to discuss. No one replied.

Simpson moved to adjourn. Pope seconded the motion. The motion passed unanimously.

J. Michael Jess
Nebraska Commissioner (Chairman)



David L. Pope
Kansas Commissioner



Hal D. Simpson
Colorado Commissioner

NINETY-FOURTH LEGISLATURE

FIRST SESSION

LEGISLATIVE RESOLUTION 218

Introduced by Elmer, 44; Beutler, 28; Bromm, 23; Schrock, 38; Wickersham, 49

WHEREAS, the State of Kansas seeks to protect its annual allocation of water for beneficial consumptive use under the existing Republican River Compact; and

WHEREAS, the State of Nebraska desires that the waters of the Republican River be managed so as to provide all parties to the compact with their annual allocation of water for beneficial consumptive use; and

WHEREAS, the State of Nebraska has found the existing Republican River compact to be impossible to administer in a manner that is satisfactory to all parties to the compact.

NOW, THEREFORE, BE IT RESOLVED BY THE MEMBERS OF THE NINETY-FOURTH LEGISLATURE OF NEBRASKA, FIRST SESSION:

1. That the Nebraska commissioner to the Republican River Compact, J. Michael Jess, in consultation with the natural resources districts whose boundaries lie within the Republican River basin, shall make appropriate resolutions at the June 8, 1995, Compact Commission meeting calling for negotiations to amend the Republican River Compact. Such amendments shall be designed to achieve the goal of establishing the administrative framework to allow regulation of water to provide all parties with the full amount of their annual allocations for beneficial consumptive use.

Exhibit 1

PRESIDENT OF THE LEGISLATURE

I, Patrick J. O'Donnell, hereby certify that the foregoing is a true and correct copy of Legislative Resolution 218, which was passed by the Legislature of Nebraska in the Ninety-fourth Legislature, First Session, on the twenty-second day of May 1995.

CLERK OF THE LEGISLATURE

REPUBLICAN RIVER COMPACT MEETING
June 8, 1995
Lincoln, Nebraska

1994 Operations -- As shown on the attached Table 1, the precipitation in the Republican River Basin varied from 84 percent of normal at Lovewell Reservoir to 123 percent of normal at Enders Reservoir. Total precipitation was near normal at the other reservoirs ranging from 16.76 inches at Bonny Dam to 24.66 inches at Norton Dam.

Inflows varied from 55 percent of the most probable forecast at Enders Reservoir to 243 percent of the most probable forecast at Keith Sebelius Lake. Inflows into Harlan County Lake were 190,817 AF and Lovewell Reservoir 55,841 AF. Inflows into Keith Sebelius were 10,956 AF which is over 2 times the expected most probable amount.

Farm delivery values are as follows:

District	Farm Delivery
Frenchman Valley	5.6 inches
H&RW	6.1 inches
Frenchman-Cambridge	12.7 inches
Almena	1.6 inches
Bostwick in NE	11.1 inches
Kansas-Bostwick	9.0 inches

Operation notes

Bonny Reservoir--normal operations.

Enders Reservoir--normal operations.

Swanson, Hugh Butler and Harry Strunk Lakes--Carryover storage was still well above normal as a result of the high rainfalls of 1993. All these reservoirs were full by the end of March.

Keith Sebelius Lake--Reservoir was at its highest level since 1967.

Harlan County Lake--Last year's High was El. 1948.07 which is 2.07 feet into the flood pool. The lake finished the season at elevation 1943.66 (2.34 ft. from full). Inflow for the year was 190,800 AF.

Exhibit 2

Current Operations

Table 2 shows a summary of data for the first five months.

Bonny Reservoir--Releases restricted to spillway gate for 2-4 weeks. The outlet pipe has been replaced but final completion has been delayed due to wet conditions. An Early Warning System (EWS) is being set up. A table top exercise was conducted in May. Bonny is 1.3 feet into flood pool.

Swanson Lake--Presently 2.1 feet into flood pool.

Enders Reservoir--A toe drain will be constructed this fall or next spring. A reservoir operating restriction may be put in place subject to the completion of the toe drain. Guardrail will be installed on the spillway bridge.

Hugh Butler Lake--Presently 1 foot into the flood pool. Corrective action studies has been initiated. Also filled in 1994.

Harry Stunk Lake--Target elevation of 2 feet into flood pool. Presently 1.9 feet into flood pool.

Keith Sebelius Lake--Presently 2 feet from full. Highest elevation since 1967. Precipitation for May was 14.33 inches.

Harlan County Lake--Presently 5.1 feet into flood pool. Since water supply was expected to be sufficient, no specific operation criteria was negotiated for 1995. May precipitation was 11.02 inches.

Lovewell Reservoir--Presently 4.6 feet into flood pool. Target elevation of 2 feet into flood pool.

Other Items:

Inspections--
All of the dams were inspected in 1994. There were no major deficiencies noted. State personnel were invited to attend the inspections.

Emergency Management Operations--
Meetings are being held with the local Emergency Management personnel below Reclamation facilities to set up notification procedures.

Water Availability--
Full supplies are available for Almena, Frenchman-Cambridge and the Bostwick Irrigation Districts. H&RW and Frenchman Valley are expected to deliver 5 inches.

Other Reservoirs--
Kirwin Reservoir is 7.8 feet into the flood pool and Webster Reservoir is 14.6 feet into the flood pool. Both are at historic highs. Kirwin received 13.46 inches and Webster 15.38 inches of precipitation in May.

TABLE 1
NEBRASKA–KANSAS AREA OFFICE
Summary of Precipitation, Reservoir Storage and Inflows

CALENDAR YEAR 1994

Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12–31–93 AF	Storage 12–31–94 AF	Gain or Loss AF	Maximum Storage Content AF	Maximum Storage Date	Minimum Storage Content AF	Minimum Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	10.9	69	13,686	10,813	(2,873)	20,961	MAY 27	5,384	AUG 31	16,402	90
Merritt	19.68	102	68,831	68,831	0	75,665	JUN 8	42,195	AUG 30	175,110	99
Sherman	22.7	103	51,057	52,722	1,665	69,365	JUN 2	47,143	SEP 2	96,907	87
Calamus	24.92	110	108,520	94,714	(13,806)	128,325	JUN 9	89,871	OCT 1	247,400	103
Davis Creek	24.02	104	10,686	8,385	(2,301)	16,221	JUL 17	8,320	MAY 15	32,367	80
Bonny	16.76	100	39,920	37,485	(2,435)	42,035	MAY 15	36,498	NOV 1	13,089	77
Enders	22.79	123	25,972	24,660	(1,312)	32,511	JUN 14	19,727	AUG 14	18,275	55
Swanson	20.91	106	104,672	85,117	(19,555)	133,333	MAY 7	77,817	OCT 4	54,608	84
Hugh Butler	17.73	91	37,113	32,804	(4,309)	39,688	APR 25	30,797	SEP 24	15,986	84
Harry Strunk	17.46	85	34,507	28,054	(6,453)	39,639	MAY 25	18,524	SEP 2	41,644	100
Keith Sebelius	24.66	103	22,950	25,216	2,266	27,795	JUL 19	22,950	JAN 1	10,956	243
Harlan County	21.04	94	316,800	285,301	(31,499)	343,415	JUN 14	266,384	OCT 13	190,817	135
Lovewell	23.35	84	37,880	30,970	(6,910)	49,190	MAY 8	28,470	AUG 30	55,841	112
Kirwin	20.31	88	129,660	98,680	(30,980)	129,600	JAN 1	93,760	SEP 25	58,679	376
Webster	21.32	92	96,733	82,405	(14,328)	95,830	JAN 1	78,624	OCT 29	61,839	524
Waconda	23.86	95	364,910	221,194	(143,716)	362,391	JAN 1	214,290	SEP 24	418,658	472
Cedar Bluff	19.2	94	69,013	69,244	231	74,555	MAY 16	68,485	NOV 18	15,148	178

TABLE 2
NEBRASKA–KANSAS AREA OFFICE
Summary of Precipitation, Reservoir Storage and Inflows

JANUARY – MAY 1995

Reservoir	Precip. Inches	Percent Of Average %	Storage 05–31–94 AF	Storage 05–31–95 AF	Gain or Loss AF	Inflow AF	Percent Of Most Probable %
Box Butte	8.14	132	20,884	20,156	(728)	10,598	105
Merritt	14.25	210	75,075	76,549	1,474	84,464	112
Sherman	14.33	178	68,788	69,365	577	25,913	100
Calamus	16.02	200	127,452	130,967	3,515	145,914	138
Davis Creek	14.2	171	10,522	22,530	12,008	17,844	71
Bonny	9.33	143	41,645	42,161	516	8,312	85
Enders	7.95	113	31,905	31,507	(398)	8,148	62
Swanson	11.12	151	130,703	120,441	(10,262)	39,212	92
Hugh Butler	8.43	121	38,860	39,109	249	8,674	97
Harry Strunk	10.67	144	39,439	39,499	60	19,170	102
Keith Sebelius	19.89	227	25,367	31,392	6,025	7,813	355
Harlan County	14.7	187	341,306	382,110	40,804	119,882	152
Lovewell	12.02	125	47,760	56,300	8,540	27,990	259
Kirwin	17.05	194	108,900	143,895	34,995	57,518	612
Webster	19.37	227	84,336	143,550	59,214	83,660	1,033
Waconda	14.75	163	244,978	403,255	158,277	266,299	640
Cedar Bluff	12.93	181	74,346	91,760	17,414	25,712	571

REPORT OF THE ENGINEERING COMMITTEE TO THE
REPUBLICAN RIVER COMPACT COMMISSION
FOR THE 1994 WATER YEAR

At the annual meeting on June 9, 1994 the Engineering Committee was requested 1) to make the appropriate calculations related to virgin water supplies and allocations, recognizing that there were concerns with the computations and 2) to review the U.S. Army Corps of Engineer's Harlan County study and, if they felt comments on the report were necessary, provide their recommendations to the Compact Commissioners.

The Engineering computed the virgin water supples and consumptive uses for water year 1994 in accordance with the procedures outlined in Republican Compact Administration Formulas for the Computation of Annual Virgin Water Supply and Consumptive Use, Revised June 1990. The resulting computations are shown in Tables 1 and 2.

The U.S. Army Corps of Engineer's Harlan County Study is not yet complete. Therefore the Engineering Committee has nothing to report.

At the special meeting of the Compact Commission January 19,1995 the Engineering Committee was requested to 1) determine what water supplies were used to calculate the virgin water supplies listed in the compact; 2) review the 1987 Republican River Compact Engineering Committee Report and 3) make recommendations on what should be included in computations today. The Engineering Committee met February 22, 1995 to carry out these special assignments. The resulting report is included as an attachment to this report.

FOR Alan Berryman
Colorado

David Barfield
Kansas

Ann Salomon Bleed
Nebraska

Leif Holliday
Kansas

Michael Thompson
Nebraska

Exhibit 3

Table 1

1994 Computed Annual Virgin Water Supply and
Original and Annual Adjusted Allocations

Sub-basin and the Original Compact Virgin Water Supply	Computed Annual Virgin Water Supply Republican River Basin 1994 (Acre Feet)				Comparison of Original Compact Allocations and 1994 Adjusted Allocation (Acre Feet)							
					Colorado		Kansas		Nebraska		Total Basin	
	Ground Water	Surface Water	Total Basin	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.
Prairie Dog Cr.	27600	10840	14640	25480			12600	12600	2100	2100	14700	14700
Sappa Cr.	21400	20560	22770	43330			8800	17820	8800	17820	17600	35640
Beaver Cr.	16500	16930	2370	19300	3300	3860	6400	7490	6700	7840	16400	19190
Medicine Cr.	50800	5970	45010	50980					4600	4600	4600	4600
Red Willow Cr.	21900	3750	17760	21510					4200	4200	4200	4200
Driftwood Cr.	7300	1800	630	2430			500	170	1200	400	1700	570
Frenchman Rv.	98500	35590	59370	94960					52800	52800	52800	52800
South Fork of the Republican Rv.	57200	13347	20070	33417	25400	14830	23000	13430	800	470	49200	28730
Rock Cr.	11000	0	7420	7420					4400	2970	4400	2970
Buffalo Cr.	7890	770	4000	4770					2600	1570	2600	1570
Arikaree Rv.	19610	10932	8180	19112	15400	15400	1000	1000	3300	3300	19700	19700
N.F. Republican Rv. in Colorado	44700	1110	35060	36170	10000	8090			11000	8900	21000	16990
N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska*	94500	99420	205750	305170			138000	235820	132000	226569	270000	462389
TOTALS	478900	221019	443030	664049	54100	42180	190300	288330	234500	333539	478900	664049

Table 2

1994 Computed Consumptive Use within the Republican River Basin (Acre Feet)

Sub-basin	Colorado			Kansas			Nebraska			Total Basin		
	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total	Ground Water	Surface Water	Total
Prairie Dog Cr.				10840	5290	16130 12600 *	1100	200	1300 2100 *	11940	5490	17430 14700 *
Sappa Cr.				4450	30	4480 17820 *	18100	1460	19560 17820 *	22550	1490	24040 35640 *
Beaver Cr.	0	0	0 3860 *	4300	60	4360 7490 *	12630	60	12690 7840 *	16930	120	17050 19190 *
Medicine Cr.							6760	1550	8310 4600 *	6760	1550	8310 4600 *
Red Willow Cr.							3750	1330	5080 4200 *	3750	1330	5080 4200 *
Driftwood Cr.				0	0	0 170 *	1800	50	1850 400 *	1800	50	1850 570 *
Frenchman Rv.							35590	14510	50100 52800 *	35590	14510	50100 52800 *
South Fork of the Republican Rv.	7697	7120	14817 14830 *	5430	100	5530 13430 *	220	0	220 470 *	13347	7220	20567 28730 *
Rock Cr.							0	100	100 2970 *	0	100	100 2970 *
Buffalo Cr.							770	580	1350 1570 *	770	580	1350 1570 *
Arikaree Rv.	10192	0	10192 15400 *	110	0	110 1000 *	630	0	630 3300 *	10932	0	10932 19700 *
N.F. Republican Rv. in Colorado	1110	3860	4970 8090 *				0	3130	3130 8900 *	1110	6990	8100 16990 *
N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska*				130	41770	41900 235820 *	95410	110070	205480 226569 *	95540	151840	247380 462389 *
TOTALS	18999	10980	29979 42180 *	25260	47250	72510 288330 *	176760	133040	309800 333539 *	221019	191270	412289 664049 *

(* indicates adjusted allocations from Table 1)

Table 3

COMPUTED VIRGIN WATER SUPPLY BY BASIN

DRAINAGE BASIN	10-YEAR AVERAGE KANSAS	NEBRASKA	COLORADO	ALLOCATED TO MAINSTEM	5-YEAR AVERAGE KANSAS	NEBRASKA	COLORADO	ALLOCATED TO MAINSTEM	1994 KANSAS	NEBRASKA	COLORADO	ALLOCATED TO MAINSTEM
PRAIRIE DOG CR.	11310	1890		11590	10940	1820		11210	12600	2100		10780
SAPPA CR.	12070	12070		5220	11990	11990		5190	17820	17820		7690
BEAVER CR	6400	6700	3300	1660	6400	6700	3300	500	7490	7840	3860	110
MEDICINE CR		4600		42430		4600		43470		4600		46380
RED WILLOW CR		4200		18020		4200		17380		4200		17310
DRIFTWOOD CR	310	740		3450	270	660		3080	170	400		1860
FRENCHMAN CR		52800		40010		52800		38220		52800		42160
S. FORK REPUBLICAN	14350	500	15850	4990	15060	520	16640	5270	13430	470	14830	4690
ROCK CR.		3230		4830		3120		4690		2970		4450
BUFFALO CR.		1650		3360		1580		3210		1570		3200
ARIKAREE RIVER	660	2180	10190	-50	740	2430	11320	-80	1000	3300	15400	-590
N. FORK REPUBLICAN		9130	8300	19690		8760	7960	18880		8900	8090	19180
TOTALS	45100	99690	37640	155200	45400	99180	39220	151020	52510	106970	42180	157220

	10-YEAR	5-YEAR	1994
M. STEM REPUBLICAN	272690	297870	305170
FROM TRIBUTARIES	155200	151020	157220
TOTAL TO ALLOCATE	427890	448890	462390
KANSAS (51%)	218220	228930	235820
NEBRASKA (49%)	209670	219960	226570

TOTAL BASIN ALLOCATIONS	10-YEAR	5-YEAR	1994
COLORADO	37640	39220	42180
KANSAS	263320	274330	288330
NEBRASKA	309360	319140	333540
TOTAL ALLOCATED	610320	632690	664050
TOTAL ALLOCATED BY BASIN	610320	632690	664050

REPORT ON THE SPECIAL ASSIGNMENT TO THE REPUBLICAN RIVER COMPACT ENGINEERING COMMITTEE

Lincoln, Nebraska
February 22, 1995

Attending the meeting were David Barfield, Alan Berryman, Ann Bleed, Leif Holliday and Michael Thompson.

The Republican River Compact Engineering Committee was asked to:

I. Determine what water supplies were used to calculate the virgin water supplies listed in the compact;

II. Review the 1987 Republican River Compact Engineering Committee Report and

III. Make recommendations on what should be included in computations today.

I. Determine What Water Supplies Were Used to Calculate the Virgin Water Supplies

The Engineering Committee relied on a 1989 report by Vander Horst[1] investigating the original virgin water supply and allocation numbers of the Republican River Compact. Vander Horst's report provides tables from the original compact commission's papers showing origin and analysis of water supplies by state and sub-basin. The numbers in these tables match, within rounding to the appropriate 100 acre feet, the values in the compact [Exhibits A & B from Vander Horst's Report]. The commissioners then added "present usage" (Exhibit B) from the gage data to calculate virgin water supply. Vander Horst tried to match the flow records from the federal reports relied on by the commission [Exhibit C from Vander Horst's Report]. He found no direct match. Based on Hinderlider's explanatory note on the second compact and minutes of the commission meetings, Vander Horst concluded that in calculating the virgin water supply the commission did not use a straight average stream flow but adjusted the data to determine what they believed to be the true conditions.

Based on Vander Horst's report the Engineering Committee concluded the original virgin water supply determinations were the negotiators attempt to estimate the renewable water supply

[1]Vander Horst, Keith. A Summary on Investigations of the Original Virgin Water Supply and Allocations of the Republican River Compact. December 13, 1989

manifested in the surface water stream flows undepleted by man's activities. Compact commission calculations by Willis used in the final computed average virgin water supply substituted the average May and June flows for the flood flows of 1935.

The Engineering Committee determined that the virgin water supply was calculated by summing the gaged flows at the bottom of each stream reach and the contemporaneous usage. As with calculations of the virgin water supply, Vander Horst could not find a direct match between values for current usage given in Exhibit B and the underlying reports on which the commission relied. Again he concluded the commissioners made their own adjustments.

II. Review of the 1987 Engineering Committee Report.

The 1995 Engineering Committee saw no reason to refute the conclusions of the 1987 Engineering Report on Assignment 2: determining the causes of stream flow depletions. In brief the report determined surface water runoff and base flow to Beaver Creek in recent years was lower than in the past and that these declines could not be fully explained by changes in precipitation or increases in consumptive use within the basin. The report went on to state: "The impacts of SCS watershed treatment and ground water pumping outside the alluvium in the Ogallala appear to be evident, especially when change in storage in the alluvium is considered" (p. 21). The 1987 Engineering Committee also concluded that the application of the Glover technique used by the U. S. Bureau of Reclamation overestimated stream depletions resulting from ground water pumping and that annual depletions caused separately by the SCS watershed treatment and ground water pumping could not be determined without the utilization of computer models.

The 1995 Engineering Committee also reviewed the 1987 Engineering Committee's report on the procedure for computing the virgin water supply. The 1987 Engineering Committee wrote a mass balance equation for the current hydrologic system of the basin. The system was defined as the stream channel and contiguous alluvium. The Ogallala Formation was stated to be the subsurface boundary of the system. The land surface boundary of the system was the edge of the alluvium and was not coincident with the watershed boundary. Hence, overland runoff from the rest of the watershed was considered to be an input to the alluvial system.

To gain a better understanding of how to calculate the virgin water supply of a system that is impacted by the activities of man, the 1995 Engineering Committee first wrote out a mass balance equation for a system in which the water supply in fact was "undepleted by the activities of man." The components in this equation were then examined to see which and how they were likely to have been impacted by activities of man. These components were then broken down to further delineate the impacts and determine which might be significant.

The components of the virgin water supply undepleted by the activities of man are shown in Table 1. The terms Qout1, annual surface outflow (streamflow) at the bottom of the stream reach of the system, and Qout2, annual subsurface outflow at the bottom of the reach, represent the renewable water supply of the alluvial system.

The mass balance equation for the system unimpacted by man is shown in Equation 1.

Equation 1:

$$P + Qin + Qogin - Qogout - ET - Es - Eb + \Delta Vs + \Delta Vg = Qout1 + Qout2$$

Equation 2 shows the mass balance for the system impacted by the activities of man. Again the terms on the left side of the equation represent the renewable water supply as they would be if they were undepleted by activities of man. The terms on the right side include Qout1 and Qout2, as in Equation 1, plus new components explicitly describing impacts of activities of man and changes in components from the left side of Equation 1. Additional components to the mass balance equation needed to delineate these changes are shown in Table 2. The delta terms in Equation 1 indicate that there were natural changes in the volume of surface and ground water in storage in the system without the impacts of man. The double deltas on the $\Delta\Delta Vs$ and $\Delta\Delta Vg$ terms in Equation 2 are merely to indicate that there is a change due to the activities of man in the rates and directions of inflows and outflows to ground and surface water storage volumes in the system.

Equation 2:

$$P + Qin + Qogin - Qogout - ET - Es - Eb + \Delta Vs + \Delta Vg = Qout1 + Qout2 + \Delta Qin + \Delta Qogin + \Delta Qogout + \Delta ET + \Delta Es + \Delta Eb + \Delta\Delta Vs + \Delta\Delta Vg + CUsw + CUgw + CUnonirr + Er + Ed$$

The only component of equation 1 not considered by the committee to be impacted by man is precipitation. All other components have changed in response to changes in runoff due to use of land for row crops and the installation of land and water conservation measures in the watershed and in the basin itself, irrigation, municipal, and industrial use of water in the basin, and ground water pumping in the contiguous Ogallala formation.

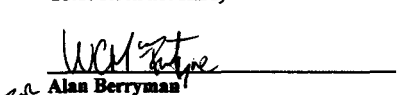
III. Make Recommendations On What Should Be Included in Compact Computations

The components of Equation 2 were examined to determine which were significant and would need to be considered for an accurate assessment of the basin water supply undepleted by activities of man. The ease of estimating these components was also assessed. These assessments are shown in Table 3. Our discussions of the significance and ease of computation of the various factors in the mass balance equation are preliminary in nature. We specifically did not address the impact of modifying the compact's methods for estimating virgin water supply and consumptive use. Similarly we did not address the legal question of whether the compact's definition of virgin water supply requires all of these variables to be considered.

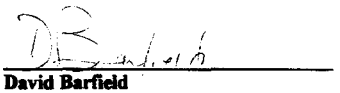
Of the components considered to be significant and easy or relatively easy to estimate, most are already being measured or estimated. However, the accuracy of the consumptive use measurements for surface and ground water pumping is questionable. Estimating consumptive use by using a Blaney-Cridle analysis or similar methodology may be an alternative. In addition, assuming that all water pumped in a given year depletes stream flow in that year is probably inaccurate.

Two significant components in Equation 2 affecting renewable surface water supplies are not included in current compact calculations: the reduction in overland runoff into the system resulting from changes in land use stemming from SCS conservation measures and the depletion of stream flows caused by pumping outside the alluvial basin. Ogallala pumping reduces inflow from the Ogallala formation to the alluvium and also can create areas of outflow from the alluvium to the Ogallala formation. The 1987 Engineers' Report noted that these factors do have a significant impact upon stream flow depletions and that the factors could only be estimated by computer modeling. The 1995 Engineering Committee did not develop any alternative methodologies to estimate these factors; however, the committee feels that these two factors would have to be included in any calculations used to accurately reflect the actual basin water supplies. The Committee noted there are a number of computer models that may be able to estimate the impacts of these factors on stream flows. The Engineering Committee needs some direction from the Commissioners regarding how we should deal with these factors.

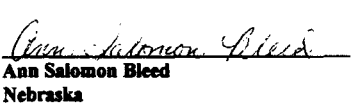
The change in evapotranspiration due to changes in phreatophyte consumptive use of water may also be a significant factor affecting the virgin water supply. The 1987 Engineering Report cites a study reporting phreatophyte consumptive use as 4.1 acre-feet per acre. The change in land surface covered by phreatophytes due to the activities of man is not known but possibly could be estimated from early maps and aerial photographs. Barfield also raised the question of whether flood flows should be included in the estimate of virgin water supply and stated that the compact's computed average virgin water supply and allocations were based on estimates at Guide Rock not Hardy.



Alan Berryman
Colorado



David Barfield
Kansas



Ann Salomon Bleed
Nebraska

Leif Holliday
Kansas

Michael Thompson
Nebraska

Table 1. Components of the Water Supply Undepleted by the Activities of Man

INFLOW	OUTFLOW	CHANGE IN VOLUME
P - Precipitation on the Alluvium Qin - Overland Flow Given Native Vegetation Qogin - Inflow from the Ogallala Formation	ET - Evapotranspiration from Native Vegetation in the Alluvium Including Phreatophytes Es - Evaporation from Streams Eb - Evaporation from Bare Soil Qout1 - Annual Surface Outflow at Gage Site Qout2 - Annual Subsurface Outflow at Gage Site Qogout - Outflow to the Ogallala Formation	ΔVs - Change in Volume of Surface Water ΔVg - Change in Volume of Water in Ground Water Storage

Table 2: Additional Components For Water Supply Impacted by the Activities of Man

CUsw	-	Consumptive Use of Surface Water for Irrigation, Industry and Municipalities
CUgw	-	Consumptive Use of Ground Water for Irrigation, Industry and Municipalities
CUnonirr	-	Consumptive Use from Nonirrigated Cropland
Er	-	Evaporation from Reservoirs
Ed	-	Evaporation from Ditches
Ep	-	Evaporation from Paved Surfaces

Table 3. Significant Components for Determining the Virgin Water Supply Given Current Conditions and the Difficulty in Estimating These Components

Ability to Estimate	Significant Factors Impacted by the Activities of Man	Possibly Significant Factors	Insignificant Factors
Easy	Qout1 - Gaged Stream Flow Er - Reservoir Evaporation		ΔEs - Change in Surface Water Evaporation ΔEb - Change in Evaporation From Bare Soil
Relatively Easy	ΔΔVs - Change in Change of Volume of Surface Water due to Reservoirs CUsw - Consumptive Use of Surface Water Ugw - Consumptive Use of Alluvial Ground Water	Qout2 - Alluvium Outflow CUnonirr - Consumptive Use of Nonirrigated Crop Land	Ed - Evaporation from Ditches Ep - Evaporation from Paved Surfaces
Difficult	ΔQin - Changes in Overland Runoff Affected by Activities of Man ΔQogin - Change in Inflow from Ogallala ΔQogout - Change in Outflow from Ogallala	ΔET - Change in ET of Native Vegetation	ΔΔVg - Change in Change of Volume of Ground Water Due to Activities of Man

Tabulation Showing
ORIGIN OF WATER SUPPLY, AREA, AND RUN-OFF OF REPUBLICAN RIVER AND TRIBUTARIES
IN COLORADO, NEBRASKA AND KANSAS

BASIN	COLORADO			NEBRASKA			KANSAS			TOTAL		
	Water Supply Acre-feet	Area Sq. Miles	Run-off per Sq.Mi.	Water Supply Acre-feet	Area Sq. Miles	Run-off per Sq.Mi.	Water Supply Acre-feet	Area Sq. Miles	Run-off per Sq.Mi.	Water Supply Acre-feet	Area Sq. Miles	Run-off per Sq.Mi.
North Fork Republican	43,950	1,474	29.8	750	26	28.8	0	0	-	44,700	1,500	29.8
Arikaree	19,414	1,760	11.0	98	10	9.8	98	10	9.8	19,610	1,780	11.0
Buffalo	5,730	1,040	5.5	2,160	137	15.8	0	0	-	7,890	1,177	6.7
Rock	0	0	-	11,000	145	75.9	0	0	-	11,000	145	75.9
South Fork Republican	43,240	2,027	21.3	200	10	20.0	13,760	658	20.9	57,200	2,695	21.2
Republican to Culbertson	0	0	-	12,850	921	14.0	1,950	144	13.5	14,800	1,065	13.9
Frenchman	0	1,289	-	98,500	1,948	50.7	0	0	-	98,500	3,237	30.4
Blackwood	0	0	-	6,800	377	18.0	0	0	-	6,800	377	18.0
Driftwood	0	0	-	4,100	216	19.0	3,200	191	16.8	7,300	407	17.9
Red Willow	0	0	-	21,900	985	22.2	0	0	-	21,900	985	22.2
Medicine	0	0	-	50,800	1,035	49.1	0	0	-	50,800	1,035	49.1
Beaver- At Mouth	1,530	288	5.3	4,780	509	9.4	10,190	1,329	7.7	16,500	2,126	7.8
Sappa- At Mouth	0	0	-	3,180	149	21.3	18,220	1,507	12.1	21,400	1,656	12.9
Prairie Dog	0	0	-	2,000	64	31.2	25,600	1,116	22.9	27,600	1,180	23.4
Republican, Culbertson to Bloomington	0	0	-	41,090	2,062	19.9	810	45	18.0	41,900	2,107	19.9
Republican, Bloomington to Guide Rock	0	0	-	21,810	1,028	21.0	1,190	66	18.0	31,000	1,094	28.3
TOTAL to Guide Rock	138,924	7,878	17.6	264,058	9,622	27.5	75,018	5,066	14.8	478,900	22,566	21.2
% of Total to Guide Rock	29.0	34.9		55.3	42.6		15.7	22.5				
Republican, Guide Rock to Hardy	0	0	-	7,733	281	27.5	1,967	71	27.7	9,700	352	27.6
White Rock	0	0			0			365			365	
Republican, Hardy to Scandia	0	0			13			120			133	
Buffalo	0	0			0			342			342	
Republican, Scandia to Concordia	0	0			0			322			322	
Republican, Concordia to Junction City	0	0			0			1,392			1,392	

F. B. Shaffer, Technician
January 4, 1941, Lincoln, Nebraska
Revised, March 26, 1941

ANALYSIS OF
REPUBLICAN RIVER BASIN WATER SUPPLY
AND ITS DISPOSAL
ABOVE GUIDE ROCK, NEBRASKA

Revised at Denver, Colorado, March 19, 1941

Stream Basin	Colorado	Kansas	Nebraska	Totals	Cumulative
	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet	Acre-Feet
N. Fork Republican					
Run-off				44,700	44,700
Pres. Use	5,500	0	5,000	10,500	
Pres. Shortage 4500 ac.	2,000	0	2,500	4,500	
Res. Loss 200 ac. at 5'	500	0	500	1,000	
New Projects 3000 ac.	2,000	0	3,000	5,000	
Total	10,000	0	11,000	-21,000	23,700
Arikaree					
Run-off				19,610	43,310
Pres. Use	2,210	0	0	2,210	
Pres. Shortage 880 ac.	880	0	0	880	
Res. Loss 550 ac. at 6'	2,150	265	885	3,300	
New Projects 7118 ac.	10,175	675	2,370	13,220	
Total	15,415	940	3,255	-19,610	23,700
Buffalo					
Run-off				7,890	31,590
Pres. Use	-	-	790	790	
Pres. Shortage 525 ac.	0	0	525	525	
Res. Loss	0	0	1,000	1,000	
New Projects 200 ac.	0	0	300	300	
Total	0	0	2,615	- 2,615	28,975

EXHIBIT B

Stream Basin	Colorado Acre-Feet	Kansas Acre-Feet	Nebraska Acre-Feet	Totals Acre-Feet	Cumulative Acre-Feet
Rock					
Run-off				≠ 11,000	39,975
Pres. Use	-	-	400	400	
Pres. Shortage 200 ac.	0	0	200	200	
New Projects 2500 ac.	0	0	3,750	3,750	
Total	0	0	4,350	- 4,350	35,625
S. Fork Republican					
Run-off				≠ 57,200	92,825
Pres. Use 10,067 ac. at 1.5'	10,200	4,900	0	15,100	
Pres. Shortage 7,200 ac.	6,800	400	0	7,200	
Res. Loss	2,000	4,200	0	6,200	
New Projects	6,400	13,500	750	20,650	
Total	25,400	23,000	750	- 49,150	43,675
Republican bet. State Line & Culbertson					
Run-off				≠ 14,900	58,475
Pres. Use	-	-	2,000	2,000	
Pres. Shortage 2000 ac.	0	0	1,000	1,000	
New Projects 3000 ac.	0	0	4,500	4,500	
Total	0	0	7,500	- 7,500	50,975
Frenchman					
Run-off				≠ 98,500	149,475
Pres. Use	-	-	15,000	15,000	
Pres. Shortage	0	0	7,500	7,500	
Res. Loss 800 ac. at 6'	0	0	4,800	4,800	
New Projects	0	0	25,500	25,500	
Total	0	0	52,800	- 52,800	96,675
Blackwood					
Run-off				≠ 6,800	103,475

Stream Basin		Colorado Acre-Feet	Kansas Acre-Feet	Nebraska Acre-Feet	Totals Acre-Feet	Cumulative Acre-Feet
Driftwood Run-off					/ 7,300	110,775
Pres. Use		-	-	-	-	
New Projects		0	500	1,200	1,700	
Total		0	500	1,200	- 1,700	109,075
Red Willow Run-off					/ 21,900	130,975
Pres. Use		-	-	800	800	
Pres. Shortage	400 ac.	0	0	400	400	
Res. Loss	500 at 6'	0	0	3,000	3,000	
Total		0	0	4,200	- 4,200	126,775
Medicine Run-off					/ 50,800	177,575
Pres. Use		-	-	500	500	
Pres. Shortage	250 ac.	0	0	250	250	
Res. Loss	650 ac. at 6'	0	0	3,900	3,900	
Total		0	0	4,650	- 4,650	172,925
Beaver Run-off					/ 16,500	189,425
Pres. Use		-	-	200	200	
Pres. Shortage	100 ac.	0	0	100	100	
Res. Loss	770 ac. at 4.5'	0	1,575	1,575	3,150	
New Projects	9050 ac.	3,300	4,800	4,800	12,900	
Total		3,300	6,375	6,675	- 16,350	173,075

Stream Basin		Colorado	Kansas	Nebraska	Totals	Cumulative
Sappa						
Run-off					+ 21,400	194,475
		-	[illegible]			
Pres. Use		-	200	200	400	
Pres. Shortage	200 ac.	0	100	100	200	
Res. Loss	700 ac. at 4.5'	0	1,575	1,575	3,150	
New Projects	9200 ac.	0	6,900	6,900	13,800	
Total		0	8,775	8,775	- 17,550	176,925
Prairie Dog						
Run-off					+ 27,600	204,525
Pres. Use		-	400	400	800	
Pres. Shortage	400 ac.	0	200	200	400	
Res. Loss		0	2,000	0	2,000	
New Projects		0	10,000	1,500	11,500	
Total		0	12,600	2,100	- 14,700	189,825
Republican bet. Culbertson & Bloomington						
Run-off					+ 41,900	231,725
Pres. Use		-	-	500	500	
Pres. Shortage	250 ac.	0	0	250	250	
New Projects	42,000 ac.	0	0	63,000	63,000	
Total		0	0	63,750	- 63,750	167,975
Republican bet. Bloomington & Guide Rock						
Run-off					+ 31,000	198,975
Pres. Use		-				
New Projects	108,000 ac. at 1.576	0	118,175	52,000	170,175	
Total		0	118,175	52,000	- 170,175	28,800
Harlan County Res. Loss		0	20,000	8,800	- 28,800	0

Recapitulation	Colorado	Kansas	Nebraska	Totals
Pres. Use	17,910	5,500	25,790	49,200
Pres. Shortage	9,680	700	13,025	23,405
Res. Loss	4,650	23,615	26,035	60,300
New Projects	21,875	154,550	169,570	345,995
Total Con. Use	54,115	190,365	234,420	478,900
Per Cent	11.3	39.8	48.9	100.0
Cons. Use excl. Res. Losses	49,465	160,750	208,385	418,600
Per Cent	11.8	38.4	49.8	100.0
Origin of Gross Water Supply Above Guide Rock	138,924	75,018	264,958	478,900
Per Cent	29.0	15.7	55.3	100.0
Area of Basin in Square Miles above Guide Rock	7,878	5,066	9,622	22,566
Per Cent	34.9	22.5	42.6	100.0

EXHIBIT C

COMPARISON OF STREAM FLOW RECORDS, REPUBLICAN RIVER
(all values in acre-feet per year)

GAGE LOCATION or REACH	FROM SECOND TABLE WATER SUPPLY		PRESENT USE		RESULTING AVG. FLOW	BUREAU OF RECLAMATION REPORTED AVG. FLOW	BUREAU OF AG. ECONOMICS REPORTED AVG. FLOW	CORPS OF ENGINEERS REPORTED AVG. FLOW	SOIL CONSERV. SERVICE REPORTED AVG. FLOW
W.FORK AT CO/NB ST.LN	44700	-	10500	=	34200	25500 (17500)	34940	36300	37210
ARIKAREE	19610	-	2210	=	17400	na	21000	22500	23000
BUFFALO CREEK	7890	-	790	=	7100	8000	na	na	na
ROCK CREEK	11000	-	400	=	10600	na	na	na	na
SOUTH FORK	57200	-	15100	=	42100	49500	39250	40200	38500
REP. NEAR BENKELMAN	--		--		--	na	62360	60000	60000
REP. NEAR MAX	--		--		--	150000 (108600)	143000	149800	160100
"REP. TO CULBERTSON"	14800	-	2000	=	12800	--	--	--	--
COMPACT CUMULATIVE TO CULBERTSON	155200	-	31000	=	124200	--	--	--	--
FRENCHMAN CREEK	98500	-	15000	=	83500	85700	92770	88300	93400
COMPACT CUMLATIVE TO CULBERSON + FRENCHMAN	253700	-	46000	=	207700	--	--	--	--
REP. AT CULBERTSON	--		--		--	# 235600 #(185600)	147550	194600	217300
BLACKWOOD CREEK	6800	-	0	=	6800	na	na	na	na
DRIFTWOOD CREEK	7300	-	0	=	7300	na	na	na	na
RED WILLOW CREEK	21900	-	800	=	21100	20500 (17900)	22046	24520	na
MEDICINE CREEK	50800	-	500	=	50300	48900	45900	58800	62000
BEAVER CREEK	16500	-	200	=	16300	14415	14415	16320	na
SAPPA CREEK	21400	-	400	=	21000	17220	21120	19250	na
PRAIRIE DOG CREEK	27600	-	800	=	26800	32900	35310	32700	32700
"REP., CULTERSON TO BLOOMINGTON"	41900	-	500	=	41400	--	--	--	--
COMPACT CUMULATIVE TO BLOOMINGTON	447900	-	49200	=	398700	--	--	--	--
REP. AT BLOOMINGTON	--		--		--	467000 (40800	460200	477700	496200
"REP., BLOOMINGTON TO GUIDE ROCK"	31000	-	0	=	31000	--	--	--	--
COMPACT CUMULATIVE TO GUIDE ROCK	478900	-	49200	=	429700	--	--	--	--
REP. AT HARDY	--		--		--	na	505540	534100	575400
REP. AT SCANDIA	--		--		--	545000 (478000)	548200	552000	561900

()=avg exclusive of 1935 flood
= Includes Frenchman Creek

MINUTES

REPUBLICAN RIVER COMPACT

Informal Special Meeting

September 28, 1994

Tall Grass Inn, Wichita, Kansas

Present at Meeting: Commissioners: Michael Jess, Nebraska, Chairman; David Pope, Kansas, Hal Simpson, Colorado. Others present are listed on the attached attendance list.

The meeting was called to order by Chairman Jess at 1:20 p.m.

1. **Acceptance of Agenda and discussion of meeting format.**

The proposed agenda was amended to include a discussion of the status of stream flow and reservoir gages used by the Compact.

2. **Legal Committee report on the general scope of rule making authority granted to the Commissioners by the Compact.**

Hupe Seib, the only Legal Committee member present, discussed separate memoranda developed by Seigneur and herself. Even though each of them approached the issue from different perspectives, both Seigneur and she reached the same general conclusion, Hupe Seib said. It was concluded the Compact Commissioners can adopt and enforce rules and regulations to administer provisions of the Compact as long as they are not inconsistent with the substance of the Compact. Hupe Seib indicated she had discussed this conclusion with Blankenau, Nebraska's legal committee member. It was said he generally agreed with the other Committee members.

Exhibit 5

Pope moved (seconded by Simpson) to accept the two memoranda with an understanding that the conclusions and advice of the committee members are in general agreement. The motion passed unanimously.

3. Discussion of issues and potential options for addressing Compact concerns.

The Commissioners agreed to discuss the topics under agenda item 3 without following the precise order listed in the agenda. A rather free-wheeling discussion followed.

To begin, Bleed presented a memorandum she developed which focuses upon formulae used for calculation and allocation of the virgin ground water supply. Under certain circumstances she concluded the Compact's methodology will produce illogical conclusions. For example, calculation of virgin ground water supply, when combined with the allocation formulae can result in quantities of unallocated ground water being consumptively used in a state's sub-basin. As a result the Commissioners' methodology may make it impossible for a state to comply with its allocation limit. Bleed's memorandum also discussed how the formulae effectively create a three-way balance where disproportionately small ground water withdrawals in one of the states potentially equates to excessive withdrawals in one or both of the others. Jess followed by indicating the possibility of noncompliance exists, but the equations are misleading to the public and Commissioners, and they do not indicate the extent of possible

noncompliance among the states. Bleed stated technical disputes don't rest upon different understandings of hydrology but with the Compact-adopted calculations.

Pope pointed out the Compact formulae do not look at changes in ground water storage. Simpson, stated there was no need to "reinvent the wheel," and referred Commissioners to the 1987 Engineering Committee Report, which discussed a method of calculating the virgin water supplies and consumptive uses. He indicated data were available to do all the calculations necessary, except for changes in ground water storage and phreatophyte use. Making these additional measurements was possible but would require a significant investment. he said. Jess indicated including the Ogallala aquifer in calculations of ground water use raises the question of where the line is drawn. The Compact was not devised as a means of allocating the Ogallala aquifer, he stressed.

For illustration Barfield pointed to ground water use in the Beaver Creek basin. It was said accounting for changes in ground water storage could make a significant difference in the annual virgin water supply quantities. But, when considering adjustments in the long term, he said there would be little difference.

Pope said long term precipitation records indicate total virgin water supplies (i.e., renewable supplies) in the Republican Basin have not changed. As surface water supplies have decreased, ground water uses have increased, he said. Ground water storage changes in the Ogallala aquifer have significantly impacted alluvial ground water supplies. Resultant impacts can be estimated, Pope said.

Bleed asked what was the basis of the original Compact allocations. Hupe Seib stated they were based upon known supplies and an estimate of future demand. She stated ground water was included in the estimates. Pope indicated ground water development has been much greater than estimated especially in several sub-basins.

Hupe Seib indicated the Compact does not allow shifting allocations from one basin to another or from state to state. Pope stated a portion of the water in the sub-basins was intentionally left unallocated in the sub-basins in recognition of larger needs to be filled on the mainstem.

Bleed asked whether the Commissioners' intent is to limit development in the precise fashion called for by the Compact. Pope indicated that development should be restricted as called for in the Compact. Simpson said the Compact could be amended to change the allocations to more closely reflect actual development patterns. Pope said that might be a possible alternative, but he was not ready to make that proposal. First, he said, we would need to identify who would be impacted. Bleed agreed.

Next, Jess and Bleed explained a potential credit/debit accounting proposal using Prairie Dog Creek as an example. During those years when consumption is less than the allocation limit, the proposed scheme would permit accumulation of a credit. In subsequent years accumulated credits would be applied against consumptive volumes which exceed the annual allocation limit, they explained. In view of its existing regulatory authorities, Pope questioned how Nebraska would be able to enforce limitations. Due to meager quantities of surface water

in some basins, Bagley said the states have limited options for choosing whether to limit surface or ground water uses. Pope questioned whether credit/debit accounting system is consistent with the Compact. Pope expressed concern that the proposal could increase injury to downstream states. Simpson suggested implementing such an accounting procedure would require a change in rules.

Discussion continued with the group acknowledging that consumptive development did not precisely follow the pattern expected in 1943. As another option, shifting allocations to reflect historical experience was suggested. Pope was reluctant and stated the Compact was instituted to limit uses in order to protect downstream supplies. Just because development occurred in different areas than expected doesn't mean the Compact should be changed, he said. He went on to say the impact of upstream depletions on Harlan County Reservoir was anticipated, but limited by the Compact's allocations.

As a substitution of current procedures Pope then presented Proposal A to the Commissioners. In subsequently agreeing with some of Bleed's observations concerning application of the formulae, he noted how the ground water components lead to a perception that the supply is growing when it really is not. Problems with the formulae exist for Kansas as well as Nebraska.

It was said he had concluded after-the-fact accounting has not resulted in action to restrict users. Pope characterized his proposed Rule 16 as a means to keep the problem from getting worse, but said it would not solve it. He stressed allocation of the renewable water supplies is essential, and the Compact must extend its authorities beyond the valley alluvium as there exists a substantial

impact due to pumping from the Ogallala aquifer, Pope said. Accordingly, it was said the Commissioners don't need to measure consumptive uses from the Ogallala aquifer at this time, but they need to account for the depletions in some manner.

Pope conduced that the proposed rules were pro-active and within the legal authority of the Compact. He suggested that problems would get worse if the states did not act. Bagley suggested terms of the Compact do not require the virgin water supply be computed every year. Pope took exception to annual adjustments. In her view Bleed stated the problem was hot to compute the supply, not when. She questioned how compliance with Article III could be achieved without an annual comparison of supplies and consumptive uses. Simpson agreed with Bleed. Pope indicated that Rule 15 doesn't ignore the obligation. He was willing to re-examine the formulae for calculating the virgin water supply, but said he was unwilling to discuss the situation indefinitely.

4. Assignments to the Legal Committee

No assignments were made.

5. Assignments to the Engineering Committee

Pope introduced Resolution B. A brief discussion followed on how consumptive uses were determined by each state. Bleed and Bagley pointed to the failure to calculate consumptive uses from small watershed reservoirs. For consumptive use, it was noted each state makes estimate differently, as allowed by the Compact. Bleed indicated that Resolutions A and B are linked. Pope concluded the

discussion with a plea for practicality and said he would not want to spend millions of dollars quantifying consumptive uses associated with terraces.

Pope moved adoption of Resolution B (seconded by Simpson). The motion failed with Kansas and Colorado voting aye and Nebraska voting nay.

Jess observed that ground water is not an element of the Compact and that Nebraska was unwilling to accept rigid uniformity is calculating consumptive uses. The Compact recognizes the right of each state to control its own uses. Pope re-emphasized the need for the best possible data. Bleed indicated Nebraska was reviewing its method of calculating consumptive uses. As the discussion drew to a close, no assignments were given to the Engineering Committee.

6. Other Discussions

a) Status of Harlan County Study

Barfield reported that the Corps of Engineers was behind schedule. Pope indicated concern that the final report would ignore the legal implications of the Compact.

b) Bureau of Reclamation conservation plan guidelines.

Simpson reported that Ed Osann, Department of Interior had acknowledged the receipt of the Commissioners' previous letter concerning the Bureau's water conservation plans. It was said Osann expected revisions and changes prior to

release of final requirements. Simpson agreed to continue being the Commissioners' contact person.

c) Stream flow measuring stations

Bleed reported the U.S. Geological Survey has no plans to drop stations operated for the Republican River Compact. It was said the Survey considers Beaver Creek at Beaver City not to be a Compact station. Oaklund expressed concerns for the lack of accessibility of the data. He also said a revised measurement schedule increased the interval between measurements from 4 to 6 weeks. Jess asked how long the USGS would continue operating the gages. Bleed said she did not know, but suggested the Survey might soon approach the Compact Commission to become a cash cooperator. Bleed agreed to follow up on these issues. She also indicated that Nebraska would make continuation of the other gages in the basin top priority.

There was some discussion of Nebraska making measurements as necessary. Pope reminded the Commissioners that Article IX of the Compact states that the Survey has responsibility of providing data to the Compact Commissioners. The Commissioners agreed the Chairman should write a letter to the USGS expressing concern that these stations should be continued, questioning the ability to maintain accuracy with a six-week measuring schedule and stressing the importance of maintaining the quality of records.

7. **Scheduling the next special meeting.**

Jess suggested that there were several items that should be discussed at the next Compact meeting: formula revision; shifting allocations among states; credits and debit accounting; Kansas' Resolution A; the Corps of Engineer's study; Bureau's Conservation Plans; and the Survey's plans for Compact gages. A schedule will be developed by the Chairman and sent to other Commissioners in December. The next special meeting of the Commission was scheduled for 9:00 January 19, 1995 in the Offices of the Colorado State Engineer in Denver.

The meeting was adjourned at 5:30 p.m.

J. Michael Jess
Nebraska Commissioner (Chairman)

David L. Pope
Kansas Commissioner

Hal D. Simpson
Colorado Commissioner

PRELIMINARY AGENDA

REPUBLICAN RIVER COMPACT WORK SESSION

Wednesday - September 28, 1994

1:00 p.m.

Tall Grass Inn, Wichita, Kansas

1) Acceptance of Agenda and discussion on meeting format.

2) Legal Committee report on the general scope of rulemaking authority granted to the Commissioners by the Republican River Compact.

3) Discussion of issues and potential options for addressing Compact concerns through revision of Compact rules and formulas:

   a) Options for real time accounting and allocations.

   b) Potential improvements to the Administration's virgin water supply calculations, allocations and related formula.

   c) Exploration of the potential for "credits and debits."

   d) Whether the Compact could allow the movement of original allocations between sub-basins to reflect where development actually occurred.

4) Assignments to the Legal Committee.

5) Assignments to the Engineering Committee.

6) Other discussions.

   a) Status of Harlan County Study.

   b) Report on letter to Bureau regarding conservation plan guidelines.

7) Scheduling of the next special meeting.

8) Adjournment.

SPECIAL MEETING

REPUBLICAN RIVER COMPACT

September 28, 1994

Wichita, Kansas

Attendance List

Michael Jess	NE Commissioner
Russell Oaklund	Cambridge, NE Division Supervisor
Leif Holliday	KS DWR
David Barfield	KS DWR
David L. Pope	KS Commissioner
DeAnn Hupe Seib	KS DWR
Leland E. Rolfs	KS DWR
James Bagley	KS DWR
Scott Ross	KS DWR
Wayland J. Anderson	KS DWR
Glen E. Kirk	KS Water Office
Hal Simpson	CO Commissioner
Mike Thompson	NE DWR
Ann Bleed	NE DWR

GALE A. NORTON
Attorney General

STEPHEN K. ERKENBRACK
Chief Deputy Attorney General

TIMOTHY M. TYMKOVICH
Solicitor General

STATE OF COLORADO

DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

STATE SERVICES BUILDING
1525 Sherman Street - 5th Floor
Denver, Colorado 80203
Phone (303) 866-4500
FAX (303) 866-5691

September 15, 1994

MEMORANDUM

TO: Compact Commissioners
Republican River Compact

FROM: Cliff Seigneur
Assistant Attorney General
Natural Resources Section

RE: Republican River Compact -- Scope of Rule Making Authority of the Compact Commission

This memorandum reflects the legal opinion of the authoring attorney and is not to be construed as an official opinion of the Attorney General.

Pursuant to the request of the Republican River Compact Commission, I have examined the issue of the Commission's rule making authority. Unfortunately, relevant case law on the subject is not abundant, so I will limit my analysis to the language of the Republican River Compact and comparison with two other compacts.

The rule making authority of the Republican River Compact Commission is outlined in Article IX of the Compact, which states:

> It shall be the duty of the three states to administer this compact through the official in each state who is now or may hereafter be charged with the duty of administering the public water supplies, and to collect and correlate through such officials the data necessary for the proper ad-

> ministration of the provisions of this compact. Such officials may, by unanimous action, adopt rules and regulations consistent with the provisions of this compact.

(emphasis added). While this language clearly indicates that the Commissioners may not adopt rules and regulations which are inconsistent with any provisions of the Compact, it does not further specify the scope of the Commission's rule making authority.

In contrast, Article III of the Republican River Compact specifically provides the Commission with authority to deviate from the allocations set forth in Article IV under certain circumstances, stating:

> Should the future computed virgin water supply of any source vary more than ten (10) per cent from the virgin water supply as hereinabove set forth [in Article III], the allocations hereinafter made from such source shall be increased or decreased in the relative proportions that the future computed virgin water supply of such source bears to the computed virgin water supply used herein.

Besides its explicit reference to proportional deviations from the Compact's stated allocations, Article III implicitly gives the Compact Commissioners authority to compute the future virgin water supply and, based upon that computation, determine the subbasin allocations for beneficial consumptive use.

As a comparison, the Pecos River Compact and the Rio Grande Compact give their respective Compact Commissions specific authority to modify certain administrative aspects of the compacts. For example, the Pecos River Compact states:

> (c) unless and until a more feasible method is devised and adopted by the commission the inflow-outflow method, as described in the report of the engineering advisory committee, shall be used . . . .

Pecos River Compact, Article VI, December 3, 1948. Although this language did not keep Texas and New Mexico out of the Supreme

Court, it is an example of the type of compact language which allows for the modification of administrative methodology without formal amendment.

The Rio Grande Compact contains an example of language that provides for the modification of compact calculations, and arguably, modification of the Compact itself. Articles III and IV of the Rio Grande Compact, which include delivery schedules for the states of Colorado and New Mexico, provide for adjustment of such schedules in particular circumstances. In addition, Article V of the Rio Grande compact states:

> If at any time it should be the unanimous finding and determination of the commission that because of changed physical conditions, or for any other reason, reliable records are not obtained, or cannot be obtained, at any of the stream gauging stations herein referred to, such stations may, with the unanimous approval of the Commission, be abandoned, and with such approval another station, or other stations, shall be established and new measurements shall be substituted which, in the unanimous opinion of the commission, will result in substantially the same results, so far as the rights and obligations to deliver water are concerned, as would have existed if such substitution of stations and measurements had not been so made.

(emphasis added).

The Rio Grande Compact Commission, pursuant to the language of Article V, not only abandoned the gauging stations at San Marcial and San Acacia, but changed New Mexico's delivery schedule from nine to twelve months. The Compact Commission, based on the opinions of their engineer advisers, found the proposed changes did not affect substantial rights and obligations under the Compact and adopted the changes by means of a Commission resolution.

The Pecos, Rio Grande, and Republican River Compacts all allow their respective compact commissions to address changing conditions in different ways. However, a guiding principle applicable to all three compacts is that the authority given to the compact

commissions is limited to modification of the administration of the compacts, not substantive changes. This comports with the general legal principle that substantive changes to an interstate compact function as amendments to the agreement which require the approval of state legislatures and the United States.

Given the general language of the Republican River Compact, as compared to language in the Pecos and Rio Grande Compacts, the question remains -- just what can the Commission do short of amending the Compact? The broad answer to this question is that the Commission can adopt rules and regulations to administer the Compact which are not inconsistent with the substance of the Compact. The substance of the Compact is the computed average virgin water supply set forth in Article III, and the allocations set forth in Article IV, as derived from the computed average virgin water supply. The Commission cannot, outside of formally amending the Compact, modify these figures. The Commission can, pursuant to its authority under Article III, proportionately modify the allocations of Article IV when the future computed virgin water supply varies more than 10% from the average annual virgin water supply set forth in Article III. Interestingly, Article III does not specify the time frame (1, 2, 10 years) in which the variance is to be determined. In addition, the Commission has traditionally, and continues to, calculate the future average annual virgin water supply and the annual allocations for each state based on a methodology it adopted. The Commission may, consistent with the substance of the Compact, use its administrative authority to either modify the calculations it currently makes, and/or develop additional rules and regulations to administer the Compact.

In discussing potential modifications and/or additions to the Rules and Regulations currently existing, the Commission needs to keep the substance of the Compact intact. Options such as real time accounting, improvements to the virgin water supply calculations, and credits and debits may be amenable to the substance of the compact. Forthright movement of the original allocations between sub-basins does not seem workable within the Compact's current framework.

I look forward to working with the Compact Commission on this issue. Please do not hesitate to contact me with any questions you may have.

(As this memo was being finalized, my legal assistant handed me a

copy of a text entitled, "Interstate Water Compacts -- The Interstate Compact and Federal-Interstate Compact" by Jerome C. Muys, National Water Commission, Report NWC-L-71-011, Legal Study 14 (July 1971). I will review this report and update this memo if necessary).

AG Alpha No. LW WE IABBQ
AG File No. E9418981.72

KANSAS STATE BOARD OF AGRICULTURE
Phillip A. Fishburn, Secretary

DIVISION OF WATER RESOURCES
David L. Pope, Chief Engineer-Director
901 S. Kansas Avenue, Second Floor
Topeka, Kansas 66612-1283
(913) 296-3717 Fax (913) 296-1176

MEMORANDUM

TO: Chairman Michael Jess
Commissioner Hal Simpson
Commissioner David Pope

FROM: DeAnn Hupe Seib DHS
Asst. Legal Counsel
Kansas Division of Water Resources

DATE: 9/14/94

RE: What is the general scope of rulemaking authority granted to the commissioners by the Republican River Compact, and specifically, as it applies to allocations and enforcement?

Once congressional consent is given under the Compact Clause, that "consent transforms an interstate compact within this Clause into law of United States . . ." *Texas v. New Mexico*, 462 U.S. 554 (1983) (hereinafter known as *Texas v. New Mexico I*); Cyler v. Adams 449 U.S. 433, 438 (1981); and Pennsylvania v. Wheeling & Belmont Bridge Co., 13 How. 518, 566 (1852).

Additionally, administrative rules and regulations have the force of law. *Paul v. United States*, 371 U.S. 245, 255, *cert. denied*, 372 U.S. 907 (1963) [citing *Public Util. Comm'n of California v. United States*, 355 U.S. 534, 542-43 (1958)].

The Republican River Compact is expressly granted the power by a federal statute (the Compact itself), a Nebraska statute, a Colorado statute, and a Kansas statute to adopt rules and

Exhibit 5b

regulations consistent with the provisions of the Compact and which would administrate the Compact. See Article IX. Whether a rule and regulation is consistent with the Compact is largely a matter of interpretation by the Compact Commissioners. The U.S. Supreme Court has held in various cases that an interpretation of a statute (as the Compact may be treated) by the agency entrusted to its administration is entitled to substantial deference. *United Sates v. City of Fulton*, 54 U.S.L.W. 4334, 4345 (U.S. Apr. 7, 1986), *Chevron U.S.A., Inc., v. Natural Resources Defense Council*, 467 U.S. 837, 842-843 (1984), *United States v. Clark*, 454 U.S. 555, 565 (1982).

> To determine the nature and scope of obligations as between States, whether they arise through the legislative means of compact or the 'federal common law' governing interstate controversies, *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 110, 58 S. Ct. 803, 811, 92 L.Ed. 1202, is the function and duty of the Supreme Court of the Nation. Of course every deference will be shown to what the highest court of a State deems to be the law and policy of its State, particularly when recondite or unique features of local law are urged. Deference is one thing; submission to a State's own determination of whether it has undertaken an obligation, what that obligation is, and whether it conflicts with a disability of the State to undertake it is quite another. *State, ex rel. Dyer v. Sims*, 341 U.S. 22 (1951)

Upon adoption, a rule, regulation and procedure which is consistent with the Compact and adopted by the Compact Administration, will make it enforceable on the basis of the Compact as confirmed by the Supreme Court in *State ex rel. Dyer v. Sims* and *Texas v. New Mexico*, 482 U.S. 124 (1987) (hereinafter referred to as *Texas v. New Mexico II*.) The fact that the passage of any rule and regulation requires a unanimous vote lends support to the Supreme Court allowing great deference to that interpretation.

The U.S. Supreme Court in the *Texas v. New Mexico I* lawsuit overruled Texas'

exception to the Special Master's recommendation to deny Texas' motion to adopt the "Double Mass Analysis" method for determining when shortfalls occur in state-line flows. As the Court noted, Article VI of their Compact states that:

> "The following principles shall govern in regard to the apportionment made by Article III of this Compact . . . (c) Unless and until a more feasible method is devised and adopted by the Commission the inflow-outflow method, as described in the Report of the Engineering Advisory Committee shall be used to:
>
> > (i) Determine the effect on the stateline flow of any change in depletions by man's activities or otherwise, of the waters of the Pecos River in New Mexico." *Texas v. New Mexico I* at 572-573.

The Supreme Court, while acknowledging the decision that the "actual curve provided by the original Inflow-Outflow Manual does not accurately describe the correlation between inflows and the state-line outflow under the 1947 condition. . .", *Texas v. New Mexico I* at 573, found that the "Double Mass Analysis" did not sufficiently meet the terms of the Compact as required in Article VI.

Regarding how the Republican River Compact Commissioners can adjust allocations, the RRC Compact similarly includes a specific method to be used by the Compact when the virgin water supply source varies more than ten percent from the original allocations. See Article III. This does not necessarily preclude the Commissioners from adopting a formula to be used to figure the increase or decrease in the virgin water supply. Nor does this prevent the Commissioners from deciding that the variance will be based on a five or ten year period of time, so long as the rules and regulations are consistent with the Compact and do not contradict but supplement specific provisions such as the provision found in Article III.

The same reasoning holds true regarding the enforcement of the Compact and its rules and regulations. Each state has the duty and authority to enforce the provisions of the Compact. (See *Texas v. New Mexico I* and *State, ex rel. Dyer v. Sims*, also discussed above, p.2.) As stated above, a rule, regulation and procedure which is consistent with the Compact and which is adopted by the Compact Administration, will be enforceable on the basis of the Compact as confirmed by the Supreme Court in *State ex rel. Dyer v. Sims* and *Texas v. New Mexico II*. No language can be found in the Compact which prevents the Commissioners from adopting rules and regulations which would then be enforced by the states to ensure compliance with the Compact.

cc: Don Blankenau

Cliff Seigneur

Lee Rolfs

Republican River Compact: Problems with Ground Water Formulas

For sub-basins that utilize ground water as a major portion of the supply, it is virtually impossible to avoid using more water than allocated. This chimera results when the compact's method of calculating the portion of the virgin water supplied by ground water is combined with the method used to allocate water between sub-basins and among states.

The compact calculates the virgin water supply from ground water as the amount pumped minus the return flows from the water pumped. The consumptive use for ground water is calculated using the same formula, except in the Sappa and Medicine Creek sub-basins and on the main stem. [1] Thus the virgin water supply for ground water equals the consumptive use of groundwater in each sub-basin. If a portion of the virgin water supply is unallocated, there is no way that ground water usage can be equal or less than the virgin water supply from ground water. The following calculations will illustrate the problem.

Let:
- P = Ground water pumped
- RF = Return flow
- V = virgin water supply for a given sub-basin
- C = consumptive use in a given sub-basin by a state
- A = the allocation for a state by sub-basin
- U = the unallocated water in a sub-basin
- t = total virgin water supply
- g = subscript for ground water
- s = subscript for surface water.

(1) $Vg = Pg - RFg$

(2) $Cg = Pg - RFg$

By substituting equation 1 into 2:

(3) $Vg = Cg$

(4) $Vt = Vs + Vg$

---

[1] In Sappa and Medicine Creek basins diversions and return flows occur below the gage. The ground water pumped below the gage is not counted as part of the virgin water supply but is counted as part of the consumptive use for that sub-basin. Any ground water pumped below the gage is therefore always over the virgin water supply for ground water.

By substituting equation 3 into 4:

(5) $V_t = V_s + C_g$

(6) $V_t = A + U$

By substitution 5 into 6: (7) $V_s + C_g = A + U.$

If ground water were the sole source of supply:

(8) $V_s = 0$

And:

(9) $C_g = A + U$

Equation 9 demonstrates the absurdity that some of the ground water pumped and used in a sub-basin is, by definition, unallocated and shouldn't be used. Therefore, whenever there is unallocated water in a sub-basin, ground water usage will always be in excess of the virgin water supply from ground water.

According to the compact, all sub-basins except the Arikaree sub-basin and the Main Stem have unallocated water. In these basins a portion of the ground water consumptively used is, by definition, unallocated and therefore the consumptive use of ground water will always be greater than the virgin water supply from ground water. As a result in basins where ground water is a major source of the supply, such as Prairie Dog Creek, Sappa Creek and Beaver Creek basins, there are a large number of years when the allocation has been exceeded (See Table 1).

Only when there is unused, allocated surface water in a sub-basin, sufficient to make up the deficit created by the use of ground water, can a state escape exceeding the allocation.

For example, using data from 1993 for Driftwood Creek Basin in which 77% of the virgin water supply is unallocated:

$C_g = 1310$ acre-feet

$V_g = C_g$

Therefore: $V_g = 1310$ acre-feet

$A_g = .23 * V_g$

Ag = 301 acre-feet.

Therefore the use of ground water is over the allocation by Cg - Ag =

1310 - 301 = 1009 acre-feet

Thus, the allocated virgin water supply from ground water is 1009 acre-feet less than was produced/consumed by pumping. Only when surface water supplies are added to the mix, does it even become possible to remain under the compact allocations.

In this case: Vs = 2470 acre-feet.

However, only 23% or 568 acre feet are allocated to the basin. Therefore the allocated supply of surface water was not enough to compensate for the deficit created by unallocated portion of the ground water supply.

Another problem with the ground water computations arises from the allocation of the virgin ground water supplies among the three states. For example consider Beaver Creek. In this basin Kansas is allocated 39% of the supply, Nebraska 41%, Colorado 20% and 1% is unallocated. Only if Kansas happens to pump 39% of the total ground water pumped in the sub-basin by all three states, can Kansas stay within the ground water allocation. Thus, Kansas's ability to stay within her allocation depends not on how much she pumps, but how much she pumps relative to whatever Nebraska and Colorado pump. If Colorado and Nebraska did not pump any ground water, there is no way Kansas can stay within her 39% allocation of ground water, quite aside from the unallocated portion. For example, consider the Beaver Creek Basin in 1991:

Let: k = Kansas, n = Nebraska, and c = Colorado.

Vg = Cgk + Cgn + Cgc = 19780 acre-feet

Vs = 390 acre-feet

Vt = 20170 acre-feet

Ak = .39 x Vt = .39 x 20170 = 7866 acre-feet

Ask = .39 x 390 = 152 acre-feet

Agk = .39 x 19780 = 7714 acre-feet

Cgk = 8050 acre-feet Csk = 180 acre-feet

Thus, Kansas pumped from ground water 184 acre-feet more than their allocation (336 acre-feet

more than their ground-water allocation.) Not only was the surface water allocated to Kansas (152 acre-feet) insufficient to make up the deficit created by groundwater pumping, but Kansas also used 180 acre-feet of surface water, further contributing to the deficit.

In addition, Kansas pumped 41% of the total ground water pumped in the basin by all three states, but Kansas is allocated only 39% of the supply. Thus, because Kansas's pumping, in proportion to the pumping of other states, was greater than her allocated proportion, she was over her groundwater allocation, without even considering the unallocated portion of the groundwater supply.

In summary, the methodology used to calculate the virgin ground water supply, when combined with the allocation formulas leads to the absurdity that:

(1) By definition, some of the ground water consumptively used is unallocated and

(2) To stay within its allocation, a state must regulate its ground water pumping so that its proportion in relation to whatever the other states pump is equal to their allocation.

Prairie Dog Creek

Note: Negative Numbers in Alloc-Use column indicates Use exceeded allocation; All measurements in Acre-Feet

	Kansas			Nebraska		
Year	Alloc-Use	Running Total	Account	Alloc-Use	Running Total	Account
1959	5680		5680	2100		784
1960	5550	11230	6379	2100	2884	784
1961	7640	14019	6379	2100	2884	784
1962	8130	14509	6379	2100	2884	784
1963	5550	11929	6379	2100	2884	784
1964	1570	7949	6379	2100	2884	784
1965	4440	10819	6379	2100	2884	784
1966	-750	5629	5629	2100	2884	784
1967	-1670	3959	3959	2100	2884	784
1968	-7380	-3421	-3421	2100	2884	784
1969	-4900	-8321	-6379	2100	2884	784
1970	-5970	-12349	-6379	2100	2884	784
1971	-4690	-11069	-6379	1520	2304	784
1972	-230	-6609	-6379	1640	2424	784
1973	-2610	-8989	-6379	1620	2404	784
1974	-8940	-15319	-6379	1510	2294	784
1975	-3470	-9849	-6379	1300	2084	784
1976	-6090	-12469	-6379	750	1534	784
1977	-2010	-8389	-6379	1000	1784	784
1978	-9910	-16289	-6379	390	1174	784
1979	-6450	-12829	-6379	1350	2134	784
1980	-11090	-17469	-6379	1210	1994	784
1981	-7360	-13739	-6379	680	1464	784
1982	-5480	-11859	-6379	-250	534	534
1983	-8560	-14939	-6379	770	1304	784
1984	-10300	-16679	-6379	300	1084	784
1985	-9600	-15979	-6379	340	1124	784
1986	-12840	-19219	-6379	460	1244	784
1987	-8550	-14929	-6379	910	1694	784
1988	-13890	-20269	-6379	1400	2184	784
1989	-9970	-16349	-6379	200	984	784
1990	-12180	-18559	-6379	340	1124	784
1991	-10460	-16839	-6379	-130	654	654
1992	870	-5509	-5509	320	974	784
1993	6970	1461	1461	2430	3214	784

Exhibit 5f

MINUTES

REPUBLICAN RIVER COMPACT

Informal Special Meeting

January 19, 1995

State Engineers Office, Denver, Colorado

Present at meeting: Michael Jess, Nebraska; David Pope, Kansas and Hal Simpson, Colorado. Others present are listed on the attendance list.

The meeting was called to order by Chairman Jess at 10:05 a.m. Following introduction by each person in attendance, the Commissioners agreed to a free discussion of all issues identified on the Chairman's tentative agenda.

With reference to his January 17, 1995, memorandum, Barfield began. It was said the three-page memorandum (with a three-page tabular attachment) was prepared as a response to the critique Bleed distributed and discussed at the September 28, 1994, Special Meeting. What followed was a technical discussion which largely focussed upon the interrelationship of ground water and surface water. Several persons (Exs: Barfield, Bleed, Simpson, Pope) exchanged descriptions and characterizations. Depictions made on a blackboard were used for illustration by several.

Relating each state's Compact obligations to consequent effects on stream flow due to water well withdrawals consumed much of the morning's time. Participants did not confine their attention to large-capacity wells tapping valley alluvial deposits. Withdrawals from the Ogallala aquifer were included also. Among those contributing (Barfield, Bleed, Simpson, and Pope), a consensus opinion did not emerge.

According to Barfield, well withdrawals from ground water sources are acceptable if a reduced supply for Kansas would not result. Simpson questioned whether limits on surface water diversions and alluvial well withdrawals went far enough in meeting Kansas' concern. Not withstanding an appreciation of practical considerations and his acknowledging the Compact was not intended to allocate uses made from the Ogallala aquifer generally, Pope's response was somewhat negative. In the short run and so long as they are not "significant," he expressed willingness to accept base flow reductions caused by withdrawals from the Ogallala aquifer.

Long-term commitment to reduce consumptive use in Nebraska is needed, Pope said. With reference to Kansas Resolution A, proposed at the September 28 Special Meeting, he advocated a "three-step process"...

(1) A moratorium to prevent authorization of additional consumptive uses in sub-basins where current uses exceed Compact limits;

(2) In the same sub-basins, a commitment to reduce consumptive uses to levels specified by the Compact; and

(3) Also in the same sub-basins, a commitment to restore base flows which have been adversely affected by well water withdrawals from the Ogallala aquifer.

In light of the many differing views, Jess urged further discussion be directed at defining the extent ground water consumption generally falls within provisions of the Compact. Barring the need to invest substantial time, Pope voiced his willingness. Simpson agreed and suggested previous experience might be helpful. Along with Bleed, Simpson rhetorically asked later whether the effort would be

worthwhile. In response Bleed indicated it would be useful to learn how the Kansas concepts would affect administration of the Compact. Following efforts to quantify Ogallala aquifer contributions, Pope suggested carving out small, insignificant portions which do not materially add to the total. Other elements affecting flows of the various streams should be identified, he added.

In departing from technical matters, Pope next discussed Kansas' general concerns. Problems of allocation, he said, are most difficult during dry years. Worrisome to Kansas is the gradual, downward trend in flow of several tributary streams. The lower portion of the mainstream was said of greatest concern. With reference to provisions of the Compact, annual adjustments when the virgin water supply deviates by more than ten percent from the quantities originally specified were termed "not very useful."

Referring to the dry year reference, Jess asked those in attendance to consider real time aspects of shortages and allocations together with the States' regulatory authorities. The possibility of state line, target flows established on a seasonal, monthly or every daily basis was mentioned. In responding Pope said he was not opposed to pursuing real time limitations in use. Average, rather than maximum limits should be employed, he said. With enforced caps on uses, it was said shortages are unlikely to result. He cautioned such efforts would be difficult to administer. By way of summary, Pope said, "...we can live with the present situation for a few more years if we believe the problem (of over use in Nebraska) is being dealt with."

Pope then moved adoption of Kansas Resolution A, previously discussed at the September 28 Special Meeting. The Chairman indicated two obstacles required his declaring the motion out of order. First, it was previously agreed the present meeting was intended to be an informal, working session. Second, the Commissioner's rules require advance notice when one of the members intends offering a motion having the intent of Resolution A. Jess went on to say he anticipated a full discussion of the Resolution at the June 8, 1995 Annual Meeting.

Next, Jess briefly discussed LB108, a legislative bill being considered by the Nebraska Unicameral. It was said LB108 would significantly modify the laws of Nebraska by providing for conjunctive use regulation of surface water and ground water users. Provisions of the bill call for substantial responsibility to be carried by Natural Resources Districts as well as the Department of Water Resources. If enacted it was said implementation would be on a watershed by watershed basis, where circumstances demonstrate a need.

Discussion returned to responsibilities given to the States by the Compact, to the historic origins for the numerical values specified in it and to previous assignments given the Engineering Committee. In maintaining its custom of delegation to the Committee, a new work assignment was given. Specifically, the Committee was directed to:

1. Determine what information and data were used to specify the virgin water supply quantities spelled out in the Compact.
2. Review the 1987 Engineering Committee report; and

3. Following those activities, make recommendations for improvements to the formulae annually employed by the Committee.

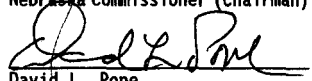
Should Committee members later seek additional direction, the Commissioners agreed to informally gather for that purpose while they were attending a University of Missouri (Kansas City) seminar scheduled for early March.

Under agenda item 3, Jess reported on impressions gained through a telephone contact with the Corps of Engineers. He said study progress was acknowledged to be slow. Several internal deadlines were missed, and it was said further delay might be expected.

In response to agenda item 4, Simpson indicated he was told the Commissioners' previous letter had been received by Bureau of Reclamation officials. Several days previous to the meeting, Barfield reported the Bureau released a set of revised conservation plan guidelines intended to replace those which were the subject of the Commissioners' previous reaction and letter. Simpson agreed to continue serving as the principle contact and spokesperson for the Commissioners. Bleed reported U.S. Geological Survey cutbacks resulted in the Survey dropping its support for the Beaver Creek station. It was said the Department of Water Resources would support its continued operation. No other stations employed by the Engineering Committee were slated for shut down by the Survey, she said. The Commissioners requested the Chairman communicate with the Nebraska District Chief of the Survey to urge reinstatement of the federal cost-share for the Beaver Creek station.

There being no further discussion, the meeting adjourned at 2:30.

J. Michael Jess
Nebraska Commissioner (Chairman)



David L. Pope
Kansas Commissioner

Hal D. Simpson
Colorado Commissioner

SPECIAL MEETING

Republican River Compact Administration
10:00 a.m., January 19, 1995
Chairman's Tentative Agenda

1. Introduction

2. Possible virgin water supply and allocation formulae revisions

   a. Shifting allocation among sub-basins
   b. Carry over credits and debits
   c. Kansas Resolution A (from September 28, 1994 meeting)

3. Harlan County Reservoir study undertaken by Corps of Engineers

4. Draft Bureau of Reclamation conservation plan rules & regulations

5. U.S. Geological Survey measuring station network

SPECIAL MEETING

Republican River Compact

January 19, 1995

Denver, Colorado

Attendance List

Ann Bleed	NE-DWR	402-471-2363
Cliff Seigneur	CO. Atty. Gen. Office	303-866-5129
Bill McIntyre	CO- DWR	303-866-3581
Alan Berryman	CO - DWR	303-352-8712
Hal Simpson	CO Com.	303-866-3581
Leland E. Rolfs	KS - DWR	913-296-4623
David L. Pope	KS Com.	913-296-3705
Russell Oaklund	NE - DWR	308-697-3730
Mike Thompson	NE - DWR	402-471-0586
Michael Jess	NE - DWR	402-471-2363

The State of Kansas' Response to Nebraska's "Republican River Compact: Problems with Groundwater Formulas"

January 17, 1995

On September 28, 1994, at a special work session of the Republican River Compact Administration, the State of Nebraska put forward a paper entitled "Republican River Compact: Problems with Groundwater Formulas." The paper seeks to demonstrate that the Compact's methods lead to non-compliance in sub-basins with significant groundwater use. While we believe improvements to the Compact's methods are needed, we disagree with the paper's basic conclusion that the methods are absurd and necessarily lead to non-compliance.

Prior to reviewing the analysis, we would like to make one suggestion on terminology. The term "un-allocated" should not be used. The Compact allocated the entire VWS estimated by the Compact negotiators to originate above Guide Rock.[1] In each of the upper sub-basins, a portion of the estimated VWS was allocated for use in that sub-basin and the remainder was reserved (or allocated) for use in the mainstem.

Our comments on Nebraska's problems with Ground Water Formulas

Our central difficulty with the analysis is its isolation of groundwater and surface water components in VWS estimates and allocations. We find no basis for this segregation in the Compact Administration's methods. The entire argument is based on a situation where the surface supply is assumed to be zero. However, where the compact negotiators found no surface VWS, they made no allocations. If the surface water component is zero, it is likely caused by its consumption through groundwater use. The faulty assumption misleads the rest of the analysis.

Starting with the assumption that the surface water supply is zero, it leads to a conclusion that the sub-basin's VWS is equivalent to the sub-basin's groundwater consumptive use (CU). This leads to Nebraska's conclusion that "some of the groundwater pumped and used in a sub-basin is, by definition, un-allocated and shouldn't be used. Therefore, whenever there is unallocated water in a sub-basin, groundwater usage will always be in excess of the virgin water supply from ground water." Thus, the paper concluded, the Compact's methods lead to non-compliance.

We believe there is no meaning to the term "Ag", a specific groundwater allocation for the sub-basin. Thus, Nebraska's statement that the CU from groundwater is over the allocation for groundwater has no relevance. The term implies that groundwater use is from a separate source and not connected to the surface water supply. Yet, the alluvial aquifer and stream share a common source.

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[1]Our review of the computations of the negotiators reveals that the water supply they estimated below Guide Rock was not included in either the Compact's VWS or allocations.

Nebraska states, "Only when there is unused, allocated surface water in a sub-basin, sufficient to make up the deficit created by the use of ground water, can a state escape exceeding the allocation." We agree. And we would add, when the system is viewed as a whole and when states limit their groundwater and surface water CU to their allocation, the "chimera" found by Nebraska is avoided.

The paper appears to blame the Compact's accounting methods for the large number of years that certain sub-basins with large groundwater use are over their allocations. The root of the problem, however, is that the allocations were not used to limit development in the sub-basins. In the Driftwood Creek example it is noted that the Compact only allocates 23% of the sub-basin's VWS for use in the sub-basin. This should have led to significant restrictions to development in the sub-basin. It appears no such restrictions have occurred.

In regard to the Beaver Creek analysis (on sharing sub-basin groundwater allocations between states) we again believe the heart of the analysis' failure is its assumption that there is meaning to a specific allocation from groundwater. This mistakenly leads to a need to restrict each state's groundwater CU to a portion of the groundwater VWS which was already assumed to be equivalent to the groundwater CU. As noted above, we believe groundwater CU is ultimately from surface water VWS. When surface water is added to the mix, the need to balance use between the states disappears.

In conclusion, where extensive groundwater development of a sub-basin consumes all of a sub-basin's water supply including that portion of the VWS reserved for the mainstem, it is not merely an accounting problem, but a Compact violation. The resolution of this problem can come only through reducing the amount of water used in the sub-basin.

Potential improvements to the formula's treatment of groundwater

While we believe the problems noted by Nebraska are based on faulty assumptions, we are not suggesting that the existing formulas are without problems. Even with their current limitations and potential incompleteness, we believe the Compact's estimates of consumptive use inform us when action is required to limit development in a sub-basin. Further, we believe the Compact's methods with some adjustments and improved data can be used as a basis for making long-term adjustments to VWS and allocations.

It has been long recognized that the Compact's method's fail to account for changes in groundwater storage. This failure is analogous to computing the surface water VWS from surface CU and stream discharge without accounting for changes in surface reservoir storage. As failure to account for reservoir storage changes in an individual year could result in a significant error in estimated surface water supply for that year, the same would be true for the groundwater reservoir. If, however, we can assume that the long-term storage of the reservoir system is stable, the long-term VWS estimated without considering changes in storage would have relatively small error. Thus, the failure of the Compact's methods to consider changes in

groundwater storage may not be a significant detriment of computing long-term adjustments to VWS and allocations.

Secondly, as we have previously expressed, the current formulas do not account for streamflow depletions due to pumping of groundwater from regional aquifers.

While the focus of Nebraska's proposal and this response is the treatment of groundwater in the Compact's formulas, we note that the use of long-term average computed VWS as the basis for adjustments to allocations, in accordance with Article III, would largely overcome our after-the-fact accounting problems. Allocations would be known ahead of time. Each state would be required to constrain its annual consumptive use accordingly. We believe this is consistent with the Compact.

The amount Colorado is over the compact allocation by sub-basin and year

Allocation	Arikaree 18460	Beaver 3300	Buffalo 0	Driftwood 0	Frenchman 0	North Fork & Mainstem 0	Medicine 0	North Fork 10000	Prairie Dog 0	Red Willow 0	Rock 0	Sappa 0	South Fork 28460
Year													
1961													
1962													
1963													
1964													
1965													
1966													
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* NOTE: These values are based on original compact allocations and numbers prepared by the Engineering Committee and adopted by the Republican River Compact Administration. They do not include streamflow depletions due to Ogallala Well Pumping.

Prepared by Kansas DWR 17-Jan-95

The amount Kansas is over the compact allocation by sub-basin and year

	Arikaree	Beaver	Buffalo	Driftwood	Frenchman	North Fork & Mainstem	Medicine	North Fork	Prairie Dog	Red Willow	Rock	Sappa	South Fork
Allocation	1600	6450	0	550	0	139600	0	0	12600	0	0	8650	23000
Year													
1951													
1952													
1953													
1954													
1955													
1956													
1957		1140							750				
1958									1670				
1959									7360				
1960									4900				
1970									5870				
1971		1060							4690				
1972									230				
1973		1580							2810				
1974		1640							8940			3320	
1975		2540							3470				
1976		3740							6090			880	
1977		4760							2010			5810	
1978		5230							8360			3870	
1979		3800							2590				
1980		3030							6370			200	
1981		3020							2170				
1982		220											
1983		2280							6510			650	
1984		2490							7200			120	
1985		1020							7280				
1986		2140							11330				
1987		3810							6550				
1988		2790							15230				
1989		3300							7140			870	
1990		3020							6920			230	
1991		1830							6540			340	
1992													
1993													

* NOTE: These values are based on original compact allocations and numbers prepared by the Engineering Committee and adopted by the Republican River Compact Administration. They do not include streamflow depletions due to Ogallala Well Pumping.

Prepared by Kansas DWR 17-Jan-95

The amount Nebraska is over the compact allocation by sub-basin and year

Allocation	Arikaree 3300	Beaver 6700	Buffalo 2600	Driftwood 1200	Frenchman 52000	North Fork & Mainstem 132000	Medicine 4600	North Fork 11000	Prairie Dog 2100	Red Willow 4200	Rock 4400	Sappa 5000	South Fork 800
Year													
1961						3080	1510					60	
1962													
1963		1620				29140	3710			3780		740	
1964		400				22570	3900			6320		560	
1965							620			3470			
1966							2330			6230			
1967							1200			5010			
1968		350			9930	32090	6620			9710		3120	
1969		1260			590		2360			5490			
1970		350			6520	50750	4220			7620			
1971		2130				27910	3470			5800			
1972		4700			1140	23390	5240			6770			
1973		2770			1780	14130	5240			6040			
1974		6070			8730	65590	6760			9310		380	
1975		11610			10330	56710	6950			8030		1740	
1976		16500			19460	110360	11430			10320		4070	140
1977		8930			10740	47260	6670			6930			
1978		21910		880	25420	100340	13460			12550		1750	190
1979					480	14700	5110			4210		3070	
1980		3220		210	440	50620	14410			9360		7660	
1981							4570			4350			
1982		2050		430		7820	9800			6770		4440	
1983		180				17260	7620			8860		1760	
1984		2430		190	30	21990	11670			7760		8520	
1985		160			6720	10770	12650			7480		2600	
1986		2830		100		58280	12900			8440		11020	
1987		3560		600		28750	8890			9480		6700	
1988		2000		60		39270	4720			1050		6050	
1989		3880		430		54810	8470			1656		12660	
1990		3750		660	9760	43950	11110			3660		6980	
1991		5030		1040		32620	1330					9850	
1992		3650		1280		8930	1680					8610	20
1993				150									

* NOTE: These values are based on original compact allocations and numbers prepared by the Engineering Committee and adopted by the Republican River Compact Administration. They do not include streamflow depletions due to Ogallala Well Pumping.

Prepared by Kansas DWR 17-Jan-95

RESOLUTION A

WHEREAS, Article IX of the Republican River Compact (RRC) vests in the officials from the three states the authority to adopt rules and regulations, by unanimous action, consistent with provisions of the RRC; and

WHEREAS, the three member states agree that the following rules and regulations are consistent with the provisions of the RRC;

THEREFORE, it is resolved that the RRC Administration hereby adopts the following rules and regulations to provide for improved administration and enforcement of the RRC:

14. The annual beneficial consumptive use in each of the states in each drainage basin shall be limited to the original allocations provided in Article IV of the RRC until such time as the RRC administration unanimously agrees to adjust those allocations pursuant to Article III of the RRC.

15. The annual beneficial consumptive use in each drainage basin shall be calculated using the formulae adopted by the RRC administration as revised by the RRC administration in June, 1990, until further amended by the RRC administration. These values shall be reported to the RRC Administration each year by the Engineering Committee.

16. A moratorium on any increase in beneficial consumptive use, except for domestic use, of surface water and hydraulically connected groundwater shall become effective immediately in any drainage basin within a state in which the annual beneficial consumptive use exceeds the original Article IV allocation to a state for that drainage basin in or after water year 1994.

17. In any drainage basin within a state in which the beneficial consumptive use of water exceeds the allocation set forth in Article IV of the RRC, all diversions of surface water and groundwater included in Rule 15 computations shall be measured by water flow meter, or other measuring method or device unanimously approved by the Compact Administration, and records kept of those flow measurements and reported annually to the Compact Administration by the member state. Whenever metering is required pursuant to the provisions of this regulation, the member state in which the drainage basin is located shall promptly require the water flow meters, or other measuring devices, be installed prior to use of water in the third water year following the water year that the drainage basin allocation has been exceeded.

18. Any state in which the consumptive use exceeds the Article IV compact allocation in a drainage basin shall diligently take whatever actions are necessary to reduce the beneficial consumptive use in that state to the original compact allocation for that drainage basin.

19. The official in each state charged with the duty to administer the public water supplies shall have the authority and responsibility to carry out the terms of these rules and regulations within the respective states. The official charged with the duty to administer the public water supply shall report annually to the RRC Administration on all actions taken pursuant to Rules 17, 18 and 19.

20. Adoption of regulations 14-20 by the RRC administration does not in any way relieve any state from liability for damages caused by any violations (past, present or future) of the provisions of the RRC.

KANSAS' 1995 RESOLUTION A

WHEREAS, Article IX of the Republican River Compact (RRC) vests in the officials from the three States the authority to adopt rules and regulations, by unanimous action, consistent with provisions of the RRC; and

WHEREAS, the three member States agree that the following rules and regulations are consistent with the provisions of the RRC;

THEREFORE, it is resolved that the RRC Administration hereby adopts the following rules and regulations to provide for improved administration and enforcement of the RRC:

14. The annual beneficial consumptive use in each of the States in each drainage basin shall be limited to the original allocations provided in Article IV of the RRC until such time as the RRC Administration unanimously agrees to adjust those allocations pursuant to Article III of the RRC.

15. The annual beneficial consumptive use in each drainage basin shall be calculated using the formulae adopted by the RRC Administration, as revised by the RRC Administration in June, 1990, until further amended by the RRC Administration. These values shall be reported to the RRC Administration each year by the Engineering Committee.

16. A moratorium on any increase in beneficial consumptive use, except for domestic use, of surface water and hydraulically connected groundwater shall become effective immediately in any drainage basin within a State in which the annual beneficial consumptive use exceeds the original Article IV allocation to a State for that drainage basin in or after water year 1994.

17. In any drainage basin within a State in which the beneficial consumptive use of water exceeds the allocation set forth in Article IV of the RRC, all diversions of surface water and groundwater included in Rule 15 computations shall be measured by water flow meter, or other measuring method or device unanimously approved by the Compact Administration, and records kept of those flow measurements and reported annually to the Compact Administration by the member State. Whenever metering is required, pursuant to the provisions of this regulation, the member State in which the drainage basin is located shall promptly require the water flow meters, or other measuring devices, be installed prior to use of water in the third water year following the water year that the drainage basin allocation has been exceeded.

18. Any State in which the consumptive use exceeds the Article IV Compact allocation in a drainage basin shall diligently take whatever actions are necessary to reduce the beneficial consumptive use in that State to the original Compact allocation for that drainage basin.

19. The official in each State charged with the duty to administer the public water supplies shall have the authority and responsibility to carry out the terms of these rules and regulations within the respective States. The official charged with the duty to administer the public water supply shall report annually to the RRC Administration on all actions taken pursuant to Rules 16, 17 and 18.

20. Adoption of regulations 14-20 by the RRC Administration does not in any way relieve any State from liability for damages caused by any violations (past, present or future) of the provisions of the RRC.

An Explanation of Kansas' 1995 Resolution A

For several years, consumptive use in a number of drainage basins of the Republican River has been in excess of the quantities allocated to those drainage basins by the Republican River Compact. The vast majority of this overuse is in Nebraska and is primarily caused by Nebraska's failure to regulate groundwater pumping in these drainage basins. In order to stop this overuse, Kansas is proposing that the Compact adopt rules and regulations (Resolution A) which include the following provisions as summarized below:

- The Compact Administration shall use the original consumptive use allocations for each State by drainage basin until the three States agree on whether and how the allocations should be adjusted. This will allow each State to know its allocation in advance and, therefore, give it the ability to limit its consumptive use to its Compact allocation. (Rule 14.)

- Each State shall declare a moratorium on any new uses of surface water and hydraulically connected groundwater in those drainage basins where a State's use in or after 1994 is over its original allocation. (Rule 16.)

- Those drainage basins which were over their original consumptive use allocations in 1994 include: Prairie Dog, KS; Beaver Creek, NE; Driftwood Creek, NE; Mainstem, NE; Medicine Creek, NE; Red Willow Creek, NE; and Sappa Creek, NE.

- Each State shall require all consumptive uses currently included in the Compact's consumptive use calculations to be metered within 3 years in any drainage basin which exceeds its allocations. At this time, this would not include well pumping from the Ogallala. (Rule 17)

- Each State shall act to reduce beneficial consumptive use within any drainage basin which is over its original Compact allocation to bring it within the original Compact allocation for that drainage basin. Each State shall choose its own method(s) of achieving compliance. (Rule 18.)

- The Compact itself gives each State's Commissioner the responsibility and the authority to act as necessary, ensuring each drainage basin's consumptive use stays within its Compact allocations. (Rule 19.)

- The determination of the impact, if any, of depletions due to the pumping from the Ogallala aquifer on the virgin water supply in each drainage basin is an unresolved concern which the three States will need to deal with in the future.

A change, however, was not recommended at that time. A formal motion by Commissioner Pope that the Engineering Committee review methods of computing virgin water supply and consumptive use with attention to groundwater depletions was passed on July 11, 1985.

At the July 21, 1989, meeting, Kansas presented a list of seven alternatives for more effective administration. Commissioner Pope stated that Kansas was trying to come into compliance by closing alluvial valleys in Republican Basins to further appropriation. (Kansas claims that this process has been underway since 1984). Kansas also objected to "after the fact" administration.

At the June 10, 1994, meeting an amended resolution proposed by Commissioner Pope was passed. It reads:

> Based on the language in the Republican River Compact and a review of all available historical documents relating to the negotiation and interpretation of the meaning of the Compact, the Legal Committee shall report on the inclusion of groundwater in the computation of "virgin water supply" and [s] to the computation of allocations and consumptive use." If there is no agreement, each representative should submit their own memo.

Kansas Resolution A has been submitted for consideration at the June 8, 1995 meeting. Its principal provisions state:

> 14. The annual beneficial consumptive use in each of the states in each drainage basin shall be limited to the original allocations provided in Article IV of the RRC until such time as the RRC Administration unanimously agrees to adjust those allocations pursuant to Article III of the RRC.
>
> 15. The annual beneficial consumptive use in each drainage basin shall be calculated using the formulae adopted by the RRC Administration as revised by the RRC

> Administration in June, 1990, until further amended by the RRC Administration. These values shall be reported to the RRC Administration each year by the Engineering Committee.

These provisions conflict with the concluding paragraph of Art. III of the Republican River Compact:

> Should the future computed virgin water supply of any source vary more than ten (10) per cent from the virgin water supply as hereinabove set forth, the allocations hereinafter made from such source shall be increased or decreased in the relative proportion that the future computed virgin water supply of such source bears to the computed virgin water supply used herein.

DISCUSSION OF COMPACT AMENDMENTS

The Constitution authorizes states to enter into compacts when congressional consent has been obtained. See U.S. Const. art. I, § 10, cl. 3. The standard interpretation of the requirement for congressional consent stems from the case of Virginia v. Tennessee, 148 U.S. 503 (1893), in which Justice Field distinguished between interstate "agreements" and "compacts" and applied the requirement of congressional approval to compacts which increased the power of the states:

> Looking at the clause in which the terms "compact" or "agreement" appear, it is evident that the prohibition is directed to the formation of any combination tending to the increase of political power in the States, which may encroach upon or interfere with the just supremacy of the United States.

148 U.S. at 519; see also New Hampshire v. Maine, 426 U.S. 363 (1976); U.S. Steel Corp. v. Multistate Tax Comm'n., 434 U.S. 452 (1978).

The requirement of congressional consent was expanded in Cuyler v. Adams, 449 U.S. 433 (1981). The Court held: "where Congress has authorized the States to enter into a cooperative agreement, and where the subject matter of that agreement is an appropriate subject for congressional legislation, the consent of Congress transforms the State's agreement into federal law . . .." 449 U.S. 440. Accordingly:

> The Court's ruling in Cuyler revolutionized Compact Clause jurisprudence in two ways. First, the Court expanded the traditional definition of a pact that requires congressional consent and thus becomes a compact subject to the Compact Clause. Although formerly only those pacts that encroached on federal supremacy were deemed to require consent, the Court added that any pact to which Congress consented also would be characterized as a compact. Second, the Court announced that a compact is federal law.

See L. Eichorn, Cuyler v. Adams and the Characterization of Compact Law, 77 Va. L. Rev. 1387, 1389 (1991).

Three principles must be applied when determining the legality of a Compact rule or regulation. First, the interpretation of a compact should be in accordance with the terms of the compact and the rules of federal substantive law. See Petty v. Tennessee-Missouri Bridge Commission, 359 U.S. 275 (1959); Dyer v. Sims, supra. Second, an aid for making this determination is the administrative practice accorded the compact by the parties. See Udall v. Tallman, 380 U.S. 1 (1965). Finally, compacts are governed by contract law. See State ex rel. Dyer v. Sims, 341 U.S. 22 (1951); Texas v. New Mexico, 482 U.S. 124 (1987). Changes to compact terms cannot be made absent the negotiations contemplated

by Art. I, § 10, and with congressional approval in a manner that is fully consistent with the status of an interstate compact as federal law.

There is no dispute that a compact's administrative body may adopt rules and regulations to implement its purposes. Moreover, Art. IX of the Republican River Compact authorizes the officials of the compacting states "by unanimous action [to] adopt rules and regulations consistent with the provisions of this compact," (emphasis added). The limitation is that the rules and regulations may not be ultra vires, i.e., "acts beyond [an] official's statutory authority, acts taken pursuant to constitutionally void powers, or acts exercised in a constitutionally void manner." See, e.g., Davis v. Reed, 462 F. Supp. 410 (W.D. Okla. 1977). In Texas v. New Mexico, 462 U.S. 554, 564-65 (1983), the Court invalidated the Special Master's recommendation that the United States Commissioner on the Pecos River Compact Commission be granted a tie-breaking vote contrary to Art. V(a). The Court held that as a consequence of the Compact's status as federal law to which Congress has consented "no court may order relief inconsistent with its express terms." The same rationale applies to Kansas Resolution A.

In Paragraph 14 of Kansas Resolution A, Kansas proposes that the beneficial consumptive use allocations set forth in Article IV of the Republican River Compact shall be adhered to "until such

time as the RRC administration unanimously agrees to adjust those allocations pursuant to Article III of the RRC." This proposal directly conflicts with the concluding paragraph of Article III which states that when the future computed virgin water supply varies more than ten percent from the virgin water supply set forth in Article III "the allocations hereinafter made from such source shall be increased or decreased in the relative proportion that the future computed virgin water supply of such source bears to the computed virgin water supply used herein," (emphasis added). This provision is mandatory and provides no basis for being set aside by a rule and regulation. As the Court held in Texas v. New Mexico, 482 U.S. 124, 128 (1987), a compact "remains a legal document that must be construed and applied in accordance with its terms." West Virginia ex rel. Dyer v. Sims, 341 U.S. 22, 28 (1951).

Administrative construction by the states supports the proposition that adjustments must be made as set forth in the final paragraph of Article III. Specifically, it has been the history of the Compact Administration to automatically adjust the allocations when the virgin water supply varied by more than 10 percent. In Udall v. Tallman, supra, the Court held:

> When faced with a problem of statutory construction, this Court shows great deference to the interpretation given the statute by the officers or agency charged with its administration. "To sustain the Commission's application of this statutory term, we need not find that its construction is the only reasonable one, or even that it is the result we would have reached had the question

> arisen in the first instance in judicial proceedings." Unemployment Comm'n v. Aragon, 329 U.S. 143, 153. See also, e.g., Gray v. Powell, 314 U.S. 402; Universal Battery Co. v. United States, 281 U.S. 580, 583. "Particularly is this respect due when the administrative practice at the stake 'involves a contemporaneous construction of a statute by the men charged with the responsibility of setting its machinery in motion, of making the partes work efficiently and smoothly while they are yet untried and new.'" Power Reactor Co. v Electricians, 367 U.S. 396, 408. When the construction of an administrative regulation rather than a statute is in issue, deference is even more clearly in order ....

380 U.S. at 16.

Moreover, the Republican River Compact is a federal law, the terms of which were negotiated among the parties. See Texas v. New Mexico, 482 U.S. 124, 128 (1987); Petty v. Tennessee-Missouri Bridge Comm'n. 359 U.S. 275, 284 (1959). But an amendment of the compact terms can only be undertaken through negotiation and ratification by the Congress. This has been the precedent where other compacts have been amended. See the amended Costilla Creek Compact, approved by Congress in the Act of December 12, 1963, 77 Stat. 350.[3]

In its Resolution, Nebraska recognizes that the issues raised by the states require renegotiation of compact provisions. Nebraska submits that among the matters appropriate for renegotiation are:

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[3] The preamble to the amended Costilla Creek Compact states that Colorado and New Mexico designated commissioners "pursuant to the acts of their respective legislatures and through their appropriate executive agencies..."

1. Prospective administration;

2. Reallocating or eliminating subbasin allocation;

3. Reorganizing the overlapping responsibilities of the Director of the Department of Water Resources and certain Natural Resource Districts with respect to water administration under Nebraska law;

4. Renegotiation of the "renewable" supply;

5. The establishment of target flows at certain locations along the Republican River and its tributaries;

6. Adoption of accounting procedures that allow for debits and credits of water allocations from year to year; and

7. The establishment of regulatory procedures to ensure that the State of Kansas receives 138,000 acre-feet of water as determined by the Commission's accounting procedures.

8. The exclusion of particular activities of man from the determination of the virgin water supply and of the consumptive use of water. Examples of such activities could include soil conservation practices, such as, reuse pits and terraces, changes in the water regime that causes changes in channel shape and increased growth of phreatophytes, and other such actions.

CONCLUSION

It seems likely that Kansas' Resolution A is beyond the authority of the Compact Commission because it would alter provisions of the Compact. This memorandum is submitted in support of Nebraska's contention that the Compact Commission lacks the authority to amend the terms of the Compact by revised rules and resolutions.

Nebraska, however, should not disagree with the point behind Kansas' Resolution A. The Compact requires restructuring. But the matter cannot be solved by rules and regulations. The Compact requires re-negotiation in a manner that is lawful, that resolves ambiguities and disputes, and that produces a result that is equitable to the three states. Accordingly, the Nebraska Resolution should be adopted.

NEBRASKA RESOLUTION

WHEREAS the State of Kansas seeks to protect its annual allocation for beneficial consumptive use under the existing Republican River Compact;

WHEREAS the State of Nebraska desires to manage the waters of the Republican River so as to provide the State of Kansas with its annual beneficial consumptive use;

WHEREAS the Annual Reports of the Republican River Compact Administration demonstrate the Commission's continuing inability since 1960 to define and develop administrative procedures that would be utilized to address uses in excess of allocations and water shortages, to develop methodologies for assessing the impacts of activities of man or virgin water supply including conservation, increased phreatophyte growth, and changes in the river channel due to change in the water regimen, to define better methods for computing consumptive use and virgin water supply, to develop procedures for dealing with consumptive use in excess of subbasin allocations, and to develop effective mechanisms to administer and enforce the terms of the Compact;

Exhibit 9

administration. Amendments to the Compact may include some or all of the following:

1. Prospective administration;

2. Reallocating or eliminating subbasin allocation;

3. Reorganizing the overlapping responsibilities of the Director of the Department of Water Resources and certain Natural Resources Districts with respect to water administration under Nebraska law;

4. Renegotiation of the "renewable" supply;

5. The establishment of target flows at certain locations along the Republican River and its tributaries;

6. Adoption of accounting procedures that allow for debits and credits of water allocations from year to year; and

7. The establishment of regulatory procedures to ensure that the State of Kansas receives 138,000 acre-feet of water as determined by the Commission's accounting procedures.

8. The exclusion of particular activities of man from the determination of the virgin water supply and of the consumptive use of water. Examples of such activities could include soil conservation practices, such as, reuse pits and terraces, changes in the water regime that causes changes in channel shape and increased growth of phreatophytes, and other such actions.

IT IS FURTHER RESOLVED that the states of Colorado, Kansas, and Nebraska will jointly seek the appointment of a federal representative to engage in the negotiations among the states to modify the Compact;

IT IS FURTHER RESOLVED that the states of Colorado, Kansas, and Nebraska will meet to create a schedule for the negotiation of specific issues within thirty days of the appointment of the last representative.

WHEREAS the Legal Committee has and the Engineering Committee is presently engaged in studies to determine the relationship of groundwater to virgin water supply;

WHEREAS the State of Kansas, as proposed in paragraphs 14 and 15 of Kansas Resolution A, has proposed rules and regulations which would amend the Republican River Compact by abrogating provisions of Article III which pertain to 10% variations in the virgin water supply;

WHEREAS numerous issues have been raised concerning the nature of the apportionment between Nebraska and Kansas, Compact accounting, Compact administration, and the enforcement power of the Republican Compact Administration;

WHEREAS the most effective and only lawful method of addressing ambiguous and disputed provisions of the Republican River Compact is through a process of negotiation and amendments to the Compact that will make it administrable and enforceable;

THEREFORE IT IS RESOLVED that the Republican Compact Commissioners will seek to obtain authority from their respective legislatures to engage in negotiations to develop compact amendments which will address all outstanding issues, and amend the Compact to provide an enforceable apportionment of Republican River water and a sound basis for

three states "subject to such quantities being physically available." Colorado is allocated 54,100 acre-feet of water. Kansas is allocated 190,300 acre-feet of water.[2] Nebraska is allocated 234,500 acre-feet of water. However, the allocations derived from the computed average annual virgin water supply are altered, pursuant to Art. III, as follows:

> Should the future computed virgin water supply of any source vary more than ten (10) per cent from the virgin water supply as hereinabove set forth, the allocations hereinafter made from such source shall be increased or decreased in the relative proportion that the future computed virgin water supply of such source bears to the computed virgin water supply used herein.

The administrative history of the Republican River Compact is important in two respects. First, it displays an ongoing debate over the scope of certain provisions. (No resolution has been achieved with respect to the inclusion of groundwater or virgin water supply.) Second, the record reflects that Kansas wishes to effectively change provisions of the Compact by rules and regulations despite having negotiated the terms, and despite the practice accorded them by the Compact Administration.

The Republican River Compact Administration has been addressing issues related to the apportionment, and to the accounting and administrative process of the Compact Administration, since at least 1979. In 1980, Kansas questioned whether groundwater use should be utilized in computing virgin water supply.

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[2] Kansas' allocation from the mainstem is 138,000 acre-feet. The 52,300 difference is allocated to Kansas from tributaries within Kansas.

MEMORANDUM

TO: Mike Jess

FROM: Don Blankenau, Assistant Director/Legal Counsel

RE: Ultra Vires Compact Action

DATE: June 7, 1995

FACTS

The negotiation of the Republican River Compact began when Congress granted its consent to the negotiations. See Act of August 4, 1942, 56 Stat. 736. The authorizing legislation provided that the Compact should not be effective "until the same shall have been ratified by the legislature of each of the said States and approved by the Congress of the United States." Congressional consent to the Compact was granted in the Act of May 26, 1943, 57 Stat. 86, after having been ratified by the legislatures of Kansas, Nebraska, and Colorado.[1] The terms of the Compact were therefore the result of negotiation among the parties, ratification by state legislatures, and congressional approval.

Articles III and IV set forth the bases for the apportionment. Article III provides that "[t]he specific allocations in acre-feet . . . made to each State are derived from the computed average annual virgin water supply originating in . . . designated drainage basins . . .." Article IV then establishes the allocations to the

[1] A previous effort to negotiate a compact, signed on March 19, 1941, was vetoed by President Roosevelt on April 2, 1942, when it purportedly sought to "withdraw the jurisdiction of the United States over the waters of the Republican Basin for purposes of navigation and to restrict the authority of the United States to construct irrigation works and to appropriate water for irrigation purposes . . .."

HISTORY OF KANSAS' REPUBLICAN RIVER COMPACT CONCERNS

- The Republican River Compact was adopted into state law by each of the three States, and into federal law by the Congress and the President, in 1943.

- The Compact limits by specific allocations the degree of water resources development (consumptive use) which each State can allow by drainage basins.

- In 1959, when the methods of calculating virgin water supply and consumptive use were first adopted, the 3 States unanimously adopted a formula that included the use of alluvial groundwater in the virgin water supply and consumptive use calculations.

- A review of the Compact records shows that Colorado's reported use does not exceed their original allocations; Kansas' use is in compliance with its original allocations in all but 1 or 2 drainage basins; and Nebraska has a consistent pattern of overuse in 6 drainage basins.

- Where overuse had occurred, Kansas closed areas within drainage basins to new appropriations of surface and groundwater in 1984. Kansas also continues to improve water use records. Colorado has also limited new appropriations.

- The State of Nebraska has refused to take action to limit alluvial well development despite repeated requests by the State of Kansas to do so.

- The State of Kansas incurred significant shortages in their water supply within the lower basin during the period 1989-1992. Kansas believes these shortages were aggravated by Nebraska's overuse of its allocations. Negative impacts included failure to satisfy all existing surface and ground water rights and failure to meet minimum streamflow targets in 1992; reduced water levels in Milford Reservoir; and caused significant shortages in supplies to the Kansas Bostwick Irrigation District. For example, deliveries to the Kansas-Bostwick Irrigation District in 1991 were only 6 inches; 9 inches less than the full delivery of 15 inches, not withstanding it was a dry year.

- In 1989, Kansas presented a proposal to bring all 3 States into compliance with the Compact within 5 years. It was defeated by Nebraska.

- Nebraska began to claim in 1990 that groundwater was not apportioned by the Compact. Kansas' and Colorado's review of historic documents concluded that groundwater uses that impact streamflows must be considered. Nebraska disagreed. Alluvial groundwater continues to be included in the RRC's formulas for computing virgin water supply and consumptive use.

- Kansas is concerned that, as Nebraska's consumptive use continues to increase above Compact allocations, shortages to Kansas will increase in frequency and duration.

- Kansas' concerns, which have been actively raised since 1985, must be resolved. Kansas would prefer to resolve them within the Compact Administration. If the administrative process fails, Kansas' primary alternative is to file an action in the Supreme Court of the United States.

- Despite Kansas' repeated expressions of concern about Nebraska's overuse, the State of Nebraska has not yet taken action to limit its consumptive use of water in the Republican River basin to their Compact allocations.