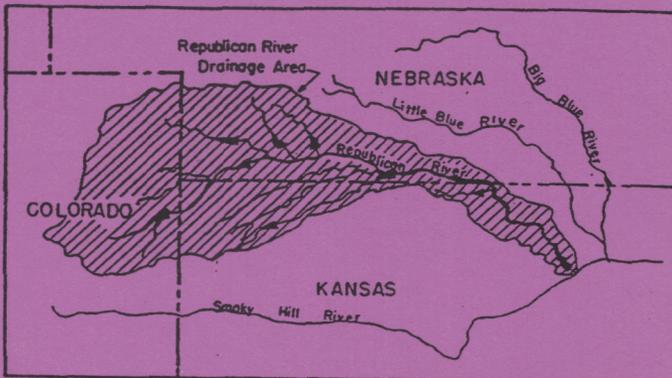




REPUBLICAN RIVER COMPACT
ADMINISTRATION

THIRTY-FOURTH ANNUAL REPORT



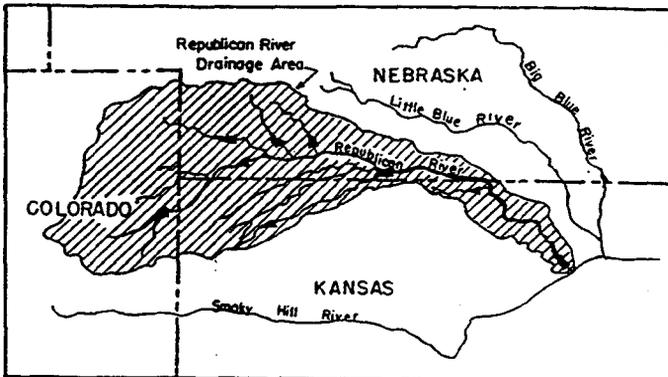
For The Year 1993

Lawrence, Kansas

June 9, 1994

REPUBLICAN RIVER COMPACT
ADMINISTRATION

THIRTY-FOURTH ANNUAL REPORT



For The Year 1993

Lawrence, Kansas

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**MINUTES
35TH ANNUAL MEETING
REPUBLICAN RIVER COMPACT ADMINISTRATION**

The meeting was called to order by Chairman Pope at 8:30 a.m., June 9, 1994, in the Big Eight Room of the Kansas Union, University of Kansas, Lawrence, Kansas. Those in attendance were:

| <u>NAME</u> | <u>REPRESENTING</u> | <u>STATE</u> |
|-----------------|--|--------------|
| David L. Pope | Kansas Commissioner | KS |
| J. Michael Jess | Nebraska Commissioner | NE |
| Hal D. Simpson | Colorado Commissioner | CO |
| Bob Kutz | U.S. Bureau of Reclamation | NE/KS |
| Dennis Allacher | U.S. Bureau of Reclamation, McCook | NE/KS |
| Bob Prouty | U.S. Bureau of Reclamation, Gr. Island | NE/KS |
| Jim Goering | U.S. Army Corp of Engineers, Kansas City | MO |
| Mike Pope | U.S. Geological Survey | KS |
| DeAnn Hupe-Seib | Kansas Div. of Water Resources | KS |
| David Barfield | Kansas Div. of Water Resources | KS |
| Leland E. Rolfs | Kansas Div. of Water Resources | KS |
| Leif Holliday | Kansas Div. of Water Resources | KS |
| Judy Bishop | Kansas Div. of Water Resources | KS |

| | | |
|---------------------|--------------------------------------|----|
| Laura Palmer | Kansas Div. of Water Resources | KS |
| James Bagley | Kansas Div. of Water Resources | KS |
| Bob Lytle | Kansas Div. of Water Resources | KS |
| Dale Mahan | Kansas Div. of Water Resources | KS |
| Scott Ross | Kansas Div. of Water Resources | KS |
| Blake Henning | Kansas Water Office | KS |
| Tom Stiles | Kansas Water Office | KS |
| David Leib | Kansas Water Office | KS |
| Glen Kirk | Kansas Water Office | KS |
| Kenneth Nelson | Kansas Bostwick Irrigation Dist. | KS |
| R.E. Pelton | Kansas River Water Assurance Dist. | KS |
| Janice Hardenburger | Kansas State Senator | KS |
| Don Blankenau | Nebraska Dept. of Water Resources | NE |
| Ann Salomon Bleed | Nebraska Dept. of Water Resources | NE |
| Russell Oaklund | Nebraska Dept. of Water Resources | NE |
| Rick Calkins | Nebraska Governor Advisory Comm. | NE |
| Ron Wunibald | Lower Republican NRD | NE |
| Mike Delka | NE Bostwick Irrigation Dist. | NE |
| C.K. Swanson | H&RW Irrigation Dist. | NE |
| Norma Sethman | Frenchman Valley Irrigation Dist. | NE |
| Jim Lundgren | Nebraska Water Users | NE |
| Bob Andrews | Frenchman-Cambridge Irrigation Dist. | NE |

| | | |
|----------------|--------------------------------------|----|
| Ralph Best | Frenchman-Cambridge Irrigation Dist. | NE |
| Jay Patterson | Frenchman-Cambridge Irrigation Dist. | NE |
| Clayton Lukow | Nebraska Governor's Water Council | NE |
| Ed Schrock | Former Legislator | NE |
| Cliff Seigneur | Colorado Attorney General's Office | CO |
| Alan Berryman | Colorado Div. of Water Resources | CO |
| Bill McIntyre | Colorado State Engineer's Office | CO |
| Mark Fagan | Lawrence Journal-World | KS |
| Hank Ernst | Kansas Farmer Magazine | KS |

Chairman Pope, Commissioner Simpson and Commissioner Jess introduced their staff in attendance. A special introduction of Senator Janice Hardenburger from Hadam, Kansas, was made by Chairman Pope. Commissioner Jess introduced Ed Schrock, who is a former Nebraska state legislator seeking re-election. Chairman Pope then asked for introductions of those present in the audience.

APPROVAL OF MINUTES

The minutes of the 34th Annual Meeting stood as previously circulated, approved, and published in the 33rd Annual Report.

REPORT OF THE CHAIRMAN

Chairman Pope, reporting as the Kansas Commissioner, discussed the flood of 1993 and its effect upon the Republican River Basin. He stated that 1993 was an extraordinary year, not one to measure the ordinary or the ongoing availability of water in the basin. He noted that there was extensive damage as a result of the flood. The reservoirs in the north part of the state, primarily in the northeastern section, received large amounts of inflow and some exceeded their capacity to store water in the flood pool. Emergency spillways operated at Milford and Tuttle Creek reservoirs and set records in terms of water levels. Extensive flooding occurred downstream on the Kansas River, as well as on the Missouri and Mississippi Rivers.

Regarding the legislative session, Chairman Pope characterized it as fairly inactive except for legislation appropriating approximately \$13 million to acquire additional water supply storage in existing federal reservoirs in Kansas. The successful passage of this legislation was due to the Kansas Water Office's years of effort to enhance the water marketing program, to provide for future water storage, and to have more control of that storage space by the state.

There were several bills passed that related to environmental and water quality issues, including regulation of feed lots, quarrying for aggregates, and others related to agriculture and corporate farming. Chairman Pope noted that the hog and dairy industries are expressing interest in locating in the western part of the state and each of these are water dependent.

The Division of Water Resources (KDWR) continued to place significant emphasis on the administration of water rights and management of water in Kansas. KDWR has required holders of water rights to keep accurate water use records and report those readings, whether they be from meters or other methods, on a yearly basis. KDWR continues to enforce that requirement and levy administrative fines when needed. This provides KDWR with the data needed to conduct an extensive review on water use.

Based on our review, we believe there have been over-estimates of actual water use in certain areas. Having this more accurate information led Kansas to believe over-reporting of water values has occurred in the tributary sub-basins in Northwest Kansas that are part of the Compact.

Kansas' efforts have allowed it to focus more on water conservation, water management, and enforcement of matters related to water rights, on both ground and surface waters.

The Legislature maintained our existing funding for over-all activities and some additional funds were made available to deal with the water right permit backlog. Also we received additional funds related to implementing the state water plan, including funds to pursue matters within the Republican River basin. Some of these matters related to Compact and interstate water issues and others related to the development of good long-term water management strategies in selected areas of the state where we are aware of problems. This is known as our sub-basin resources management program and includes tributaries in the upper Republican basin

(Beaver Creek, Sappa Creek and Prairie Dog Creek) as well as other areas of the state. This will allow us on a multi-year basis to analyze those areas and determine what kind of long term management strategy is needed.

REPORT OF THE COMMISSIONER FROM COLORADO

Commissioner Hal Simpson reported on legislation in Colorado. An attempt to require well drillers to obtain continuing education credit was made. Further fine tuning of certain groundwater statutes was made, including adjustments to the authority of the groundwater commission and to the authority of the state engineer to enforce rules and regulations state-wide. The Colorado Division of Water Resources was allocated four additional staff members to deal with the expected 12,000 permits this year and within the allotted 45-day time limit required by the legislature. Well permits have doubled in the last few years and are primarily for residential use.

Senate Bill 203 transferred surplus funds to water programs and this provided us with an additional 4-1/2 full time employees to enforce rules and regulations. These positions will begin July 1, 1994 to deal with the rules and regulations dealing with groundwater use in the Arkansas River basin. The rules now require that all wells in the Arkansas basin, larger than 15 gallons per minute, either install a meter or use a power coefficient test, which is a relationship between the energy input into the well and the water pumped, and then provide monthly water use data to the State engineer. These rules have been challenged and a hearing will be held July 1, 1994.

Colorado is still seeing a decline in the range of 1 foot each year in the Ogallala. This is less than what was projected when the groundwater commission set the allocation in 1965 for the Republican River Basin. The change to corn and other crops that require less water will cause the aquifer to last longer than projected.

We are seeing a significant increase in satellite hog farming operations in the Ogallala area of the northern High Plains. They are entitled to an exempt well for 5.0 gallons per minute or less outside the priority system with the allocation of the Ogallala and this is sufficient to run a small 2,000 head operation. These are generally breeding operations and have amounted to 30 to 40 in the last couple years.

The snow pack, as of May 1, was below average state-wide, at approximately 90% of normal, and by June 1, the snow pack had dropped to 33% of normal due to May being the second driest and warmest on record. There is concern that the runoff will be less than anticipated, resulting in serious demands for water in early July.

Data collection is being focused upon in several geographical areas, including the Arkansas River, western Colorado, and the Colorado River Basin. The CDWR has been working with the United States Bureau of Reclamation on developing data on irrigated acres using their satellite imagery and our water commissioners' ground crew to verify crop types and field boundaries. The technology is promising and it is hoped that if the satellite imagery can

be acquired, this process will be used in other basins. In the future, the imagery could be used to monitor changes in crops or irrigated fields, allowing a more accurate estimate of consumptive use in the Colorado River Basin.

Also, staff in our quality control section are verifying the data that our water commissioners input into our data bank to determine and maintain consistency.

The South Platte water rights management system will be in the testing stage as of July 1. The CDWR has combined the information from 150 streamflow gaging stations which are linked by satellite to computers in our main Denver office and which monitor the streamflows throughout the state on a real time basis. We are now combining that system with information coming from water users and our water commissioners via pc's or laptops and have set up an information sharing network for those same users and commissioners. This information on diversion data can be displayed graphically and otherwise, with the ultimate outcome being better administration of water rights within the basin. Sudden changes in the basin can be monitored and appropriate changes called or relayed to the various water users and commissioners. This can also monitor delivery of water and flooding.

Each lead commissioner in Alan Berryman's division has been provided with a small 486 laptop personal computer, printer, modem and software which has been designed by the University of Colorado Computer Specific Design Center. This is a GIS based system and will be a useful tool. We hope that once it is tested we will find funding and be able to move it into

other basins in Colorado.

Chairman Pope and Commissioner Simpson then discussed the exemptions for small wells in each state. Colorado bases their exemption upon the capacity of the well (5.0 g.p.m.) which allows operators up to 80 acre-feet a year. Kansas' exemption is limited to 15 acre-feet per calendar year on a volumetric measure. Many new uses in Kansas, such as the livestock industry, are having to acquire existing rights or limit the size of their operation to the small well exemption as many of the areas are closed to new appropriations. Kansas has adopted policies that do not allow an increase in net irrigated acreage limit, unless the requesting party submits an analysis to show they can accomplish their goal without an increase in consumptive use of water. Further, there has been a rapid conversion to more efficient irrigation systems which has caused KDWR to deal with requests to expand the amount of acreage irrigated. Kansas has attempted to balance the need for increased efficiency while limiting total acreage. Commissioner Simpson stated that Colorado has been careful to limit users to historic use. This may allow increased acreage where they have converted from alfalfa to corn because consumptive use (historic) remains the same.

Commissioner Jess asked whether the South Platte water rights system software is tailor-made to the area or if it has a general application state-wide. Commissioner Simpson replied that the software has both applications. While it needs to be fine tuned to a given basin, the concept, and how it would work, is transferable to other basins. In reply to Commissioner Jess' additional question, Commissioner Simpson indicated that the Republican River basin, due

to its few surface water rights, was far down the list of basins to receive this application.

REPORT OF THE COMMISSIONER FROM NEBRASKA

As Director of the Department of Water Resources, Commissioner Jess signed an order approving rule changes in the groundwater control area administered by the Upper Republican Natural Resources District. This control area manages the water withdrawals from the Ogallala formation. The rate of decline in the aquifer has lessened substantially since the control area was designated. There is a long way to go toward the District's goal of safe yield, but it is an achievable goal.

A number of the Natural Resource Districts have prepared groundwater management plans, as required by a bill discussed at last year's Compact meeting. Quite a few have been approved and a number have not been approved. As of today, the Middle Republican Natural Resource District has an approved plan and the other two districts in the Republican River Basin are still working on the preparation of their plans.

The Governor's Water Council, composed of twenty-four individuals, has met half a dozen times to discuss and make appropriate recommendations, if any, regarding conjunctive use of groundwater and surface water. Recent discussions have included the Republican River Basin and the Kansas-Colorado dispute regarding the Arkansas River. The litigation between Colorado and Kansas "provides a lot of discussion points there, in the litigation that is ongoing in that

river basin, which we think have some application, perhaps, to our state. "We believe that litigation may have some application in the State of Nebraska.

At this time, it is the expectation of the Water Council to develop an outline of proposals that the Water Council could endorse. Then public meetings around the state to gather input from people of our state would be held with an eye towards the preparation and introduction of legislation in January. Currently, the Water Council is divided and there is an absence of consensus on specific proposals. An issue being wrestled with is who should be in charge should conjunctive use legislation be passed. There is a strong desire that control be placed in the hands of Natural Resource Districts at the local level. Questions have been raised whether responsibilities can be delegated to Natural Resource Districts in areas subject to interstate compacts. Others have questioned whether the streams and aquifer systems which underlay several NRD's can be properly regulated by one district that will benefit the people in another district.

Commissioner Jess requested that Russ Oaklund of his staff report on water rights administration and adjudication of unused water rights.

Russ Oaklund

Based on an investigation and adjudication conducted last fall and early winter on the

Superior Canal in Nebraska-Bostwick and the Prairie Dog Creek sub-basin, it is anticipated that approximately 160 acres of the Superior Canal project will be cancelled for non-use. Also, approximately 400 acres out of the 700 acres presently permitted will be cancelled in the Prairie Dog Creek sub-basin. The high precipitation in the east end of the Republican last year, coupled with significant storage in Harry Strunk and Harlan County Reservoirs, made it unnecessary to set normal restrictions at either Medicine Creek sub-basin or the Lower Republican last year. Junior permits on Frenchman Creek above the Culbertson Canal headgate were closed June 24, 1993. These permits were opened August 25th after the irrigation districts completed their season. Junior permits were closed in mid-July on Red Willow Creek and the Middle Reach of the Republican. Senior permits on Red Willow, as well as permits on Frenchman Creek below the Culbertson Canal headgate, were regulated. These restrictions were lifted on September 10, 1993. 1994 restrictions have not been set in place. If the dry weather persists, "we'll begin restriction closings, as needed" in the latter part of June.

Commissioner Jess then requested that Don Blankenau report on legislative activities.

Don Blankenau

A number of water related bills were introduced, but only two passed that affected their agency. One dealt with administrative procedure changes and the other with the fee structure for well registration.

On a non-legislative note, the Nebraska Supreme Court decided the case of Bamford v. Upper Republican NRD, and affirmed the authority of the NRD's to regulate groundwater under the Groundwater Management and Control Act.

Commissioner Jess then ended his report by mentioning that Nebraska enacted a bill approximately eight years ago which required continuing education for licensed well drillers, pump installers, and those who install septic systems. The Well Driller Advisory Board, upon being given authority to set the fee, did so at the maximum amount allowed.

BUREAU OF RECLAMATION, U.S. DEPARTMENT OF INTERIOR

Chairman Pope requested that the Bureau of Reclamation report on its operations. Robert Kutz spoke on behalf of the Bureau.

Mr. Kutz reported that due to construction declines especially, their agency is downsizing by approximately a 13% reduction in staff. His last day will be July 1, 1994, but his position will be refilled through a probable re-assignment. No other significant changes in office status are foreseen.

In accordance with Vice-President's Gore's national performance review, the Bureau is reducing the layers of supervision and the number of high managers, increasing diversity in the work force, and providing greater authority to area offices.

Federal legislation which would directly affect our surface irrigators is minimal. There is a draft plan currently being reviewed which will make the water conservation program drafted after the 1982 Reclamation Reform Act legislation a tougher program. Irrigation districts have an additional 60 days to review those plans. The draft plan will require a need for compliance or federal action will result.

The bids on the third and last phase of the Courtland Canal lining from Harlan County down to the stateline have been opened. Each section was over the engineer's estimate -- the first section by 42% and the last section by 30%. If additional funds to award both sections of phase three cannot be found, the Bureau will probably re-design and re-bid the project.

The surface irrigation projects which contract for water service out of the Republican reservoirs are up for renewal prior to January 1, 1997. The trend by the federal government is to study all the natural resources in a basin and then manage all those resources in a balanced manner, neglecting all existing state and federal laws and existing contracts. To do this correctly, the federal government needs to listen more to the public and changing attitudes and demands. Mr. Kutz presented a copy of the resource assessment outline to each of the state Commissioners. He pointed out that the Bureau is already behind the schedule contained in the outline. This will cause the Bureau to extend the water contracts by temporary one or two-year contracts before final renewal occurs. The Bureau has requested a directive from Washington regarding the surface water contracts. He also does not expect any great increase in staff to assist in completing the assessment.

Mr. Kutz then introduced Dennis Allacher, who continued with the Bureau's report. Mr. Allacher reported that the Bureau has estimated over \$1.1 billion in flood damages in the basin last year. Referring to the Bureau's handout (Exhibit 1), Table 1, Mr. Allacher summarized last year's precipitation events throughout the basin's reservoirs. Frenchman Valley delivered 4.8 inches of irrigation water; H&RW delivered 4.5 inches; Frenchman-Cambridge delivered 5.5 inches; Almena didn't deliver any water; Nebraska Bostwick delivered .7 inch of water; and Kansas Bostwick delivered 1 inch of water to its irrigators.

Bonny had 117% of normal precipitation; Enders had a larger carryover, so they have a little more water this year; Swanson and Hugh Butler didn't make that much of a release; and Harry Strunk ended in the flood pool. At Keith Sebelius, the Bureau gained 13,000 acre-feet last year; while Harlan County Lake went into the flood pool by 7.62 feet, thereby preventing \$33.8 million worth of flood damage. Lovewell ended in the surcharge pool late in July and the Bureau is attempting to balance inflow and outflow at this point. Lovewell did prevent \$103.3 million of flood damages downstream.

This year all the reservoirs in the basin are full, except Enders and Keith Sebelius, due to good precipitation and little water being used out of the reservoirs during the past two years. Certain reservoirs are restricted in total amounts held due to construction or hydrologic deficiencies. The Bureau is also inspecting all of the dams this year and has completed inspection of six of the dams, including Bonny, Enders and Trenton. The Bureau is also working with local authorities on emergency action plans.

(TAPE HAD DIFFICULTIES HERE, JUMPING INTO THE MIDDLE OF CONVERSATION BETWEEN POPE, JESS & KUTZ)

Chairman Pope, Commissioner Jess and Bob Kutz then discussed Lovewell Reservoir, which has a limited recharge or inflow, causing irrigators to learn to use the limited amount of water.

Commissioner Jess noted that Nebraska Bostwick was an ideal conjunctive use system where they realize the great importance of moving surface water in there, even though the seepage out of the system might lose half of it. It then recharges that river alluvium for their supplemental wells. Chairman Pope pointed out that most of the Nebraska Bostwick district lands are in the valley and many are served by wells.

Mr. Kutz then continued his report on the Republican River Basin and the federal reservoirs. He concluded that decreased precipitation is not the overriding significant factor in determining loss of streamflow, although there may be significant changes or trends in true precipitation at a specific gaging station. To account for changes in precipitation, Mr. Kutz proposed that because there is more groundwater irrigation which puts more moisture in the air there is less dust which creates fewer particles causing precipitation. He also mentioned that rainfall intensity studies had not been conducted as the older records did not contain intensity information.

Commissioner Simpson mentioned a study by Kansas State University on precipitation in western Kansas which also concluded that the decline in streamflow was not related to precipitation.

Mr. Kutz concluded his report by saying that precipitation may have a small effect upon the decline in streamflow, but that it does not explain the 66% decline in streamflow.

Commissioner Jess questioned Mr. Kutz regarding "water spreading," which Commissioner Jess defined as "the use of Reclamation water on properties not covered by contracts that the Districts (NRD's) have with the Bureau." Mr. Kutz did not think that it was an issue in Nebraska as Nebraska periodically reviews irrigated acres. Bob Prouty of the Bureau added that water spreading also occurs where an irrigator has added to a pivot (they had been authorized so many irrigable acres under the pivot and then the irrigator decided to water some corners which were not authorized as irrigable acres), or they irrigate more acres than originally requested under the gravity system, thereby spreading the same water over smaller acres.

Commissioner Jess also asked Mr. Kutz whether the Bureau is still intending to impose a high degree of efficiency on projects and at the same time sacrifice the return flow aspects of these projects which support secondary users and environmental habitat needs. Mr Kutz's answer was, "Absolutely yes." Chairman Pope also expressed his concern at Mr. Kutz' answer based on the reliance on return flows by users below Harlan County in the Bostwick project.

Mr. Kutz was then questioned by Chairman Pope as to the Bureau's intent regarding the Republican River Compact, Compact allocations, state law, water rights, and other similar issues in its resource management assessment. Mr. Kutz was of the opinion that the Bureau's proposal would be contrary to many of those issues. He also pointed out that irrigation or Natural Resource Districts may fall under NEPA on the water conservation plan.

Chairman Pope then introduced Jim Goering of the U.S. Army Corps of Engineers.

U.S. ARMY CORPS OF ENGINEERS

Mr. Goering reported that, based on early figures, the reservoirs of the Kansas City District prevented approximately \$5.5 billion dollars worth of flood damage. A report on "The Great Flood of 1993 in the Upper Mississippi Basin" should be available after the first of October. The Corps is also conducting a floodplain management assessment which may lead to policy changes in the management of floodplains and operational changes at reservoirs when flooding occurs.

The Corps is approximately a year behind on the Harlan County Study because of the resources diverted to the Flood of 1993 and its followup. However, the Corps is in the final stages of compiling the pre-draft report. It should be put together this week and will be subject to internal review before other in-house staff and divisional staff review the report. They plan to submit the report for public review in September 1994. They are looking at the impacts of

four different levels of operation, from the bottom of the multi-purpose pool at 1932.8, down to an elevation of 1925.0, using the inflow depletion analysis which the Bureau furnished us last year and which includes groundwater in its analysis.

The "public" review in September will actually go to Nebraska, Kansas, the Bureau and U.S. Fish and Wildlife Service before it is sent out for public review. Mr. Goering did not feel that the Compact and its provisions were addressed by the Harlan County study.

Commissioner Jess requested that during New Business the Compact Commissioners discuss whether to make a statement as a Compact regarding the Harlan County Study.

Mike Pope of the U.S. Geological Survey was then introduced by Chairman Pope.

UNITED STATES GEOLOGICAL SURVEY

Mr. Mike Pope informed the Commissioners that no changes are expected in their upstream flow information network on the Kansas side. He did not have any information regarding Nebraska or any changes expected there. Mike Pope also reported on a cooperative study with the Kansas Water Office which will begin July 1, 1994, and will study the lower regions of the Republican River basin from Harlan County down to Clay Center, Kansas. The result of the study will be a groundwater model that will map the basin from the Kansas-Nebraska stateline to Clay Center. They also intend to determine the effects from surface water

pumping on the river and to the Kansas Bostwick Irrigation District. They also intend to study the effects of groundwater pumping from the alluvial system along the Republican River. They will also examine "the effect of timing and magnitude of releases out of Harlan County."

Tom Stiles of the Kansas Water Office explained that the study was recommended through the Lower Republican sub-basin plan, water plan process, as an effort to address issues raised by the 1991-1992 drought. It is a more detailed approach based on a specific sub-basin rather than the currently used state basin-wide depletion analysis. The study is intended to address many of the issues that arose during the 1991-1992 drought, when the state was administering minimum streamflows along the Republican River. The outcome of the study should assist in developing management tools and in addressing the groundwater-surface water interaction as to the benefits or impacts water administration has on surface water benefits.

Mr. Stiles distinguished the U.S.G.S./KWO study, which is primarily downstream of Harlan County, with the Corps study, which is concerned with the depletion upstream of Harlan County.

ENGINEERING COMMITTEE REPORT

David Barfield, on behalf of the Committee, gave the Engineering Committee report. (Exhibit 2) Mr. Barfield noted in Table 1 of the report that the mainstream virgin water supply was particularly large for 1993, approximately 700,000 acre-feet, in comparison to the original

estimate by the Compact negotiators of 94,508 acre-feet. However, eight of the sub-basins had virgin water supply estimates significantly lower than the original estimates, while five sub-basins were above the original estimates. Also, Colorado's adjusted allocations were lower than the original allocations, while Kansas and Nebraska had significantly higher adjusted allocations due to the large water supply, especially in the lower basin.

Mr. Barfield pointed out to the Commissioners that Table 2 shows the consumptive use to be quite low in the lower regions of the basin. The 1993 consumptive use was the lowest estimate since 1961.

The Engineering Committee was requested to compile a list of all technical reports which were related to the Republican River basin and its surface water hydrology, groundwater geology, hydrology, and interaction between groundwater and surface water, which were known to or were easily discoverable by each state. There were a total of 139 technical reports, and this list has been provided to each of the Commissioners.

A question was received on how groundwater figures are computed by each state to arrive at the groundwater figures on the charts.

Mr. Barfield explained that each state has a different method of estimating consumptive use of groundwater, although basically the method is diversions minus return flows within each sub-basin within each state. He noted the groundwater figures reflect only the alluvial

groundwater use. Citing Kansas as an example, alluvial wells are determined through plotting wells on maps and using well logs. Water use reports from those wells then provide the figures which are submitted to the Compact.

Ann Salomon Bleed, on behalf of the State of Nebraska, informed the audience that Nebraska does not use a set distance from the mainstream for determining alluvial wells. Russ Oaklund discussed the review of methodology that he went through in 1990 regarding determining which wells were alluvial. On a county by county basis he looked for wells registered with the state which may be at a distance of more than one mile from the thread of the stream. He recomputed the number of wells and then looked at the number of acres served by those wells. He also included that rainfall data from 17 different stations across the basin which are used in the computation. Each year since, he has requested information for wells newly drilled or registered. He determines whether those are alluvial or Ogallala aquifer wells and then includes the alluvial wells in the running total. Additionally, the amount of precipitation received in the growing season determines the assumed amount of water used from the alluvial wells.

[COLORADO'S DESCRIPTION, IF ANY, WAS NOT DISCERNABLE UPON THE TAPE.]

Commissioner Jess moved to accept the Engineering Committee report. Commissioner Simpson seconded the motion. There being no further discussion, Chairman Pope called the question. Motion passed.

The meeting was then recessed for lunch.

The meeting was called to order at 1:05 p.m. by Chairman Pope. Chairman Pope noted that the next item of business was the Legal Committee report and requested that Cliff Seigneur, Assistant Attorney General, report for Colorado.

LEGAL COMMITTEE REPORT

Cliff Seigneur

Mr. Seigneur read the resolution which directed the activities of the Legal Committee. "Based on the language in the Republican River Compact, 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 as to the computation and allocation of consumptive use." The resolution provided a deadline of May 1 and requested that the Legal Committee comment on the inclusion of groundwater. Importantly, when the resolution was passed it was not known whether the Legal Committee could come to an agreement on whether or not groundwater was included, so the committee was provided the option that if agreement could not be reached by March 1, 1994, on whether or not groundwater was included in the Compact, that each Committee member could submit their own report. An agreement was not reached, so each member of the Legal Committee submitted his or her own report.

Mr. Seigneur submitted Colorado's report on April 29th. He began his research by going through the historical documents for the state of Colorado. There were only a few which Mr. Seigneur thought were really important out of the various technical reports; i.e., minutes of the Compact Commissioners, correspondence between the Commissioners, and a number of other types of documents. There were basically two types of documents which dealt with groundwater. First, there were those which gave an explicit statement of the Compact Commissioners, which were in correspondence between themselves or the actual minutes of the original Compact Commission meeting. He thought those which contained some explicit statements and which did not require interpretation by anyone were of the greatest importance.

Secondly, he also thought there were a number of documents which implicitly discussed groundwater; and it was up to the Legal Committee, or up to the individual states, to decide if those were important or not. He chose not to include those in his report and referred to Kansas' discussion of those documents. In Colorado's view, the document which really sets forth Colorado's position is what is entitled "The Explanatory Statement in the Compact," which was submitted to Colorado's legislature upon asking for ratification of the Compact. That was done by Colorado's Compact Commissioner, Mr. Hinderlider. Mr. Seigneur quoted one section of Mr. Hinderlider's conclusion:

"It is believed that this Compact equitably apportions the total available average annual virgin water supplies of the basin, both surface and underground, among the three signatory states. . ."

Mr. Seigneur believed that statement was clear and did not need any interpretation. It basically sets forth Colorado's position, which is that they believe that groundwater is included in the Compact.

Mr. Seigneur noted that he discussed other statements, which he did decline to deal with at length, but stated his belief that Mr. Hinderlider's statement was clear and that when Colorado's Compact Commissioner, Mr. Hinderlider, went to the Colorado legislature asking for ratification of the Compact, which he negotiated, he clearly stated to Colorado's legislature that groundwater was included in with surface water.

Mr. Seigneur also thought of importance in the discussion on whether or not groundwater was included in the Compact was the practice of the Administration over the years which has been the practice to include groundwater in the calculations.

Finally, he pointed out that a common sense approach is that groundwater does impact those surface flows. He noted that the state of Nebraska very recently filed a reply brief in Nebraska v. Wyoming which advocated this practical approach. Quoting very briefly from the reply brief which Nebraska filed in Nebraska v. Wyoming.

"As the courts held," (U.S. Supreme Court), "(i)t is impossible to separate surface water from hydrologically connected groundwater. In most river systems surface water and groundwater are one in the same, separated only in time.

Typically, the surface flow of an interstate river consists of tributary inflow and groundwater accretion, with the latter most often providing more significant contribution. "

Nebraska stated that Wyoming's argument, which is that groundwater is not included in the North Platte decree, "is in a word absurd." Colorado agrees that Nebraska's argument on the North Platte is applicable also to the Republican River.

Chairman Pope introduced DeAnn Hupe Seib reporting on behalf of Kansas.

DeAnn Hupe Seib

As Mr. Seigneur said, the Legal Committee did not come to an agreement. Ms. Hupe Seib reminded the Commissioners that Kansas had submitted a memorandum to the Commission a year ago as a draft report. The report submitted this year has not substantively changed and Kansas concurs with Colorado report, although more historical documents were examined.

The conclusions in the report are based on, for example, the Hinderlider document which Mr. Seigneur has already alluded to and quoted from, various documents by George S. Knapp, information that was exchanged between R.H. Willis, who was the negotiator on behalf of Nebraska at that time, writings by Wardner G. Scott and others, including A.C. Tilley, who was one of the early Commissioners.

Kansas' conclusions are that groundwater has been in the Compact, that it is part of the original formula that is still being used, and that groundwater is not only within the virgin water supply, it is what makes up a portion of the allocations and the consumptive use allowed in each state. Ms. Hupe Seib pointed out to the Commissioners that section 3, starting on page 18, was new to the report from the prior year and that the addition was in response to the Administration's Resolution as stated.

The early Commissioners made it very clear that underground water developments were considered at the time of the signing. Commissioner Hinderlider, for example, also wrote a letter, in which he refers to the Frenchman Creek sub-basin area in eastern Colorado which has very little runoff because of the type of soils that are there.

Commissioner Hinderlider stated, "Obviously the rainfall in that area which is not dissipated thru evaporation and plant transpiration contributes to the underground water supplies, which in turn may contribute in some measure to stream flow accretions east of the stateline."

Ms. Hupe Seib's interpretation of the Commissioner's statement was that in that area there may not be enough flow there to really take into account at the stateline, that it will have some affect on what's available in terms of surface flow, but his statements show an understanding that the water that is on top does go down into the system. When it does, it contributes to streamflow and accretion on east or downstream.

Ms. Hupe Seib reserved her comments regarding Nebraska's report until after Nebraska gave its report.

Chairman Pope introduced Don Blankenau, Legal Counsel for Nebraska.

Don Blankenau

Mr. Blankenau recognized the obvious disagreement Nebraska has with the positions taken by the states of Colorado and Kansas. He addressed an item that Mr. Seigneur raised and which is contained in the addendum memorandum submitted by Ms. Hupe Seib. Mr. Blankenau noted that any filings Nebraska made in the *Nebraska v. Wyoming* litigation cannot be seen as being relevant to the question of whether the legislatures of each respective state apportioned groundwater within the Republican River Compact. That's apples and oranges, and that doesn't make sense. Nebraska has never argued that there is no hydrologic link between surface water and the alluvial aquifer. The question for Nebraska was whether or not the legislatures of Colorado, Kansas and Nebraska actually intended to divide up those groundwaters. Mr. Blankenau believes there are other ways around this issue and that is Nebraska's basis for suggesting re-examination of the virgin water supply formula and raising real time enforcement issues, which he believes is the heart of the Compact dispute.

Mr. Seigneur added at that point that the reason for mentioning Nebraska's reply brief in Nebraska v. Wyoming is the confusion by Colorado over Nebraska's position on the North

Platte and their position, or what has been their position, on the Republican River. Colorado is seeking clarification on this, too, because in the reply brief Nebraska discusses a number of decrees and/or compacts that are silent on the groundwater issue and argues that groundwater was implicitly included. Colorado is confused as to why Nebraska is taking a different stance on the Republican River.

Mr Blankenau replied that each compact is based upon its own individual terms and history. Nebraska thinks that the history of the Republican River Compact is distinguishable from the Decree analyzed in the brief that was filed in the Nebraska/Wyoming litigation.

Ms. Hupe Seib submitted to the Commissioners her addendum to her original memorandum. The addendum does refer to the filing and the brief Nebraska v. Wyoming, which Kansas recognizes was filed for that case alone and on behalf of the state of Nebraska. However, Ms. Hupe Seib stated her appreciation of the logic and the reasoning used in that brief and believed it was applicable to the Republican River Compact. Ms. Hupe Seib agreed that it was impossible to separate surface water from hydrologically connected groundwater, that the applicable surface flow of an interstate river could be influential on groundwater accretion, with the latter most often providing the more significant contribution. She thought that this is something that needs to be studied by this Compact and in some areas groundwater contributions may be the vast majority of the virgin water supply.

Ms. Hupe Seib raised again the issue that Compact negotiators did understand the

hydrologic connection between groundwater and surface water. She referred again to the Hinderlider letter discussed above that surface water does go into the system and it does provide baseflow when there is rainfall. The negotiator for Nebraska, Mr. Willis, was very cognizant of groundwater, as was A.C. Tilley, who was at that time the Compact Commissioner. Mr. Tilley was quite busy during that period of time, of negotiating the Compact, of going around the state and presenting his six-point plan, one point of which was having the state of Nebraska recognize that there was a connection between surface and groundwater and that groundwater development could be very important, but that it did need to be governed and regulated. It's just unfortunate that nothing was done at the time when Mr. Tilley was so strongly for it. Ms. Seib requested the opportunity to submit the addendum.

Chairman Pope suggested that he would entertain a motion to accept the reports and make them a matter of record. Commissioner Simpson moved to receive the three reports, including the addendum. Chairman Pope seconded the motion. There being no further discussion, Chairman Pope called the question. The motion was declared passed.

UNFINISHED BUSINESS

Chairman Pope expressed Kansas' continuing concerns regarding the administration and enforcement of the Compact. He noted that Kansas has raised its concerns for several years regarding the lack of compliance with the Compact and lack of an effective mechanism to administer and enforce the Compact. Referring to the annual report from the prior year, and

the Engineering Committee report contained therein, Chairman Pope pointed out that Table 2 shows that a problem exists when comparing the computed consumptive use within the Republican River basin by sub-basin and by state with the adjusted allocations. The consumptive use by Kansas and by Colorado did not exceed the adjusted allocations last year.

Kansas stated that a serious problem which must be addressed is this is Nebraska's consumption of more water than is allowed by the rules and regulations of the Compact. Kansas has also been concerned about the after-the-fact accounting method used by the Compact. Chairman Pope expressed his appreciation that Nebraska, in Don Blankenau's memorandum, has alluded to this also being an issue to pursue.

Chairman Pope also pointed out that, while he did not feel that Kansas has an obligation to explain all of their concerns to everybody in Nebraska, Kansas did participate in two meetings in Nebraska. The first meeting in Fairbury was initiated by legislators from both states who have expressed an interests in resolving these concerns. In addition, Kansas received an invitation from the Nebraska Water Users Association to speak at a meeting of water users in Franklin, Nebraska. At each meeting, a briefing paper with numerous attachments was presented. Chairman Pope requested that the Commissioners note for the record that the briefing papers exist.

Commissioner Jess requested that a copy be included in the Minutes. (Fairbury, Nebraska briefing paper, Exhibit 3. Franklin, Nebraska briefing paper, Exhibit 4)

RESOLUTION RECOGNIZING ROBERT D. KUTZ

Chairman Pope read a resolution honoring Robert D. Kutz' 15 years of service to the Republican River Compact into the record. (Exhibit 5) He then offered the resolution to the Administration and Commissioner Simpson seconded. The motion passed unanimously.

PROPOSALS BY NEBRASKA, COLORADO, AND KANSAS

Commissioner Simpson asked whether the Administration should react to the Corps of Engineers' study on Harlan County. Chairman Pope questioned whether the Administration should also discuss the activities of the Bureau regarding their renegotiation of contracts.

Discussion then began on Kansas' proposals entitled Number One (Exhibit 6) and Number Two (Exhibit 7).

Chairman Pope provided the Administration with his perspective on Resolution Number One which included a request to the Engineering Committee to look at the data and all available information and then provide the Administration with their conclusions as to why the trend of a decline in annual computed virgin water supply continues to exist.

Chairman Pope noted that certain elements affect the virgin water supply that are not included in current computations. Whether or not Nebraska now believes that groundwater is

not included, groundwater is included in the rules of the Compact. Chairman Pope recognized that not all groundwater, such as all Ogallala groundwater, is included in the current computations under the Compact rules. However, he felt that how, and in what way, groundwater is included was still an item of interest.

Chairman Pope moved to adopt Kansas' Resolution Number One. Commissioner Simpson seconded the motion for purposes of discussion.

Commissioner Jess began the discussion by raising the issue of what the virgin water supply might be in a "real time" sense. The Administration is unable to determine the supply until after computations are made twelve months later. This prevents the Administration, and individual states, from knowing exactly what the allocation limits might be. The Administration certainly does not know until the calculations are made after the fact as to how much consumption is taking place in each state. Therefore, Commissioner Jess felt that there is no way for the states to bring about effective limitations. He pointed out that, in his opinion, growers or water users are unable, if they are irrigators, to know when they may be nearing the point where it is necessary to curtail their diversions. Commissioner Jess felt that the Administration must come to grips with the problem of determining the usage and availability of the virgin water supply only long after the water has gone "past the bridge".

Commissioner Jess wondered whether the Administration could take the volumetric limitations on an annual basis and convert them to a seasonal use, a monthly use, or even to an

amount of water that is supposed to pass from one state to the next and be measured at the state line. He referred to both the South Platte and the Big Blue River Compacts which call for a certain flow to pass from one state to the next. In each, the upstream state is obligated to regulate water user in order for the flow to attain a certain level so that the stream will flow into the other states. Nebraska knows exactly the requirements placed on the state. Further it knows the authorities to exercise in an attempt to comply with those compacts.

Commissioner Jess proposed asking whether the formulae that the Engineering Committee uses reflect the true magnitude of available resources, including the Ogallala aquifer. In determining the virgin water supply, the Administration steps back from doing such in its formulas which are based on a far more limited supply. His interpretation of the intent of this Compact is to apportion the renewable resources which may include the Ogallala aquifer. The Administration needs to look at the formulas. Commissioner Jess noted that with an increase in consumption, the virgin water supply increases and he believes that there is something inane about that method.

Commissioner Jess also suggested that the Administration explore the possibility of apportionment of the natural flow versus the storage water available from the reservoirs for the users in our basins. Also, he recommended that imported water be examined. Imported water for purposes of his discussion includes the groundwater mound underneath parts of Nebraska which have resulted from diversions from the Platte River and which have expanded literally into the upper portions of the Republican River Basin. Its influence on the baseflows of tributaries,

primarily those coming into the Republican River from the north, should be examined.

Commissioner Jess also questioned whether a proposal could be made allowing each state to build up a credit during those years when less than the maximum water is consumed. This credit could be applied against those years when more water is consumed by a state than the Compact allocations is allowed to the state. This would allow each state to have a running total.

In order to discuss the issues raised, Commissioner Jess proposed a series of Administration meetings.

Commissioner Simpson commented that it would be difficult under the current makeup of the Compact to translate annual consumptive use allocations into a stateline flow. He did agree with Commissioner Jess about Ogallala pumping as being one factor that is impacting the virgin water supply. Other factors, including soil conservation measures, impact the supply just as much, and the Administration does not properly account for them. The 1986 Engineering Committee was assigned the task of identifying causes in the decline of the virgin water supply and whether the current method of computing virgin water supply was appropriate. The Committee conducted extensive review of the considerable amount of work completed by the Bureau of Reclamation, including their six-volume report which dealt with the very same issue and also the precipitation issue raised by Mr. Kutz today. The Bureau's work was conducted to determine why the inflow to the project reservoirs was declining. The Administration should not overlook the previous work.

Commissioner Simpson agreed that they should review prior work but pointed out the conclusion of the previous Engineering Committee, of which he was a member, was that there were two impacts of man on the virgin water supply which are not quantified and, if attempted, would be very difficult. Until there are data or techniques to determine the impact of conservation measures and pumping of the Ogallala, he did not see how the Engineering Committee could do much more than the 1986 Committee. He suggested that they review the previous work first and then tell the Administration if they believe additional work could be done.

Commissioner Simpson was open to looking at modifying the Compact to allow a credit system. He proposed asking the Legal Committee to review the authority we have under rule making in the Compact to modify the Compact including changing the allocations in sub-basins to reflect where the actual development took place, as long as the total allocation to each state does not change.

Commissioner Simpson pointed out the allocations were made in 1940 and were based upon the Commissioners' best estimate of when and where that development would take place. He offered the question of whether the Administration should adjust some of the allocations in the sub-basins to reflect the actual development, but still stay within the original State allocations that they allocated based upon eleven years of study. He was unsure as to how the declines previously discussed could be worked into the adjustment.

Commissioner Simpson, speaking from his experience with the Rio Grande Compact, noted that rule making made a very significant change in the responsibilities of the two upper basin states without amending the Compact. If the Administration proceeds on Resolution Number One, he suggested that the members review prior work and report to the Administration by the end of December on what they believe can be accomplished with the resources available.

Chairman Pope reiterated that Kansas did not intend for the Committee to start from scratch in terms of reviewing factual questions and data. Kansas has been frustrated with the continuation of studies and reports and the failure to act. He recognized that limited data is available in certain areas. He questioned Nebraska whether, in light of their position on groundwater and their existing state law, a new method of calculating allocations would be more enforceable than what is presently in use.

Commissioner Jess replied that no consensus exists in Nebraska that allow him to hold the position that the Compact is over-riding and provides all the authority he needs to enforce restrictions in groundwater. He believed that Nebraska would have to enact legislation which would appoint the Department of Water Resources, Natural Resources Districts, or another governmental entity to regulate conjunctively the uses of groundwater and surface water.

Chairman Pope commented that efforts at resolving the problems may still be frustrated by Nebraska's inability to carry out any changes to which we might agree. He pointed out that legal precedent exists which supports the obligation of each state to adhere to the Compact; an

obligation which cannot be frustrated by individual state laws or the failure to pass those laws.

He informed the Administration that he was willing to participate in work sessions but that he was looking for some action that would move the issues forward. Kansas was still concerned with protecting its allocations and felt that upstream entities, including those basins in Kansas, must administer their water to protect those allocations.

Chairman Pope also discussed whether withdrawal of water from the Ogallala could be treated as a separate matter. He questioned whether this would be a one-time volume issue versus renewable supply which affects streamflow. If the streamflow is based upon the baseflow, whether that can be attributed to the alluvium or the Ogallala is less important than in determining whether the supply is renewable.

He also felt that the conservation issue will be difficult to resolve but felt that it could be approached in one of two ways. Conservation could either be factored in, or viewed as reality and accepted that it does impact the water supply of the basin. He did not believe that the Administration should be allowed to use conservation as a barrier to action.

In regard to crediting upstream states for water in wet years, Chairman Pope stated that Kansas was not interested in allowing upstream states to get credit for large quantities of flood flows to make up for deficits during normal or water short years. Conceivably, a running average could be arrived at in the form of adjusted allocations, which is allowed by the

Compact. If this were properly used, it would be unnecessary to utilize seasonal or monthly figures or rely on a state-line delivery.

In response to Commissioner Jess' questioning, David Barfield informed the Administration that the intent of Resolution Number One was for the Engineering Committee to review any work done, including modeling of the basin or sub-basins, since the 1986 Engineering Committee completed its report.

Commissioner Simpson suggested that the Administration direct the Engineering Committee to review all of the old information, including the work done in 1986 by that Engineering Committee to determine if data are available to compute the virgin water supply differently than it is now done and report back to this Administration in writing by December 31, 1994. The 1986 Committee recommended a modification that requires collection of two pieces of data that we don't collect; one was a change in groundwater storage in the alluvium; and the second was the increase in phreatophytes. These two pieces of information could be collected since the 1986 Committee had proposed a water budget that would let them compute the virgin water supply. The 1986 Committee never received further direction regarding insuring that data was readily available and what it would take to collect that data.

Ann Bleed, on behalf of Commissioner Jess, suggested that Resolution Number One be changed to say in paragraph four "That the Committee review such information and summarize its conclusions in report form as," delete the rest and substitute, "as for direction for further

work to determine causes of declines in the estimated virgin water supply." She proposed that to go beyond the 1986 report without the above word change in Resolution Number 1 was a task that Nebraska could not conclude by December 31, 1994.

Specifically, Ms. Bleed proposed that the Engineering Committee look at what data are available, including models and methodologies. From this beginning, the Engineering Committee could develop a research proposal.

Commissioner Simpson, replying to Chairman Pope's question, informed the Administration that the 1986 Committee took one basin and did a study of the change in baseflows to estimate what is pre-well and post-well development. The study showed a very drastic change.

Commissioner Jess queried whether each state could assign itself, its legal and engineering advisors the task of exploring real time accounting, virgin water supply allocations, a system of credits and debits, and the movement of allocations among sub-basins to reflect where the development actually took place over the past fifty years.

Commissioner Simpson proposed that each state individually examine the four issues, submit a written report to the other states and then have a working committee meeting in early 1995.

Chairman Pope noted that the Western State Association of Water Engineers Annual Meeting would be in Wichita at the end of September and proposed that the Commissioners and staff remain for a meeting of the Compact. The Administration agreed to hold a special workshop meeting on the afternoon of September 28, 1994 in Wichita.

Chairman Pope restated Commissioner Jess' proposal as a motion, specifying that the issues to be dealt with included real time accounting; virgin water supply calculations, allocations and related formulas; a system of debits and credits; and the movement of allocations among sub-basins to reflect actual development.

Chairman Pope agreed to a substitution of his original motion on Kansas' Resolution Number One with the above restatement and so moved. Commissioner Jess seconded the motion. Chairman Pope called the question and the motion passed.

KANSAS' RESOLUTION NUMBER TWO

Chairman Pope directed the Administration to Kansas Resolution Number Two. He noted that this resolution dealt with concern over how water is administered in regard to the diversion by Kansas Bostwick Irrigation District at Guide Rock, Nebraska. The purpose of this resolution is to provide notice to the Administration that this concern has not been resolved. Chairman Pope then moved for adoption of Kansas' Resolution Number Two. (Exhibit 6) Commissioner Simpson seconded the motion for discussion purposes.

Commissioner Jess did not accept the premise contained in whereas number seven which stated that there is a problem due in part to a lack of regulation by Nebraska. Commissioner Jess in looking at number four also stated that Nebraska doesn't need the recommendation of the Compact Committee. Further he did not view this as an interstate matter but an administrative state function in Nebraska. He also noted that there are channels through which Kansas Bostwick Irrigation District may raise its objections.

Commissioner Jess noted that Kansas Bostwick has expressed frustration based on their belief that private users between Harlan County dam and Guide Rock diversion dam take more water than they are entitled to take. Nebraska was under the impression that the previous issues had been resolved satisfactorily.

Chairman Pope introduced Kenny Nelson, manager for Kansas Bostwick, and provided him with the opportunity to address the Commission.

Mr. Nelson proposed that the question was whether Nebraska recognized the need to maintain a bypass flow to Guide Rock in order for Kansas Bostwick to operate their system. He stated that Kansas Bostwick has not had a problem the last two years, but that what he believes was needed was a recognition of the need to maintain a bypass flow in order to operate an open canal system. What Nebraska has done in the past will not be sufficient to meet that recognition.

Commissioner Jess stated that he did not view this as a Compact issue, but as a state water rights regulation issue. He viewed the issue as whether Mr. Nelson must take every drop available at the head gate and spill none or whether Mr. Nelson may spill a couple hundred second feet and still expect Nebraska to regulate the flow upstream from him.

Don Blankenau interjected that for Nebraska, the issue is the intrastate administration of water, and not whether or not Kansas has a right to take the water but rather how Nebraska administers water relative to other right holders in Nebraska. He questioned whether Kansas Bostwick has fully explored whether or not Nebraska is complying with its own state law. Mr. Blankenau suggested that Kansas Bostwick discuss with Nebraska how best to get that issue before the Department.

Commissioner Simpson inquired whether it would be appropriate for the Bureau to look at the efficiency of the diversion structure and how it could be improved. Secondly he raised the issue of whether there are methods approved for administration if needed. He stated that he did not feel the subject matter of the resolution was a Compact issue.

Chairman Pope withdrew his motion. A second as to the withdrawal was obtained.

Chairman Pope noted that the Administration traditionally makes an assignment to the Engineering Committee. Chairman Pope moved that the Engineering Committee make the appropriate computations related to virgin water supplies and allocations, recognizing that there

are concerns with the computations. Commissioner Simpson seconded the motion.

Commissioner Jess moved to amend the motion and also direct that the Engineering Committee confer by telephone regarding the Corps of Engineers' Harlan County study and, if they conclude that the Compact should comment upon the study, provide their comments to the Administration. The Engineering Committee should then consult with the Administration for direction. Further, if the Engineering Committee needs to consult with the Legal Committee, they were authorized to do so. Chairman Pope called the question on the motion as amended. The motion passed.

Commissioner Simpson expressed a desire to have the Administration send a letter to the Bureau of Reclamation regarding the Bureau's conservation measures and guidelines and that the laws of western states should be considered in determining the final guidelines. He volunteered to draft and circulate a letter to the Administration and then moved to send a letter to the Bureau of Reclamation signed by the three Commissioners of the Compact. (Exhibit 8) Commissioner Jess seconded. There being no discussion, Chairman Pope called the question. The motion passed.

Commissioner Jess then raised the matter of the Bureau's assessment related to contract renewals after discussion. Chairman Pope suggested that the matter be noted as an area of concern and that the Administration anticipate the need to deal with it in the future.

ASSIGNMENT TO LEGAL COMMITTEE

Commissioner Simpson reminded the Administration of his suggestion that the Legal Committee review the scope of rule making authority that the Administration has relative to adjusting allocations of the Compact. Chairman Pope thought a memorandum on this point would be useful prior to the September meeting. Commissioner Simpson's suggestion was accepted as a motion and seconded by Chairman Pope. The motion passed.

SETTING OF 1995 ANNUAL COMPACT MEETING AND SPECIAL MEETINGS

Commissioner Jess suggested that a special January meeting not be selected until the September meeting.

The consensus of the Administration was to meet on June 8, 1995, in Nebraska, for the next Annual Meeting.

ADJOURNMENT

Commissioner Simpson moved to adjourn. Commissioner Jess seconded. Chairman Pope called the question. The motion passed.

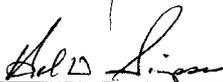
Upon Motion and a Second, the meeting was adjourned at 3:00 p.m., June 9, 1994.



David L. Pope
Kansas Commissioner (Chairman)



J. Michael Jess
Nebraska Commissioner



Hal D. Simpson
Colorado Commissioner

REPUBLICAN RIVER COMPACT MEETING

June 9, 1994

Lawrence, Kansas

1993 Operations -- As shown on the attached Table 1, the precipitation in the Republican River Basin varied from 117 percent of normal at Bonny Reservoir to 171 percent of normal at Harlan County Lake. Rainfall totals for July were at record high levels in many areas with significant flooding occurring in the lower basin. July precipitation at Lovewell Dam was 14.91 inches, Harlan County Lake 13.71 inches, Keith Sebelius Lake 11.02 inches, Harry Strunk Lake 10.11 inches, and Hugh Butler Lake 8.28 inches.

Inflows varied from 63 percent of the most probable forecast at Enders Reservoir to 532 percent of the most probable forecast at Lovewell Dam. Inflows into Harlan County Lake were 383,221 AF and Lovewell Reservoir 177,625 AF. Inflows into Keith Sebelius were 18,496 AF which is over 4 times the expected most probable amount.

Irrigation deliveries were very minimal with farm deliveries as follows:

| <u>District</u> | <u>Farm Delivery</u> |
|---------------------|----------------------|
| Frenchman Valley | 4.8 inches |
| H&RW | 4.5 inches |
| Frenchman-Cambridge | 5.5 inches |
| Almena | 0.0 inches |
| Bostwick in NE | 0.7 inches |
| Kansas-Bostwick | 1.0 inches |

Operation notes

Bonny Reservoir--normal operations.

Enders Reservoir--normal operations, larger carryover than normal because of rainfall and reduced irrigation demands.

Swanson, Hugh Butler and Harry Strunk Lakes--Irrigation releases were at record low levels. Carryover storage was at the highest level in many years. Harry Strunk Lake finished irrigation season in the flood pool. Releases were made all fall.

Keith Sebelius Lake-- Reservoir gained 13,071 AF during year.

Harlan County Lake--Last year's High was El. 1953.62 which is 7.62 feet into the flood pool. The lake finished the season in the flood pool and releases were made all fall. Highest inflow since 1967.

Lovewell Reservoir--Was in surcharge pool for several hours in July. The maximum elevation exceeded the previous record high which was reached in 1973. The reservoir finished the season in the flood pool and releases continued throughout the fall.

Current Operations

Table 2 shows a summary of data for the first 5 months.

Bonny Reservoir--Releases restricted to spillway gate. Replacing the outlet pipe to the river. Contractor is working on an additional toe drain. Working on establishing an Early Warning System (EWS).

Swanson Lake--Target elevation of 4 feet into flood pool. Painting large spillway gates. The road across the dam will be closed during the week.

Enders Reservoir--Possible additional toe drains. Highest end of May since 1984.

Hugh Butler Lake--First fill since 1983. Highest end of May since 1973. Target elevation was 1 foot into the flood pool. Some concerns of seepage if reservoir reaches high level. Corrective action studies are continuing.

Harry Strunk Lake--Target elevation of 2 foot into the flood pool.

Keith Sebelius Lake--Highest end of May since 1968.

Harlan County Lake--Since water supply was expected to be sufficient, no specific operation criteria was negotiated for 1994. Target elevation of 2 feet into the flood pool.

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

Other Items

Inspections

All of the dams will be inspected this year. Distribution systems will be inspected every 6 years. Inspections have been completed at Bonny, Enders and Trenton Dams. State personnel have been advised of the schedules and are invited to participate.

Emergency Action Plans

We are taking a more active role in working with local authorities to ensure that an evacuation plan is in place if dams should fail.

SCADA system

The present SCADA system is being replaced. Most of the hardware is operational, however several items need work in order to correct deficiencies. A 30-day availability test should start in the near future.

Water Availability

Full supplies are available for Frenchman-Cambridge and the Bostwick Irrigation Districts. H&RW and Frenchman Valley are expected to deliver 5.5 inches and Almena Irrigation District plans to limit irrigators to 3 inches.

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

| Reservoir | CALENDAR YEAR 1993 | | | | | | | | | | |
|----------------|--------------------|--------------------|------------------|------------------|--------------|-------------------------|--------------|-------------------------|--------------|--------------|--------------------------|
| | Total Precip. | Percent Of Average | Storage 12-31-92 | Storage 12-31-93 | Gain or Loss | Maximum Storage Content | Storage Date | Minimum Storage Content | Storage Date | Total Inflow | Percent Of Most Probable |
| | Inches | % | AF | AF | AF | AF | | AF | | AF | % |
| Box Butte | 23.94 | 152 | 10,768 | 13,686 | 2,918 | 20,691 | JUL 7 | 6,988 | SEP 13 | 22,593 | 123 |
| Merritt | 24.36 | 126 | 68,560 | 68,831 | 271 | 75,075 | JUL 3 | 54,842 | SEP 6 | 180,224 | 101 |
| Sherman | 34.16 | 155 | 50,820 | 51,057 | 237 | 70,230 | JUN 24 | 49,421 | FEB 27 | 62,565 | 38 |
| Calamus | 36.55 | 162 | 108,520 | 108,520 | 0 | 129,047 | APR 20 | 98,860 | OCT 1 | 282,007 | 118 |
| Davis Creek | 36.07 | 156 | 10,696 | 10,696 | 0 | 31,997 | JUL 23 | 9,058 | APR 21 | 37,892 | 168 |
| Bonny | 19.57 | 117 | 36,763 | 39,920 | 3,157 | 41,172 | JUN 6 | 36,782 | JAN 1 | 18,782 | 110 |
| Enders | 27.99 | 152 | 20,860 | 25,972 | 5,112 | 28,594 | JUN 24 | 20,231 | AUG 24 | 21,035 | 63 |
| Swanson | 25.53 | 130 | 73,958 | 104,692 | 30,734 | 113,648 | JUN 14 | 73,998 | JAN 1 | 73,760 | 113 |
| Hugh Butler | 30.55 | 156 | 25,935 | 37,113 | 11,178 | 37,113 | DEC 31 | 25,935 | JAN 1 | 24,297 | 127 |
| Harry Strunk | 30.78 | 151 | 34,669 | 34,507 | (162) | 46,536 | JUL 28 | 34,169 | APR 2 | 75,242 | 180 |
| Keith Sebelius | 37.47 | 157 | 9,879 | 22,950 | 13,071 | 22,950 | DEC 31 | 9,879 | JAN 1 | 18,496 | 411 |
| Harlan County | 38.14 | 171 | 177,172 | 316,802 | 139,630 | 427,217 | SEP 8 | 177,368 | JAN 1 | 383,221 | 271 |
| Lovewell | 45.08 | 163 | 42,860 | 37,880 | (4,980) | 92,354 | JUL 22 | 36,050 | OCT 20 | 177,625 | 532 |
| Kirwin | 38.05 | 165 | 20,238 | 129,660 | 109,422 | 132,040 | DEC 6 | 20,254 | JAN 1 | 129,287 | 829 |
| Webster | 39.94 | 173 | 9,452 | 96,733 | 87,281 | 130,122 | OCT 17 | 9,475 | JAN 1 | 143,663 | 1,217 |
| Waconda | 47.15 | 188 | 242,716 | 364,910 | 122,194 | 921,303 | JUL 29 | 239,701 | FEB 1 | 1,147,252 | 1,293 |

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

JANUARY - MAY 1994

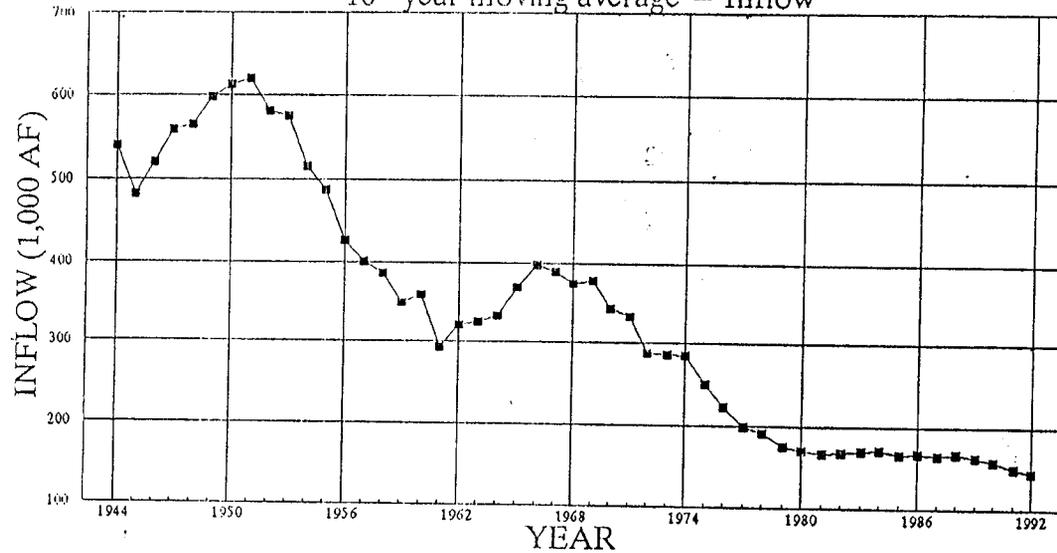
| Reservoir | Precip. Inches | Percent Of | Storage | Storage | Gain or | Inflow | Percent |
|----------------|-------------------|------------|----------|----------|----------|---------|----------|
| | | Average | 05-31-93 | 05-31-94 | Loss | | Of Most |
| | | % | AF | AF | AF | AF | Probable |
| | | | | | | | % |
| Box Butte | 2.71 | 44 | 19,107 | 20,884 | 1,777 | 8,958 | 89 |
| Merritt | 4.77 | 70 | 74,486 | 75,075 | 589 | 72,190 | 96 |
| Sherman | 4.80 | 60 | 67,930 | 68,788 | 858 | 27,630 | 100 |
| Calamus | 4.58 | 57 | 128,067 | 127,452 | (615) | 108,998 | 103 |
| Davis Creek | 3.63 | 44 | 23,712 | 10,522 | (13,190) | 3,600 | 14 |
| Bonny | 5.15 | 79 | 41,030 | 41,645 | 615 | 8,582 | 88 |
| Enders | 3.56 | 51 | 27,946 | 31,905 | 3,959 | 7,657 | 58 |
| Swanson | 4.22 | 57 | 111,576 | 130,703 | 19,127 | 36,798 | 86 |
| Hugh Butler | 3.68 | 53 | 33,304 | 38,860 | 5,556 | 7,613 | 86 |
| Harry Strunk | 5.11 | 69 | 37,911 | 39,439 | 1,528 | 22,817 | 121 |
| Keith Sebelius | 6.86 | 78 | 19,070 | 25,367 | 6,297 | 4,541 | 206 |
| Harlan County | 5.91 | 75 | 305,104 | 341,306 | 36,202 | 116,318 | 148 |
| Lovewell | 5.71 | 59 | 53,790 | 47,760 | (6,030) | 28,287 | 208 |
| Kirwin | 7.71 | 88 | 49,860 | 108,900 | 59,040 | 37,172 | 395 |
| Webster | 6.91 | 81 | 37,271 | 84,336 | 47,065 | 42,899 | 530 |
| Waconda | 6.22 | 69 | 275,993 | 244,978 | (31,015) | 286,293 | 688 |
| Cedar Bluff | 5.24 | 73 | 17,110 | 74,346 | 57,236 | 9,505 | 211 |

RESERVOIR INFLOWS

| <u>Dam</u> | <u>Predicted Pre-1970 Inflow</u> | <u>Ave. Inflow 1988-1992</u> | <u>Percent Depletion</u> |
|----------------|--------------------------------------|----------------------------------|------------------------------|
| Norton | 20,000 | 5,360 | 73 |
| Bonny | 27,000 | 17,420 | 35 |
| Swanson | 115,000 | 55,860 | 52 |
| Enders | 59,400 | 19,660 | 67 |
| Red Willow | 20,500 | 16,720 | 19 |
| Medicine Creek | 52,800 | 35,200 | 33 |
| Harlan County | <u>446,000</u> | <u>103,800</u> | <u>77</u> |
| Totals | 740,700 | 254,020 | 66 |

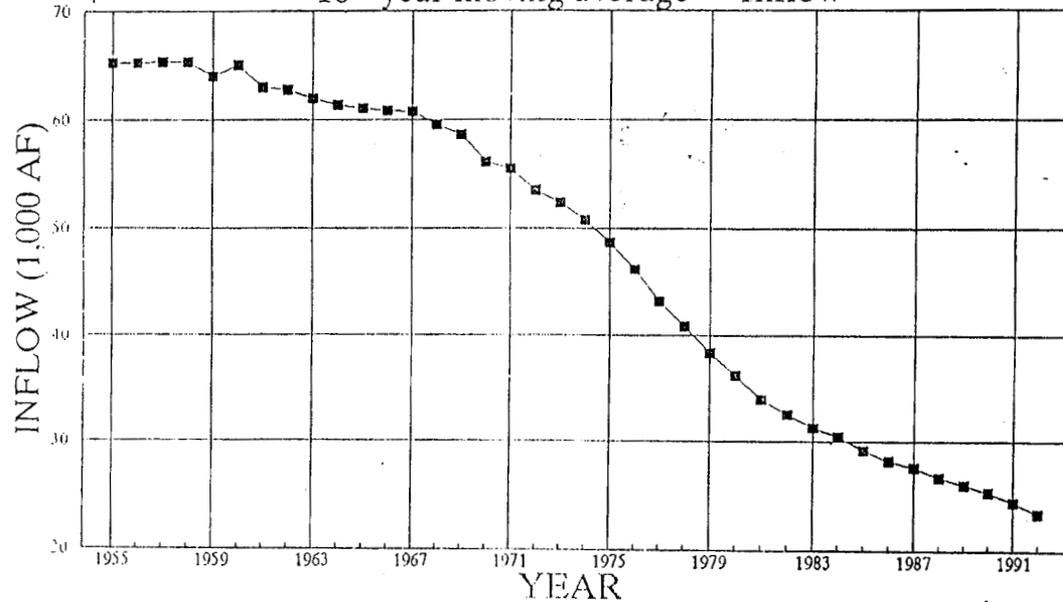
HARLAN COUNTY RESERVOIR

10-year moving average - Inflow



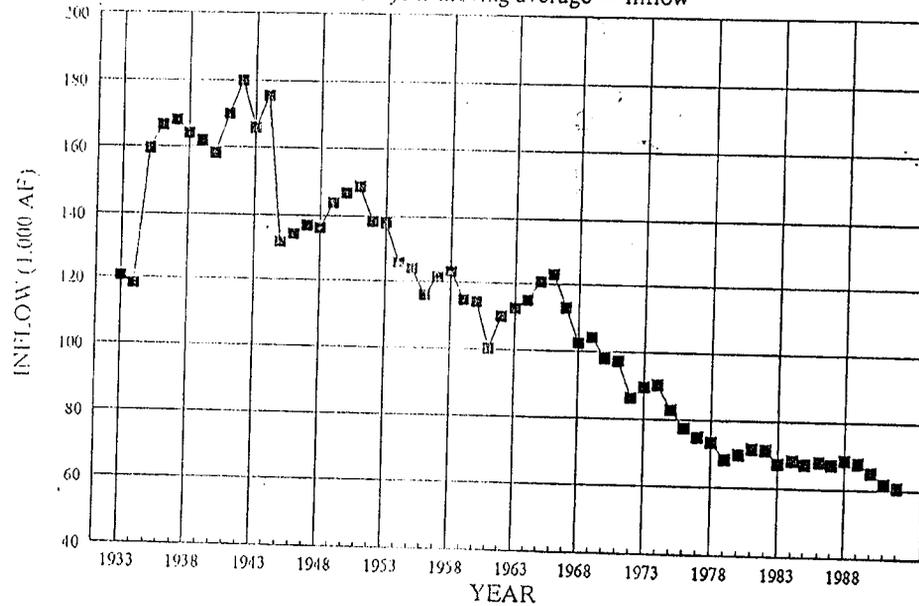
ENDERS RESERVOIR

10-year moving average - Inflow



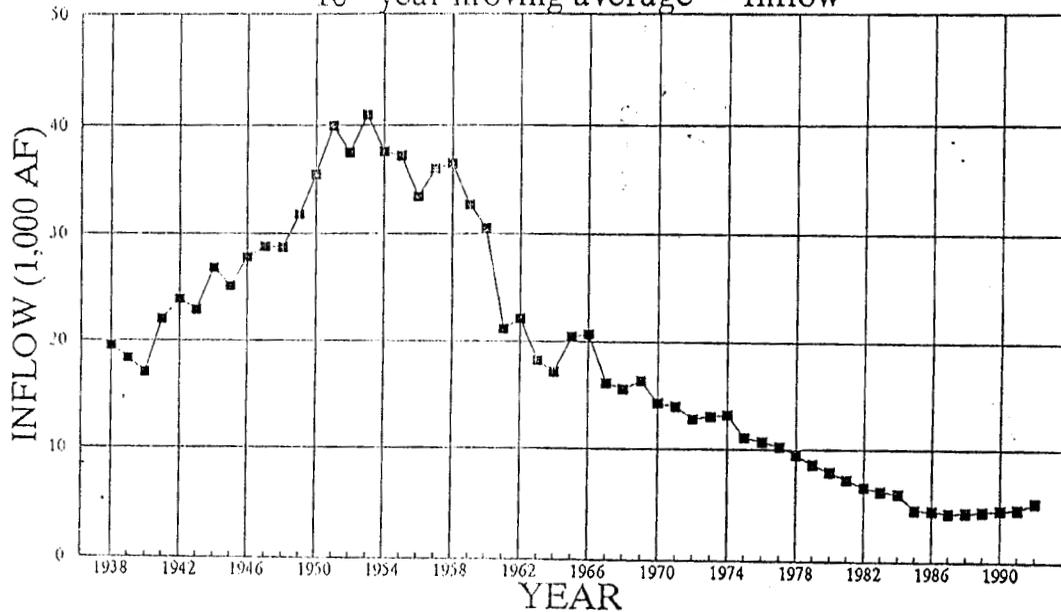
SWANSON LAKE

10-year moving average - Inflow



NORTON RESERVOIR

10-year moving average - Inflow



Report of the Engineering Committee
to the
Republican River Compact Administration
for the
1993 Water Year

The Engineering Committee corresponded, exchanged data, and met via phone conference on June 3, 1994 to complete the work assignments made by the Compact Administration at the June 10, 1993 annual meeting. Those assignments included the computation of the virgin water supply, consumptive use and adjusted allocations for the 1993 water year and a special assignment related to a compilation of studies regarding the Republican River basin. The phone conference included:

Ann Bleed, Nebraska Department of Water Resources
Alan Berryman, Colorado Division of Water Resources
David Barfield, Kansas Division of Water Resources
Jim Bagley, Kansas Division of Water Resources

It is noted that David Barfield, Division of Water Resources, Kansas State Board of Agriculture, was appointed as Kansas Engineering Committee Representative through correspondence of Commissioner Pope of October 25, 1993 to the other Commissioners of the Administration.

COMPUTATION OF VIRGIN WATER SUPPLIES AND CONSUMPTIVE USES

The Engineering Committee completed its normal assignment of computing virgin water supply, consumptive use and adjusted allocations for the 1993 water year. The computations were made using the computer program developed by the Engineering Committee which utilizes the revised formulae approved by the administration in 1990. Data provided by each state for the diversion of water in 1993 was reviewed. Reported groundwater use was included for only those wells producing from the alluvial aquifers.

The results of the computations are shown in Tables 1 and 2 attached to this report. Table 1 is a summary of the 1993 computed annual virgin water supply and original and adjusted allocations. Table 2 is a summary of the 1993 computed consumptive use.

According to the calculations resulting in Tables 1 and 2:

1. The computed annual virgin water for the basin for water year 1993 is 1,035,820 acre-feet. This is more than 521,000 acre-feet more than 1992 and nearly 557,000 acre-feet more than the original compact virgin water supply. It represents the largest virgin water supply estimated by the Compact Administration. The unusually large water supply was produced by significant runoff from the flood of 1993 which dominated much of the summer, particularly in the main stem sub-basin. Storage in the basin's reservoir increased substantially during the water year.

2. Adjusted allocations in the main stem were particularly large. Other sub-basins with adjusted allocations greater than the original Compact were Prairie Dog Creek, Sappa Creek, Medicine Creek and Red Willow Creek. All other sub-basins had adjusted allocations less than or equal to original compact allocations. The total adjusted allocation for Colorado was less than the original while the adjusted allocations for Kansas and Nebraska were larger than the original.
3. The computed consumptive use for the basin for water year 1993 was 156,170 acre-feet. This is almost 136,000 acre-feet less than in water year 1992 and the the lowest consumptive use calculated by the Compact Administration. Unusually low consumptive use was particularly evident in the main stem Republican due to the significant summer rains. For calculated consumptive use by subbasin, and for each state, see Table 2.

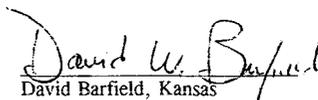
Special Assignment

The Engineering Committee carried out its assignment to compile a list of all technical reports (known to or easily discoverable by each state) which relate to the Republican River basin surface water hydrology, groundwater geology and hydrology, and interaction between groundwater and surface waters of the Republican River basin. The list of technical reports was to be compiled and provided to the Commissioners of the Republican River Compact Administration not later than November 1, 1993.

The final list comprising one-hundred thirty-nine (139) technical reports was mailed to the Commissioners on January 26, 1994. Colorado provided a list of thirty (30) reports; Nebraska provided a list of seventy (70) reports; and Kansas provided a list of eighty-six (86) reports.

Respectfully submitted:


Ann Salomon Bleed, Nebraska


David Barfield, Kansas

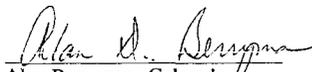

Alan Berryman, Colorado

Table 1

1993 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 1993 (Acre Feet) | | | | Comparison of Original Compact Allocations and 1993 Adjusted Allocation (Acre Feet) | | | | | | | |
|---|---|---------------|-------------|-------------------------|---|-----------------------|-------------|-------------------------|-------------|----------------------------|-------------|---------|
| | Ground Water | Surface Water | Total Basin | Colorado Compact Alloc. | Adj. Alloc. | Kansas Compact Alloc. | Adj. Alloc. | Nebraska Compact Alloc. | Adj. Alloc. | Total Basin Compact Alloc. | Adj. Alloc. | |
| Prairie Dog Cr. | 27600 | 6600 | 25370 | 31970 | | | 12600 | 14590 | 2100 | 2430 | 14700 | 17020 |
| Sappa Cr. | 21400 | 5720 | 18880 | 24600 | | | 8800 | 10120 | 8800 | 10120 | 17600 | 20240 |
| Beaver Cr. | 16500 | 7430 | 2090 | 9520 | 3300 | 1900 | 6400 | 3690 | 6700 | 3870 | 16400 | 9460 |
| Medicine Cr. | 50800 | 1990 | 69420 | 71410 | | | | | 4600 | 6470 | 4600 | 6470 |
| Red Willow Cr. | 21900 | 1920 | 24610 | 26530 | | | | | 4200 | 5090 | 4200 | 5090 |
| Driftwood Cr. | 7300 | 1310 | 2470 | 3780 | | | 500 | 260 | 1200 | 620 | 1700 | 880 |
| Frenchman Rv. | 98500 | 15580 | 70990 | 86570 | | | | | 52800 | 46410 | 52800 | 46410 |
| South Fork of the Republican Rv. | 57200 | 11340 | 27740 | 39080 | 25400 | 17350 | 23000 | 15710 | 800 | 550 | 49200 | 33610 |
| Rock Cr. | 11000 | 0 | 8020 | 8020 | | | | | 4400 | 3210 | 4400 | 3210 |
| Buffalo Cr. | 7890 | 950 | 3760 | 4710 | | | | | 2600 | 1550 | 2600 | 1550 |
| Arikaree Rv. | 19610 | 7050 | 8250 | 15300 | 15400 | 12010 | 1000 | 780 | 3300 | 2570 | 19700 | 15360 |
| N.F. Republican Rv. in Colorado | 44700 | 750 | 34680 | 35430 | 10000 | 7930 | | | 11000 | 8720 | 21000 | 16650 |
| N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska* | 94500 | 25230 | 653670 | 678900 | | | 138000 | 438530 | 132000 | 421340 | 270000 | 859870 |
| TOTALS | 478900 | 85870 | 949950 | 1035820 | 54100 | 39190 | 190300 | 483680 | 234500 | 512950 | 478900 | 1035820 |

Table 2

1993 Computed Consumptive Use within the
Republican River Basin (Acres 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. | | | | 6600 | 1020 | 7620 14590 * | 0 | 0 | 0 2430 * | 6600 | 1020 | 7620 17020 * |
| Seppa Cr. | | | | 2650 | 20 | 2670 10120 * | 3240 | 80 | 3320 10120 * | 5890 | 100 | 5990 20240 * |
| Beaver Cr. | 0 | 0 | 0 1900 * | 2590 | 20 | 2610 3690 * | 4840 | 20 | 4860 3870 * | 7430 | 40 | 7470 9460 * |
| Medicine Cr. | | | | | | | 2090 | 240 | 2330 6470 * | 2090 | 240 | 2330 6470 * |
| Red Willow Cr. | | | | | | | 1920 | 460 | 2380 5090 * | 1920 | 460 | 2380 5090 * |
| Driftwood Cr. | | | | 0 | 0 | 0 260 * | 1310 | 40 | 1350 620 * | 1310 | 40 | 1350 880 * |
| Frenchman Rv. | | | | | | | 15580 | 12170 | 27750 46410 * | 15580 | 12170 | 27750 46410 * |
| South Fork of the Republican Rv. | 6520 | 8150 | 14670 17350 * | 4600 | 80 | 4680 15710 * | 220 | 0 | 220 550 * | 11340 | 8230 | 19570 33610 * |
| Rock Cr. | | | | | | | | 30 | 30 3210 * | 0 | 30 | 30 3210 * |
| Buffalo Cr. | | | | | | | 950 | 380 | 1330 1550 * | 950 | 380 | 1330 1550 * |
| Arikaree Rv. | 6020 | 0 | 6020 12010 * | 400 | 0 | 400 780 * | 630 | 0 | 630 2570 * | 7050 | 0 | 7050 15360 * |
| N.F. Republican Rv. in Colorado | 750 | 2770 | 3520 7930 * | | | | | 0 | 3120 8720 * | 750 | 5890 | 6640 16650 * |
| N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska* | | | | 20 | 7990 | 8010 438530 * | 24940 | 33710 | 58650 421340 * | 24960 | 41700 | 66660 850870 * |
| TOTAL | 13280 | 10820 | 24210 | 16880 | 9130 | 25990 | 65720 | 50230 | 105970 | 86670 | 70300 | 156170 |

Briefing Paper
Meeting with the Nebraska Natural Resources Legislative Committee
November 12, 1993
Fairbury, Nebraska

I. Republican River Compact Overview

The Republican River Compact was negotiated during the early 1940's with participation by the States of Colorado, Kansas and Nebraska and a representative of the President of the United States. The Compact was formally signed on December 31, 1942 (Attachment A).

As stated in Article I, the purposes of the Compact are to: (1) provide for equitable division of such waters, (2) remove all causes of controversy, (3) promote interstate comity, (4) promote joint action by the States and the United States in the efficient use of water and the control of destructive floods, and (5) provide for the most efficient use of waters in the Republican River Basin.

To accomplish these purposes, the negotiators of the Compact determined the virgin water supply within the Basin. The Compact defines virgin water supply as "the water supply within the Basin undepleted by the activities of man." Based on the determined virgin water supply, the Compact made specific allocations to each of the 3 states in fourteen different sub-basins. Attachment B provides an overview of virgin water supply and allocations by State and sub-basin. The Compact includes provisions for adjustment to the virgin water supply and allocations based on future records and/or changing conditions.

The Compact has a number of provisions related to the federal government's actions in developing projects within the basin to the benefit of the various states. Major federal developments anticipated by the Compact were flood control projects (clearly shown as being needed following the 1935 flood) and irrigation development through the Bureau of Reclamation.

The Compact makes it the duty of the three states to administer the Compact through the State official in each state who is charged with administering water law. The Compact grants to those officials, in their capacity as Compact Commissioners, the power to adopt by unanimous vote, rules and regulations consistent with the provisions of the Compact. In the late 1950's, following the construction of several of the federal projects, the Compact Commissioners met to establish the administration of the Compact. The meetings resulted in the adoption of rules and regulations by which the Compact is administered on July 15, 1959. During the annual meetings of the early 1960's, methods were adopted to annually estimate virgin water supply and consumptive use of surface water and groundwater by each of the states by sub-basin.

II. Basin Development

A. Federal Project Development

Following ratification of the Compact, the Bureau of Reclamation and Corps of Engineers began basin planning. Many of the planned projects were constructed in the 1950's and continue to operate today. They provide a significant degree of flood control, water supply for irrigation and municipal use, and fish and wildlife benefits. A summary of the federal reservoirs is provided in Attachment C.

B. Other Basin Development

In addition to the federal projects, other technological changes have had significant impacts on the basin. These include the development of the groundwater for irrigation purposes and significantly improved methods of soil and water conservation.

1. Groundwater development

While groundwater development was discussed and envisioned by the Compact negotiators, the development of the center pivot and improved flood irrigation methods has spurred significant development in areas previously thought to be non-irrigable and which were not allocated significant water by the Compact. Water supply for this development has been largely from groundwater within the alluvium of the Republican River and its major tributaries and in upland areas overlying the Ogallala formation (particularly in the upper basin). Groundwater development has reduced the surface water supplies available from the Republican River and its tributaries.

Attachment D illustrates the dramatic increase in the number of wells in the Republican River Basin. It shows the number of wells within 12 miles of the Republican River and its major tributaries.

2. Soil and water conservation practices.

Since the 1930's there have been many changes and improvements in land use. These include terracing, crop residue management, and improved rangeland management. The changes have reduced soil losses and increased agricultural productivity through better use of precipitation. They have also resulted in significantly diminished runoff.

C. Conclusions

The impacts of Federal project development, groundwater development, and soil and water conservation practices noted above have been dramatic. An obvious decline of the inflows into Harlan County Reservoir is shown in Attachment E. Similarly, Attachment F exemplifies the effects in surface water availability to the State of Kansas in terms of lessening annual volumes flowing in the Republican River.

Some decline in water supply into Harlan County Reservoir was expected due to development envisioned and permitted by the Compact. The Compact, when its allocations are strictly followed, limits the extent of that reduction.

III. Kansas Water Law

A. General

On June 28, 1945, the State of Kansas fully embraced and enacted the Prior Appropriation Doctrine as its water allocation system (See K.S.A. 82a-701 et seq.). The basic concept of the doctrine is that those who were first in time, are first in right, and have the highest protection under the law. In other words, the earliest users have the best rights to the use of water. Users of water before the date of the Act (June 28, 1945) had the opportunity to obtain what are called "Vested Rights" to the use of water. Prior to the cut-off date of July 1, 1980, approximately 2,000 vested rights to the use of water were determined in Kansas. Subsequent to June 28, 1945, the only way one can obtain a surface water or groundwater right, except for domestic use and other small exceptions, is by applying for and obtaining a permit to appropriate water from the Chief Engineer, Division of Water Resources, Kansas State Board of Agriculture. Since 1945, over 40,000 applications have been applied for in Kansas.

There is a single priority system for groundwater and surface water rights in Kansas. Each of the over 30,000 active water rights in the State of Kansas has a separate priority in time.

Kansas clearly recognizes the interaction of groundwater and surface water, both physically and legally. The Chief Engineer has and does administer both surface water and groundwater rights against each other. Most frequently, this occurs where there is a stream-alluvial aquifer situation.

On January 1, 1978 it became mandatory in Kansas to have a water right or permit to appropriate water

for non-domestic water use. Failure to comply with the law is punishable as a separate class C misdemeanor for each day the violations continue after notice of the violation is given by the Chief Engineer.

In Kansas, new applications to appropriate either groundwater or surface water are evaluated on a variety of factors, but effective March 20, 1990, the Chief Engineer determined that the primary controlling factor in deciding whether to approve a new permit to appropriate water would be the "safe yield" of the proposed source of water supply. If the safe yield (the long-term sustainable water supply) is insufficient to meet existing water rights and the pending application, then the application will be denied.

B. Kansas Water Appropriation in the Republican Basin

As noted above, with the advent of the center pivot and local availability of groundwater, significant areas of irrigation development have occurred in the Republican basin, including Kansas. The groundwater development in Kansas that most directly impacts the Republican River has occurred in the northwest portion of the State within the alluviums of major tributaries of the Republican River and within the alluvium of the mainstem below the Kansas-Nebraska stateline. This has resulted in some groundwater level declines and reduced surface water availability in northwest Kansas streams. Extensive development has also occurred in the Ogallala Aquifer, primarily in Northwest Kansas Groundwater Management District No. 4 in the upper portion of the basin, and which is less hydrologically related to the streams.

The State of Kansas has responded to these declines by reviewing the basins, by taking administrative actions to close or limit new appropriations, and by developing conservation and management programs to deal with water shortages. A summary of the actions taken and the dates of those actions are shown below:

| <u>Source of Supply</u> | <u>Status</u> |
|--|--|
| 1. Beaver Creek, Little Beaver Creek & their Tributaries & Alluviums | Closed to new appropriations, June 27, 1984 |
| 2. Prairie Dog Creek, its Tributaries & Alluviums | Closed to new appropriations, June 27, 1984 |
| 3. Sappa Creek, Tributaries and Alluviums | Closed to new appropriations, October 8, 1984 |
| 4. Northwest Kansas GMD No. 4 - Ogallala Aquifer (0.5"/year) | Allowable appropriation originally set by regulation, May 1, 1983; appropriations limited to safe yield (recharge) effective February 16, 1990 |
| 5. Lower Republican River, its Tributaries & their Alluviums appropriations, June 15, 1993 | Closed to new groundwater appropriations July 1992 and new summer surface water |
| 6. Rest of Republican Basin | Appropriations limited to safe yield, March 20, 1990 |

C. Kansas Bostwick Irrigation District and Lower Republican River Water Use

The Compact allocates to Kansas 138,000 acre-feet/year plus all inflows into the basin below the stateline. In addition to the water provided to the Kansas-Bostwick Irrigation District for irrigating approximately 40,000 acres through the Courtland Canal, Kansas also makes extensive use of surface water and groundwater in the lower Republican River basin for other irrigation, municipal and industrial purposes.

D. Milford Water Reservation Right

The entire drainage area of Milford Reservoir is contained within the Republican River Basin. With a priority date of April 3, 1974, the Kansas Water Office has a water reservation right to store water in the 388,816 acre feet of conservation water supply storage space in Milford Reservoir. This storage space was originally projected to yield approximately 155,639 acre feet per year on a 2% chance basis. The yield estimate is currently under review.

The State currently has contracts for water stored in Milford Reservoir storage with: (1) Kansas Power & Light (Western Resources, Inc.) for its Jeffrey Energy Center and (2) the Kansas River Water Assurance District No. 1, which supplies municipal and industrial water to 14 entities, including the Cities of Junction City, Manhattan, Topeka, Lawrence and significant portions of the metropolitan Kansas City area.

The State of Kansas has a vital interest in the direct uses in the upper and lower portions of the basin and in securing and protecting the yield of this storage space which is dependent on waters received from the Republican River basin.

E. Republican River Minimum Desirable Streamflows

Effective April 12, 1984, minimum desirable streamflows were set by the Kansas Legislature on the Lower Republican River. At the Concordia gage, the monthly values for minimum desirable streamflows range from 65 c.f.s. in October to 150 c.f.s. in the summer. Those values range from 90 c.f.s. in October to 250 c.f.s. during the summer at the Clay Center gage. This water has been reserved for instream flow purposes. All appropriations after 1984 (both surface water and groundwater) are subject to restrictions during times when the flows at those gauging stations fall below the mandated minimum desirable streamflows. Once again, flow contributions from the Republican River Basin, or the lack thereof, determine whether these minimum desirable streamflows are achieved and the appropriators are subject to minimum desirable streamflows administration. Water passing these locations is available for storage at Milford Reservoir, direct use and instream flow benefits on further downstream along the Kansas River.

IV. Nebraska Water Law in General

Surface water and accompanying rights are allocated and administered by the Nebraska Department of Water Resources (NDWR). A permit must be obtained by anyone wishing to appropriate surface water.

The development and use of groundwater, however, is personal to the landowner and not subject to regulation by the NDWR except that NDWR is responsible for well registration, well abandonment, groundwater withdrawals from pits near streams, interstate groundwater transfers and ground water transfers for public water supply.

The Nebraska Legislature also created twenty-four Natural Resource Districts (NRDs) which are local units of government. NRDs are granted the authority to initiate the process of designating groundwater control areas. Then with NDWR approval, they are authorized to regulate groundwater development and use within those control areas, to regulate groundwater irrigation runoff and to stop the construction or use of illegal wells.

The Upper, Middle and Lower Republican River NRDs are located within the basin. The Upper Republican River NRD has experienced declines in its groundwater and has established a designated groundwater control area. To date, much of the work in the three NRDs has been related to groundwater quality.

Nebraska state law does not recognize the interrelationship between surface water and groundwater. The Nebraska Supreme Court has also declined to recognize the theory of conjunctive use which acknowledges the impact of groundwater and surface water upon each other and then requires each be managed with those impacts in mind. Instead, the Court has sent this problem back to the Legislature.

There have been unsuccessful attempts in the Nebraska Legislature to insert the theory of conjunctive use into its water law in both the 1992 and 1993 sessions. However, a task force appointed by Governor Nelson is continuing to study and work towards resolution of this issue.

V. Kansas' Concerns and Their Expression at the Compact Administration

A. Kansas' Concerns:

1. Nebraska's overuse of its original Compact allocation.

Attachment G provides an overview of trends in consumptive use as estimated by the Compact's engineering committee and compared to the Compact's original allocations. Attachment H compares Nebraska's consumptive use for all its basins versus its adjusted allocation as determined by the Compact's methodology. Nebraska has been consistently over its original and adjusted allocations in several sub-basins for a number of years. More recently Nebraska has been over its adjusted allocation in the basin as a whole. Despite this, it does not appear that the State of Nebraska is taking significant action to limit its appropriations in the basin.

As a result of Kansas' request for action on this issue, the State of Nebraska has recently begun to assert that groundwater diversions within the basin were not intended to be regulated by the Compact Administration. Nebraska contends that if groundwater is not considered in the computations, it remains within its Compact limitations. Groundwater consumptive use has been included in the estimates of consumptive use and the determination of annual virgin water supply since the Administration's conception and is based on unanimous approval by Kansas, Colorado and Nebraska. The State of Kansas has presented significant evidence that groundwater, to the extent that its consumptive use impacts virgin water supply, was intended to be included in the Compact allocations.

2. Trends in Increasing Consumptive Use

The State of Kansas is not only concerned with the current conditions in the basin but trends in consumptive use by the states. The State of Kansas is concerned that as Nebraska's consumptive use escalates, shortages to Kansas will increase in frequency and duration. While Attachment G shows that Kansas' use of its allocation is significantly below that allowed by the Compact, two additional factors must be noted. First, the Compact methods do not include legitimate uses of water by Kansas below the State line. Secondly, Kansas' use of water in the Republican River is limited by surface water availability (see below).

3. Current Lack of enforcement mechanism.

Kansas has long been concerned that, as the most downstream state, it could be dispossessed of its Compact allocation. The Compact's current procedure of estimating consumptive use by each state at the end of the calendar year allows no opportunity to preempt overuse. Because of this inability to prevent future damage from occurring, Kansas has requested since 1974 that the Compact Administration develop an administrative procedure that would deal with times of water shortage and overuse by a State.

B. Expressions of Kansas' Concerns to the Compact Administration

1. History and overview of Kansas' complaints to the Compact Administration.

Beginning in 1974, Kansas began to inquire as to how the Compact Administration would handle shortages of water supply on the River. This issue and other related issues were discussed at several Compact meetings between 1974 and 1979. A special meeting in 1979 identified major areas of contention, several which went unanswered until a special meeting in 1986. That special meeting was devoted to discussion of each State's perspective on the meaning of "virgin water supply", the methods of estimating consumptive use and adjusting allocations, and the potential for an administrative mechanism for allocating supplies of the basin. Ultimately, areas of disagreement precluded any meaningful action.

Since 1985, Kansas has consistently expressed the concerns noted in Section A above to the Republican River Compact Administration. Despite a number of discussions at the Compact Administration meetings and a significant amount of work by the Compact's Engineering Committee, Kansas' concerns remain unresolved.

After significant work of the engineering committee and the Compact Administration did not lead to any agreement regarding Kansas' concerns, Kansas was challenged to present a written proposal to the Administration. Kansas' proposal was presented at the July 1989 annual meeting and is summarized below.

Nebraska began to claim in 1990 that groundwater was not apportioned by the Compact. This led to an agreement that a review of Compact historic documents of this issue was appropriate.

2. Groundwater inclusion in Compact allocations.

Historical documents were exchanged between the three states prior to the June 1993 annual meeting. A brief on whether groundwater is a part of the virgin water supply was submitted by Kansas at the June 1993 annual meeting. Kansas, having examined historical documents in its possession prior to May 1993, clearly showed that groundwater was included in the original Compact negotiations. For example, in drafting the provisions of the Compact, the negotiators met with representatives of the Bureau of Reclamation and the Bureau of Agricultural Economics. C.T. Judah, a Bureau of Reclamation engineer, reported to the Commissioners that the areas to be served in Nebraska by the Bostwick Project had been computed and that these figures included everything irrigable or irrigated in the basin below the Harlan County Dam. Mr. Judah reported that 28,000 acres of the total 33,000 acres could be served by Bureau works involving gravity canals and 5,000 acres by pumping "from wells or streams".

The Bureau of Agricultural Economics conducted a detailed investigation which determined the underground water supply, potential lands for irrigation, limits of pumping life, costs per acre for irrigation using groundwater, and other factors. Harry Burleigh of the Bureau of Agriculture Economics requested that the Commissioners state whether the development of the underground water supplies he had outlined would "in the opinion of the Commission, exceed the allotments of water to each state which the Commission may have agreed upon." Mr. Burleigh added that "his department did not want to recommend developments of underground water supplied in excess of the allocations of water to each state."

The Commissioners concluded that the groundwater developments then being considered were within the interstate apportionment figures the Commissioners were considering. M.C. Hinderlider, the Colorado Commissioner, wrote to George Knapp of Kansas and Wardner G. Scott of Nebraska that:

"It is my understanding that Mr. Knapp will address a letter to Engineer Burleigh of the Bureau of Agricultural Economics, advising him that the Commissioners are in agreement that the estimated amount of ground water which may be developed in each of the tributary basins of the Republican River basin are within the allocations which the Commission has tentatively made."

As directed by the Commission, Mr. Knapp wrote to Mr. Burleigh confirming that the figures presented to the Commissioners by Mr. Burleigh were within the total estimated annual consumptive use of the virgin water supply envisioned by the Compact.

Although the brief by Kansas was submitted to the Compact Administration at the 1993 annual meeting, the resolution to accept its conclusions failed to overcome Nebraska's objections. As a result, the Legal Committee has been directed to look at all documents including historical and present, and determine whether agreement can be reached that groundwater was part of the virgin water supply as originally conceived by the negotiators. If agreement is not reached by March 1, 1994, each member of the Legal Committee may submit their own memorandum to the Compact Administration at the next Compact meeting.

C. 1991 as an Example of Damages to Kansas

1991 serves to illustrate the damages that Kansas faces and will face as a result of the trends noted above. As a result of significant reductions of inflow into Harlan County Dam, water supply availability was reduced. Deliveries to the Kansas-Bostwick Irrigation District in 1991 were only 6 inches, 9 inches less than the full delivery of 15 inches. Kansas' established minimum desirable streamflow targets for the Republican River were not met in late 1991 and early 1992 and resulted in junior wells along the lower Republican River being shut off for 6 months.

During 1991 reductions of inflow into Milford Reservoir occurred resulting in a protracted period where Milford stayed below the top of conservation pool with negative impacts to recreation and wildlife.

VI. Suggestions Toward Resolution

A. Provisions of 1989 Proposal by Kansas

As noted above, Kansas presented its proposal for improved administration of the Compact in 1989. This proposal included the following provisions: use of the original Compact allocations (as opposed to annually adjusted allocations) until information is available to show long-term average annual virgin water supply has varied by more than 10% in any sub-basin; continued annual estimation of consumptive use for each sub-basin according to established methods; requiring each state within one year to halt further development of both groundwater and surface water in those sub-basins that have exceeded their original allocations in any of the prior three years; requiring each state within five years to come into compliance with its sub-basin allocations; and requiring each state to report to the Compact Administration at each annual meeting concerning actions it has taken to bring each sub-basin into compliance.

This proposal was defeated with Kansas and Colorado agreeing with its passage and Nebraska voting no.

B. Alternative Mechanisms for Resolution of Compact Problems.

The Republican River Compact, as discussed above, allows for the Compact members to pass rules and regulations governing the Compact and the Compact's enforcement. To date, Nebraska has rejected the proposals offered by Kansas and backed by Colorado. Although Kansas has requested that Nebraska bring alternative proposals to the table, Nebraska has declined to do so.

If the administrative process fails, Kansas' primary alternative is to file an action in the Supreme Court of the United States. The U.S. Supreme Court has sole jurisdiction over conflicts between states and would be the alternative Kansas must turn to when, and if, all reasonable efforts through the administrative process have failed to remedy the damage caused by Nebraska's violations of the Compact's terms.

VIII. Conclusion

Kansas has taken aggressive action, under its state law, to stay in compliance with the terms of the Republican River Compact. Virtually the entire Republican River Basin in Kansas, both upstream and downstream of the Kansas-Nebraska stateline, has been closed to new groundwater appropriations for some time and the small areas that remain open are managed on a safe yield basis. Most of the upstream tributaries to the Republican River are closed to new surface water appropriations and on the downstream portion only surplus flood flows and non-summer flows may be appropriated.

Kansas believes that the physical reality, as well as a review of historic documents, supports its assertion that both surface water and groundwater are allocated pursuant to the terms of the Republican River Compact.

Colorado is in compliance with the Compact. Kansas has always been under its total allocations and is actively dealing with the one or two sub-basins where overuse has occurred in some years. It is imperative that Nebraska take aggressive action to manage the use of both surface water and groundwater in the Republican River Basin in order to stay in compliance with the Compact. The Compact itself gives Nebraska that authority. In addition, the U.S. Supreme Court has held that states are bound by amounts fixed by decree and that each state may not allow withdrawals greater than those amounts.

Kansas continues to be concerned with Nebraska's overuse of its Compact allocation, a subject Kansas has raised often with the Compact Administration. Kansas' concerns must be resolved and it would prefer to resolve them within the Compact Administration.

Attachment A - Republican River Compact

82a-518

Scott, as commissioner for the state of Nebraska, and also signed by Glenn L. Parker, as representative of the United States, which said compact is as follows:

REPUBLICAN RIVER COMPACT

The States of Colorado, Kansas, and Nebraska, parties signatory to this compact (hereinafter referred to as Colorado, Kansas, and Nebraska, respectively, or individually as a State, or collectively as the States), having resolved to conclude a compact with respect to the waters of the Republican River Basin, and being duly authorized therefor by the Act of the Congress of the United States of America, approved August 4, 1942, (Public No. 696, 77th Congress, Chapter 545, 2nd Session) and pursuant to Acts of their respective Legislatures have, through their respective Governors, appointed as their Commissioners:

M. C. HINDERLIDER, for Colorado

GEORGE S. KNAPP, for Kansas

WARDNER G. SCOTT, for Nebraska

who, after negotiations participated in by Glenn L. Parker, appointed by the President as the Representative of the United States of America, have agreed upon the following articles:

ARTICLE I

The major purposes of this compact are to provide for the most efficient use of the waters of the Republican River Basin (hereinafter referred to as the "Basin") for multiple purposes; to provide for an equitable division of such waters; to remove all causes, present and future, which might lead to controversies; to promote interstate comity; to recognize that the most efficient utilization of the waters within the Basin is for beneficial consumptive use; and to promote joint action by the States and the United States in the efficient use of water and the control of destructive floods.

The physical and other conditions peculiar to the Basin constitute the basis for this compact, and none of the States hereby, nor the Congress of the United States by its consent, concedes that this compact establishes any general principle or precedent with respect to any other interstate stream.

ARTICLE II

The Basin is all the area in Colorado, Kansas, and Nebraska, which is naturally drained by the Republican River, and its tributaries, to its junction with the Smoky Hill River in Kansas. The main stem of the Republican River extends from the junction near Haigler, Nebraska, of its North Fork and the Arikaree River, to its junction with Smoky Hill River near Junction City, Kansas. Frenchman Creek (River) in Nebraska is a continuation of Frenchman Creek (River) in Colorado. Red Willow Creek in Colorado is not identical with the stream having the same name in Nebraska. A map of the Basin approved by the Commissioners is attached and made a part hereof.

The term "Acre-foot," as herein used, is the quantity of water required to cover an acre to the depth of one foot and is equivalent to forty-three thousand, five hundred sixty (43,560) cubic feet.

The term "Virgin Water Supply," as herein used, is defined to be the water supply within the Basin undepicted by the activities of man.

The term "Beneficial Consumptive Use" is herein defined to be that use by which the water supply of the

Basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated area.

Beneficial consumptive use is the basis and principle upon which the allocations of water hereinafter made are predicated.

ARTICLE III

The specific allocations in acre-feet hereinafter made to each State are derived from the computed average annual virgin water supply originating in the following designated drainage basins, or parts thereof, in the amounts shown:

North Fork of the Republican River drainage basin in

Colorado, 44,700 acre-feet;

Arikaree River drainage basin, 19,610 acre-feet;

Buffalo Creek drainage basin, 7,890 acre-feet;

Rock Creek drainage basin, 11,000 acre-feet;

South Fork of the Republican River drainage basin,

57,200 acre-feet;

Frenchman Creek (River) drainage basin in Nebraska,

98,500 acre-feet;

Blackwood Creek drainage basin, 6,800 acre-feet;

Driftwood Creek drainage basin, 7,300 acre-feet;

Red Willow Creek drainage basin in Nebraska, 21,900

acre-feet;

Medicine Creek drainage basin, 50,800 acre-feet;

Beaver Creek drainage basin, 16,500 acre-feet;

Sappa Creek drainage basin, 21,400 acre-feet;

Prairie Dog Creek drainage basin, 27,600 acre-feet;

The North Fork of the Republican River in Nebraska

and the main stem of the Republican River between

the junction of the North Fork and Arikaree River

and the lowest crossing of the river at the Nebraska-

Kansas state line and the small tributaries thereof,

87,700 acre-feet.

Should the future computed virgin water supply of any source vary more than the (10) percent from the virgin water supply as hereinabove set forth, 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.

ARTICLE IV

There is hereby allocated for beneficial consumptive use in Colorado, annually, a total of fifty-four thousand, one hundred (54,100) acre-feet of water. This total is to be derived from the sources and in the amounts hereinafter specified and is subject to such quantities being physically available from those sources:

North Fork of the Republican River drainage basin,

10,000 acre-feet;

Arikaree River drainage basin, 15,400 acre-feet;

South Fork of the Republican River drainage basin,

25,400 acre-feet;

Beaver Creek drainage basin, 3,300 acre-feet; and

In addition, for beneficial consumptive use in Colorado,

annually, the entire water supply of the Frenchman

Creek (River) drainage basin in Colorado and of the

Red Willow Creek drainage basin in Colorado.

There is hereby allocated for beneficial consumptive use in Kansas, annually, a total of one hundred ninety thousand, three hundred (190,300) acre-feet of water. This total is to be derived from the sources and in the amounts hereinafter specified and is subject to such quantities being physically available from those sources:

Arikaree River drainage basin, 1,000 acre-feet;
South Fork of the Republican River drainage basin,
23,000 acre-feet;

Driftwood Creek drainage basin, 500 acre-feet;
Beaver Creek drainage basin, 6,400 acre-feet;
Sappa Creek drainage basin, 8,800 acre-feet;
Prairie Dog Creek drainage basin, 13,600 acre-feet;
From the main stem of the Republican River upstream
from the lowest crossing of the river at the Ne-
braska-Kansas state line and from water supplies of
upstream basins otherwise unallocated herein,
138,000 acre-feet provided, that Kansas shall have
the right to divert all or any portion thereof at or
near Guide Rock, Nebraska; and
In addition there is hereby allocated for beneficial con-
sumptive use in Kansas, annually, the entire water
supply originating in the Basin downstream from
the lowest crossing of the river at the Nebraska-
Kansas state line.

There is hereby allocated for beneficial consumptive use
in Nebraska, annually, a total of two hundred thirty-four
thousand, five hundred (234,500) acre-feet of water. This
total is to be derived from the sources and in the amounts
hereinafter specified and is subject to such quantities being
physically available from those sources:

North Fork of the Republican River drainage basin in
Colorado, 11,000 acre-feet;
Frenchman Creek (River) drainage basin in Nebraska,
52,800 acre-feet;
Rock Creek drainage basin, 4,400 acre-feet;
Arikaree River drainage basin, 3,300 acre-feet;
Buffalo Creek drainage basin, 2,600 acre-feet;
South Fork of the Republican River drainage basin,
800 acre-feet;
Driftwood Creek drainage basin, 1,200 acre-feet;
Red Willow Creek drainage basin in Nebraska, 4,200
acre-feet;

Medicine Creek drainage basin, 4,600 acre-feet;
Beaver Creek drainage basin, 6,700 acre-feet;
Sappa Creek drainage basin, 8,800 acre-feet;
Prairie Dog Creek drainage basin, 2,100 acre-feet;
From the North Fork of the Republican River in Ne-
braska, the main stem of the Republican River be-
tween the junction of the North Fork and Arikaree
River and the lowest crossing of the river at the
Nebraska-Kansas state line, from the small tribu-
taries thereof, and from water supplies of up-stream
basins otherwise unallocated herein, 132,000 acre-
feet. The use of the waters hereinbefore allocated
shall be subject to the laws of the State, for use in
which the allocations are made.

ARTICLE V

The judgment and all provisions thereof in the case of
Adelbert A. Weiland, as State Engineer of Colorado, et
al., v. The Pioneer Irrigation Company, decided June 5,
1922, and reported in 259 U. S. 498, affecting the Pioneer
Irrigation ditch or canal, are hereby recognized as binding
upon the States; and Colorado, through its duly authorized
officials, shall have the perpetual and exclusive rights to
control and regulate diversions of water at all times by
said canal in conformity with said judgment.

The water heretofore adjudicated to said Pioneer Canal
by the District Court of Colorado, in the amount of 875
(50) cubic feet per second of time is included in and is a

part of the total amounts of water hereinbefore allocated
for beneficial consumptive use in Colorado and Nebraska.

ARTICLE VI

The right of any person, entity, or lower State to con-
struct, or participate in the future construction and use of
any storage reservoir or diversion works in an upper State
for the purpose of regulating water herein allocated for
beneficial consumptive use in such lower State, shall never
be denied by an upper State; provided, that such right is
subject to the rights of the upper State.

ARTICLE VII

Any person, entity, or lower State shall have the right
to acquire necessary property rights in an upper State by
purchase, or through the exercise of the power of eminent
domain, for the construction, operation and maintenance
of storage reservoirs, and of appurtenant works, canals and
conduits, required for the enjoyment of the privileges
granted by Article VI; provided, however, that the gran-
tees of such rights shall pay to the political subdivisions
of the State in which such works are located, each and
every year during which such rights are enjoyed for such
purposes, a sum of money equivalent to the average annual
amount of taxes assessed against the lands and improve-
ments during the ten years preceding the use of such
lands, in reimbursement for the loss of taxes to said po-
litical subdivisions of the State.

ARTICLE VIII

Should any facility be constructed in an upper State
under the provisions of Article VI, such construction and
the operation of such facility shall be subject to the laws
of such upper State.

Any repairs to or replacement of such facility shall also
be made in accordance with the laws of such upper State.

ARTICLE IX

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
administration of the provisions of this compact. Such of-
ficials may, by unanimous action, adopt rules and regu-
lations consistent with the provisions of this compact.

The United States Geological Survey, or whatever fed-
eral agency may succeed to the functions and duties of
that agency, insofar as this compact is concerned, shall
collaborate with the officials of the States charged with
the administration of this compact in the execution of the
duty of such officials in the collection, correlation, and pub-
lication of water facts necessary for the proper adminis-
tration of this compact.

ARTICLE X

Nothing in this compact shall be deemed:

(a) To impair or affect any rights, powers or jurisdiction
of the United States, or those acting by or under its au-
thority, in, over, and to the waters of the Basin; nor to
impair or affect the capacity of the United States, or those
acting by or under its authority, to acquire rights in and
to the use of waters of the Basin;

(b) To subject any property of the United States, its
agencies or instrumentalities, to taxation by any State, or
subdivision thereof, nor to create an obligation on the part
of the United States, its agencies or instrumentalities, by
reason of the acquisition, construction, or operation of any

property or works of whatsoever kind, to make any payments to any State or political subdivision thereof, state agency, municipality, or entity whatsoever in reimbursement for the loss of taxes:

(c) To subject any property of the United States, its agencies or instrumentalities, to the laws of any State to any extent other than the extent these laws would apply without regard to this compact.

ARTICLE XI

This compact shall become operative when ratified by the Legislature of each of the States, and when consented to by the Congress of the United States by legislation providing, among other things that:

(a) Any beneficial consumptive uses by the United States, or those acting by or under its authority, within a state, of the waters allocated by this compact, shall be made within the allocations hereinabove made for use in that State and shall be taken into account in determining the extent of use within that State.

(b) The United States, or those acting by or under its authority, in the exercise of rights or powers arising from whatever jurisdiction the United States has in, over, and to the waters of the Basin shall recognize, to the extent consistent with the best utilization of the waters for multiple purposes, that beneficial consumptive uses of the waters within the Basin is of paramount importance to the development of the Basin; and no exercise of such power or right thereby that would interfere with the full beneficial consumptive use of the waters within the Basin shall be made except upon a determination, giving due consideration to the objectives of this compact and after consultation with all interested federal agencies and the state officials charged with the administration of this compact, that such exercise is in the interest of the best utilization of such waters for multiple purposes.

(c) The United States, or those acting by or under its authority, will recognize the established use, for domestic and irrigation purposes of the waters allocated by this compact which may be impaired by the exercise of federal jurisdiction in, over, and to such waters; provided, that such use is being exercised beneficially, is valid under the laws of the appropriate State and in conformity with this compact at the time of the impairment thereof, and was validly initiated under state law prior to the initiation or authorization of the federal program or project which causes such impairment.

IN WITNESS WHEREOF, the Commissioners have signed this compact in quadruplicate original, one of which shall be deposited in the archives of the Department of State of the United States of America and shall be deemed the authoritative original, and of which a duly certified copy shall be forwarded to the Governor of each of the States.

Done in the city of Lincoln, in the State of Nebraska, on the 31st day of December, in the year of our Lord, one thousand nine hundred forty-two.

M. C. HENDERLIDER
Commissioner for Colorado
GEORGE S. KNAPP
Commissioner for Kansas
WARDNER C. SCOTT
Commissioner for Nebraska

I have participated in the negotiations leading to this proposed compact and propose to report to the Congress of the United States favorably thereon.

GLENN L. PARKER
Representative of the United States

Attachment B

Overview of Compact Allocation

Table B-1 provides an overview of Republican River Compact allocations to each state by sub-basin. The basin's total virgin water supply was estimated by the Compact negotiators to be 478,900 acre-feet (AF) and this entire amount was allocated to the various states. For each sub-basin a portion of the virgin water supply was assigned to be used in the sub-basin and a portion was allocated downstream to the Republican River mainstem below Harlan County Dam. The table also shows the percentages of the total virgin water supply sourced in each sub-basin, the percentage of the virgin water supply that is allocated to be used in its sub-basin of origin as well as the portion allocated to the mainstem.

There is significant variance in the percent of a sub-basin virgin water supply that is allocated downstream. This percentage varies from 90.9% for Medicine Creek to 0% for the Arikaree River and Beaver Creek. A total of 175,500 AF or 37% of the virgin water supply is allocated from the upstream basins to the mainstem.

72% of Kansas total allocation is to be used in the reach below Harlan County Dam. Consumptive use in excess of Compact allocations in basins upstream from Harlan County will directly impact Kansas' ability to use the majority of its Compact allocations.

The sub-basins projected to supply the greatest quantity of water to the mainstem are Medicine Creek with 46,200 AF and Frenchman Creek with 45,700 AF. Kansas' upstream sub-basins of Prairie Dog Creek, Sappa Creek and Beaver Creek were envisioned to contribute 12,900 AF, 38,000 AF, and 100 AF, respectively, to the reach below Harlan County Dam.

Table B-1
Summary of Virgin Water Supply and Sub-basin allocations

| Sub-basin | ORIGINAL SUPPLY | % OF TOTAL | IN-BASIN ALLOCATIONS TO EACH STATE | | | | % ALLOCATED TO SUB-BASIN | RF ALLOCATED TO MAIN STEM |
|------------------------|--------------------|---------------|---------------------------------------|---------------|---------------|---------------|-----------------------------|------------------------------|
| | | | CO | KS | NB | Total | | |
| Prairie Dog | 27600 | 5.8 | | 12600 | 2100 | 14700 | 53.3 | 12900 |
| Sappa Creek | 21400 | 4.5 | | 8600 | 8800 | 17600 | 82.2 | 3800 |
| Beaver Creek | 16500 | 3.4 | 3300 | 6400 | 6700 | 16400 | 99.4 | 100 |
| Medicine Creek | 50800 | 10.6 | | | 4600 | 4600 | 9.1 | 46200 |
| Red Willow Creek | 21900 | 4.6 | | | 4200 | 4200 | 19.2 | 17700 |
| Driftwood Creek | 7300 | 1.5 | | 500 | 1200 | 1700 | 23.3 | 5600 |
| Frenchman River | 98500 | 20.6 | | | 52800 | 52800 | 53.6 | 45700 |
| S. F. Republican River | 57200 | 11.9 | 25400 | 23000 | 800 | 49200 | 86.0 | 8000 |
| Rock Creek | 11000 | 2.3 | | | 4400 | 4400 | 40.0 | 6600 |
| Buffalo Creek | 7890 | 1.6 | | | 2600 | 2600 | 33.0 | 5290 |
| Arikaree River | 19610 | 4.1 | 15400 | 1000 | 3300 | 19700 | 100.5 | 0 |
| N.F. Republican (CO) | 44700 | 9.3 | 10000 | | 11000 | 21000 | 47.0 | 23700 |
| N.F. (NB) & Main Stem | 94500 | 19.7 | | 138000 | 132000 | 270000 | 285.7 | |
| TOTALS | 418900 | 100 | 51100 | 190300 | 224500 | 478500 | | 175500 |

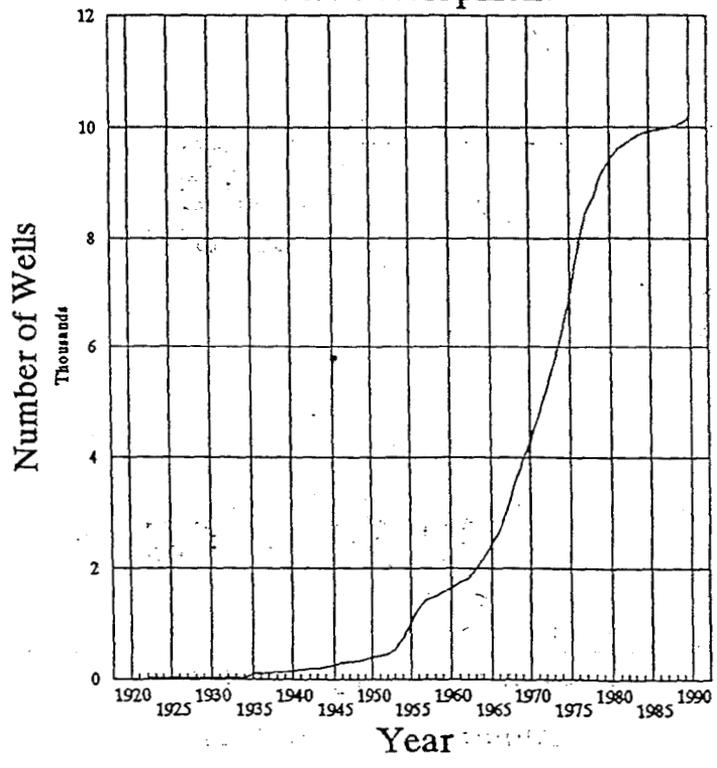
Republican River major reservoirs

| Dam name | Reservoir name | Tributary | Contributing drainage area | Conservation storage (AF) | % of total | Date storage began |
|----------------|----------------|---------------------|----------------------------|---------------------------|------------|--------------------|
| Bonny | Bonny | S.F. Republican | 1,820 | 41,340 | 6.2 | 7/6/50 |
| Trenlon | Swanson | Mainstem Republican | 3,940 | 112,214 | 16.9 | 5/4/53 |
| Enders | Enders | Frenchman Creek | 790 | 44,480 | 6.7 | 10/23/50 |
| Red Willow | Hugh Butler | Red Willow | 310 | 37,776 | 5.7 | 9/5/61 |
| Medicine Creek | Harry Strunk | Medicine Creek | 640 | 35,705 | 5.4 | 8/8/49 |
| Norton | Keith Sebelius | Prairie Dog Creek | 683 | 35,935 | 5.4 | 10/6/64 |
| Harlan County | Harlan County | Mainstem Republican | 13,530 | 315,090 | 47.4 | 11/14/52 |
| Lovewell | Lovewell | White Rock Creek | 345 | 41,690 | 6.3 | 1957 |
| Total | | | | 664,230 | 100 | |

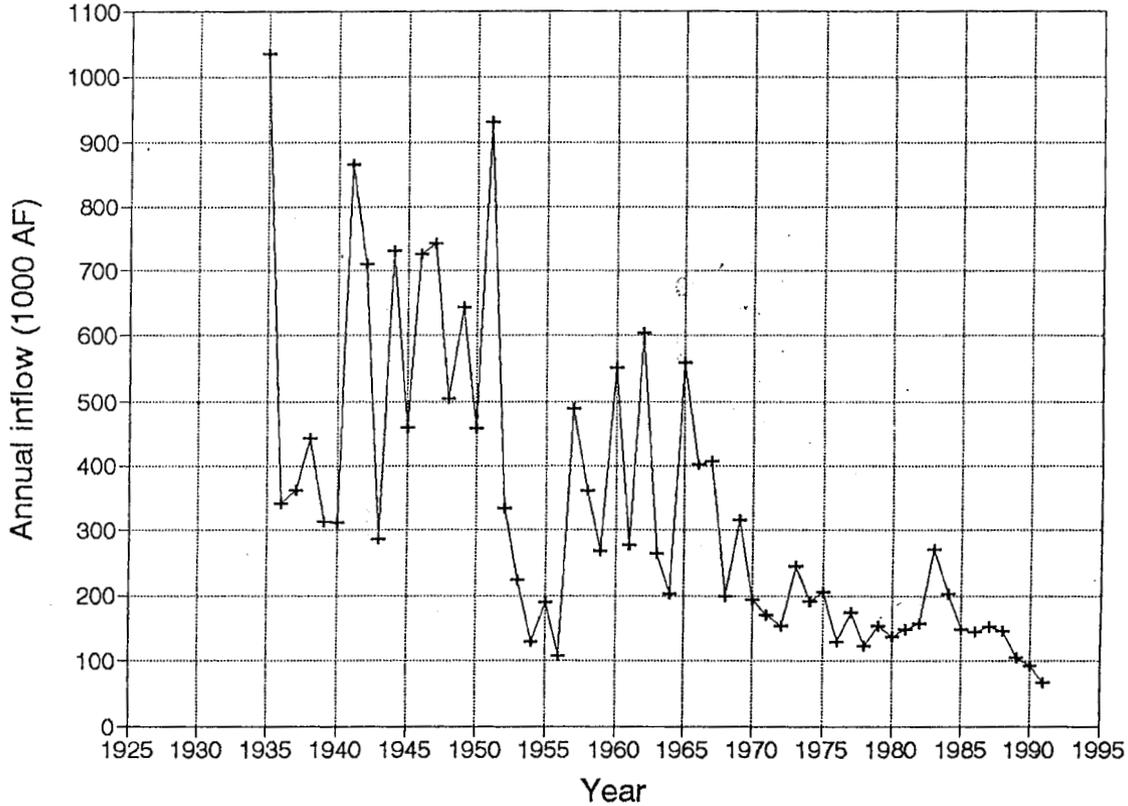
Attachment C - Summary of Federal Projects in the Republican Basin

Attachment D - Well Development Above Harlan County Dam

Harlan County Reservoir Basin Well Development

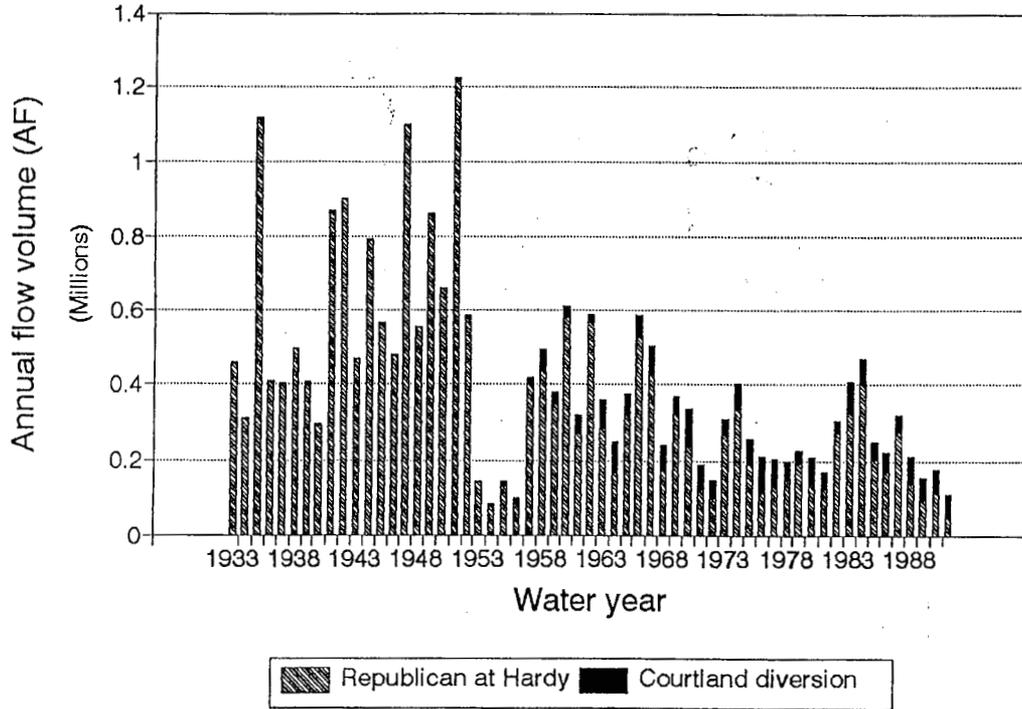


Harlan County Reservoir Inflows



Attachment E - Harlan County Inflows

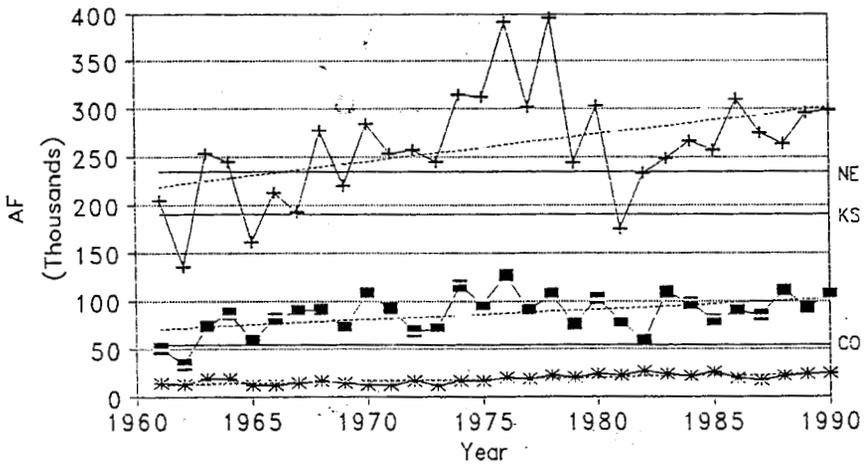
Republican River flows to Kansas Annual volumes



Attachment F - Republican River Flows to Kansas

Attachment G - Comparison of Compact Allocations and State's Use

Republican River, all sub-basins
Comparison of States use & allocations



KS consumptive use
 NE consumptive use
 CO consumptive use
 Allocations
 CU trend lines

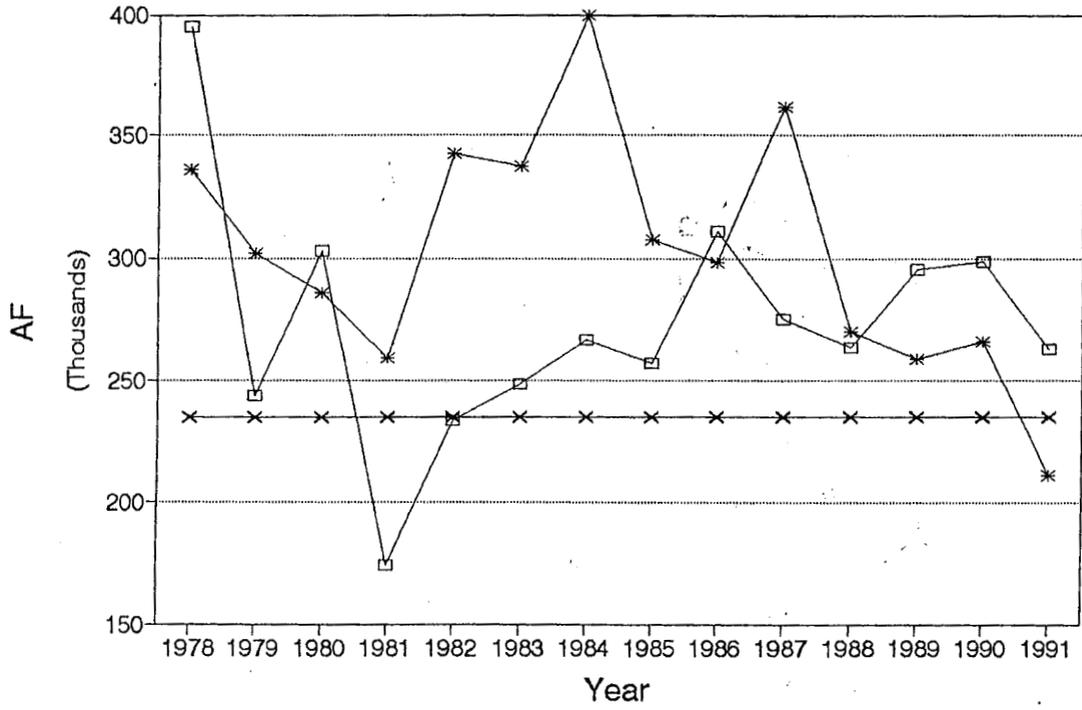
Notes:

Prepared by the KS Division of Water Resources, June 1995

All numbers from Compact records except trend lines

Kansas CU does not include those diverted below state line

Total for all Basins Nebraska Consumptive Use vs Adj Alloc.



*— Adj Allocation □— Total CU —X— Orig. Compact alloc

Attachment H - Nebraska's Consumptive Use Versus Adjusted Allocation

Kansas Presentation to the Nebraska Water Users Association
March 14, 1994
Franklin, Nebraska

- I. Republican River Compact Overview
- II. Basin Development
 - A. Federal Project Development
 - B. Other Basin Developments
 - 1. Groundwater Development
 - 2. Soil and water conservation
 - C. Conclusions
- III. Kansas Water Law
 - A. General
 - B. Kansas Water Appropriation in the Republican Basin
 - C. Kansas Bostwick Irrigation District and Lower Republican River Water Use
 - D. Milford Water Reservation Right
 - E. Republican River Minimum Desirable Streamflows
- IV. Kansas Concerns and their Expression to the Compact Administration
 - A. Kansas concerns:
 - 1. Nebraska's overuse of its allocation
 - 2. Trends in increasing consumptive use.
 - 3. Current Lack of enforcement mechanisms in the Compact's Administration.
 - B. Expressions of Kansas Concerns to the Compact Administration.
 - 1. History and overview of Kansas complaints to the Compact Administration
 - 2. Groundwater inclusion in Compact allocation.
 - C. 1991 as an Example of Damages to Kansas.
- V. Toward Resolution
 - A. Kansas 1989 Proposal
 - B. Alternative Mechanisms for Resolution of Compact Problems
- VI. Conclusions

Attachments:

- Attachment A - Republican River Compact
- Attachment B - A Summary of Compact Allocations
- Attachment C - Summary of Federal Projects in the Republican Basin
- Attachment D - Well Development Above Harlan County Dam
- Attachment E - Harlan County Inflows
- Attachment F - Republican River Flows to Kansas
- Attachment G - Comparison of Compact Allocations and State's Use
- Attachment H - Nebraska's Consumptive Use versus Adjusted Allocation
- Attachment I - 1991 Computed Consumptive Use within the Republican River Basin

Kansas Presentation to the Nebraska Water Users Association
March 14, 1994
Franklin, Nebraska

I. Republican River Compact Overview

The Republican River Compact was negotiated during the early 1940's with participation by the States of Colorado, Kansas and Nebraska and a representative of the President of the United States. The Compact was formally signed on December 31, 1942. Subsequently, it was adopted into state law by each of the three states and into federal law by the Congress and the President. (See Attachment A.)

Article I states the purposes of the Compact are to: (1) provide for equitable division of such waters, (2) remove all causes of controversy, (3) promote interstate comity, (4) promote joint action by the States and the United States in the efficient use of water and the control of destructive floods, and (5) provide for the most efficient use of waters in the Republican River Basin.

To accomplish these purposes, the negotiators of the Compact determined the virgin water supply within the Basin. The Compact defines virgin water supply as "the water supply within the Basin undepleted by the activities of man." Based on the determined virgin water supply, the Compact made specific allocations to each of the 3 states in fourteen different sub-basins. Attachment B provides an overview of virgin water supply and allocations by State and sub-basin as provided by the Compact. The Compact includes provisions for adjustment to the virgin water supply and allocations based on future records and/or changing conditions.

The Compact has a number of provisions related to the federal government's actions in developing projects within the basin to the benefit of the various states. Major federal developments anticipated by the Compact were flood control projects (clearly shown as being needed following the 1935 flood) and irrigation development through the Bureau of Reclamation.

The Compact makes it the duty of the three states to administer the Compact through the State official in each state who is charged with administering water law. The Compact grants to those officials, in their capacity as Compact Commissioners, the power to adopt by unanimous vote, rules and regulations consistent with the provisions of the Compact. In the late 1950's, following the construction of several of the federal projects, the Compact Commissioners met to establish the administration of the Compact. The meetings resulted in the adoption of rules and regulations by which the Compact is administered on July 15, 1959. During the annual meetings of the early 1960's, methods were adopted to annually estimate virgin water supply and consumptive use of surface water and groundwater by each of the states by sub-basin.

II. Basin Development

A. Federal Project Development

Following ratification of the Compact, the Bureau of Reclamation and Corps of Engineers began basin planning. Many of the planned projects were constructed in the 1950's and continue to operate today. They provide a significant degree of flood control, water supply for irrigation and municipal use, and fish and wildlife benefits. A summary of the federal reservoirs is provided in Attachment C.

B. Other Basin Development

In addition to the federal projects, other technological changes have had significant impacts on the basin. These include the development of new irrigation technology which increased groundwater use greatly and improved methods of soil and water conservation.

1. Groundwater development

While groundwater development was discussed and envisioned by the Compact negotiators, the development of the center pivot and improved flood irrigation methods has spurred significant development in areas previously thought to be non-irrigable and which were not allocated significant water by the Compact. Water supply for this development has been largely from groundwater within the alluvium of the Republican River and its major tributaries and in upland areas overlying the Ogallala formation (particularly in the upper basin). Groundwater development has reduced the surface water supplies available from the Republican River and its tributaries.

Attachment D (proposed by the Bureau of Reclamation) number of wells in the Republican River Basin. It shows the number of wells within 12 miles of the Republican River and its major tributaries.

2. Soil and water conservation practices.

Since the 1930's there have been many changes and improvements in land use. These include terracing, crop residue management, and improved rangeland management. The changes have reduced soil losses and increased agricultural productivity through better use of precipitation. They have also resulted in significantly diminished runoff.

C. Conclusions

The impacts of Federal project development, groundwater development, and soil and water conservation practices noted above have been dramatic. An obvious decline of the inflows into Harlan County Reservoir is shown in Attachment E. Similarly, Attachment F exemplifies the effects in surface water availability to the State of Kansas in terms of lessening annual volumes flowing in the Republican River.

Some decline in water supply into Harlan County Reservoir was expected due to development envisioned and permitted by the Compact. The Compact, when its allocations are strictly followed, limits the extent of that reduction.

III. Kansas Water Law

A. General

On June 28, 1945, the State of Kansas fully embraced and enacted the Prior Appropriation Doctrine as its water allocation system (See K.S.A. 82a-701 et seq.). The basic concept of the doctrine is that those who were first in time, are first in right, and have the highest protection under the law. In other words, the earliest users have the best rights to the use of water. Users of water before the date of the Act (June 28, 1945) had the opportunity to obtain what are called "Vested Rights" to the use of water. Prior to the cut-off date of July 1, 1980, approximately 2,000 vested rights to the use of water were determined in Kansas. Subsequent to June 28, 1945, the only way one can obtain a surface water or groundwater right, except for domestic use and other small exceptions, is by applying for and obtaining a permit to appropriate water from the Chief Engineer, Division of Water Resources, Kansas State Board of Agriculture. Since 1945, over 40,000 applications have been applied for in Kansas.

There is a single priority system for groundwater and surface water rights in Kansas. Each of the over

30,000 active water rights in the State of Kansas has a separate priority in time.

Kansas clearly recognizes the interaction of groundwater and surface water, both physically and legally. The Chief Engineer has and does administer both surface water and groundwater rights against each other. Most frequently, this occurs where there is a stream-alluvial aquifer situation.

On January 1, 1978 it became mandatory in Kansas to have a water right or permit to appropriate water for non-domestic water use. Failure to comply with the law is punishable as a separate class C misdemeanor for each day the violations continue after notice of the violation is given by the Chief Engineer.

In Kansas, new applications to appropriate either groundwater or surface water are evaluated on a variety of factors, but effective March 20, 1990, the Chief Engineer determined that the primary controlling factor in deciding whether to approve a new permit to appropriate water would be the "safe yield" of the proposed source of water supply. If the safe yield (the long-term sustainable water supply) is insufficient to meet existing water rights and the pending application, then the application will be denied.

B. Kansas Water Appropriation in the Republican Basin

As noted above, with the advent of the center pivot and local availability of groundwater, significant areas of irrigation development have occurred in the Republican basin, including Kansas. The groundwater development in Kansas that most directly impacts the Republican River has occurred in the northwest portion of the State within the alluviums of major tributaries of the Republican River and within the alluvium of the mainstem below the Kansas-Nebraska stateline. This has resulted in some groundwater level declines and reduced surface water availability in northwest Kansas streams. Extensive development has also occurred in the Ogallala Aquifer, primarily in Northwest Kansas Groundwater Management District No. 4 in the upper portion of the basin, and which is less hydrologically related to the streams.

The State of Kansas has responded to these declines by reviewing the basins, by taking administrative actions to close or limit new appropriations, and by developing conservation and management programs to deal with water shortages. A summary of the actions taken and the dates of those actions are shown below:

| <u>Source of Supply</u> | <u>Status</u> |
|--|--|
| 1. Beaver Creek, Little Beaver Creek & their Tributaries & Alluviums | Closed to new appropriations, June 27, 1984 |
| 2. Prairie Dog Creek, its Tributaries & Alluviums | Closed to new appropriations, June 27, 1984 |
| 3. Sappa Creek, Tributaries and Alluviums | Closed to new appropriations, October 8, 1984 |
| 4. Northwest Kansas GMD No. 4 - Ogallala | Allowable appropriation originally set by aquifer regulation, May 1, 1983; appropriations limited to safe yield (0.5"/year recharge) effective February 16, 1990 |
| 5. Lower Republican River, its Tributaries & Alluviums | Closed to new groundwater appropriations July their 1992 and new summer surface water appropriations, June 15, 1993 |
| 6. Rest of Republican Basin | Appropriations limited to safe yield, March 20, 1990 |

C. Kansas Bostwick Irrigation District and Lower Republican River Water Use

The Compact allocates to Kansas for use below the state line 138,000 acre-feet/year plus all inflows into the basin below the stateline. In addition to the water provided to the Kansas-Bostwick Irrigation District for irrigating approximately 40,000 acres through the Courtland Canal, Kansas also makes extensive use of surface water and groundwater in the lower Republican River basin for other irrigation, municipal and industrial purposes.

D. Milford Water Reservation Right

The entire drainage area of Milford Reservoir is contained within the Republican River Basin. With a priority date of April 3, 1974, the Kansas Water Office has a water reservation right to store water in the 388,816 acre feet of conservation water supply storage space in Milford Reservoir. This storage space was originally projected to yield approximately 155,639 acre feet per year on a 2% chance basis. The yield estimate is currently under review.

The State currently has contracts for water stored in Milford Reservoir storage with: (1) Kansas Power & Light (Western Resources, Inc.) for its Jeffrey Energy Center and (2) the Kansas River Water Assurance District No. 1, which supplies municipal and industrial water to 14 entities, including the Cities of Junction City, Manhattan, Topeka, Lawrence and significant portions of the metropolitan Kansas City area.

The State of Kansas has a vital interest in the direct uses in the upper and lower portions of the basin and in securing and protecting the yield of this storage space which is dependent on waters received from the Republican River basin.

E. Republican River Minimum Desirable Streamflows

Effective April 12, 1984, minimum desirable streamflows were set by the Kansas Legislature on the Lower Republican River. At the Concordia gage, the monthly values for minimum desirable streamflows range from 65 c.f.s. in October to 150 c.f.s. in the summer. Those values range from 90 c.f.s. in October to 250 c.f.s. during the summer at the Clay Center gage. This water has been reserved for in-stream flow purposes. All appropriations after 1984 (both surface water and groundwater) are subject to restrictions during times when the flows at those gauging stations fall below the mandated minimum desirable streamflows. Once again, flow contributions from the Republican River Basin, or the lack thereof, determine whether these minimum desirable streamflows are achieved and the appropriators are subject to minimum desirable streamflows administration. Water passing these locations is available for storage at Milford Reservoir, direct use and instream flow benefits on further downstream along the Kansas River.

IV. Kansas' Concerns and Their Expression at the Compact Administration

A. Kansas' Concerns:

1. Nebraska's overuse of its original Compact allocation.

Attachment G provides an overview of trends in consumptive use as estimated by the Compact's engineering committee and compared to the Compact's original allocations. Attachment H compares Nebraska's consumptive use for all its basins versus its adjusted allocation as determined by the Compact's methodology. Nebraska has been consistently over its original and adjusted allocations in several sub-basins for a number of years. See Attachment I for an example of consumptive use as computed by the Compact Administration for the 1991. It shows Nebraska over its adjusted allocations in 9 sub-basins out of 13. More recently Nebraska has been over its adjusted allocation in the basin as a whole. Despite the over pumpage and Kansas' repeated expressions of concern, it does not appear that the State of Nebraska is taking significant action to limit its appropriations in the basin.

As a result of Kansas' request for action on this issue, the State of Nebraska has recently begun to assert that groundwater diversions within the basin were not intended to be regulated by the Compact Administration. Nebraska contends that if groundwater is not considered in the computations, it remains within its Compact limitations. Groundwater consumptive use has been included in the estimates of consumptive use and the determination of annual virgin water supply since the Administration's conception and is based on unanimous approval by Kansas, Colorado and Nebraska. The State of Kansas has presented significant evidence that groundwater, to the extent that its consumptive use impacts virgin water supply, was intended to be included in the Compact allocations.

2. Trends in Increasing Consumptive Use

The State of Kansas is not only concerned with the current conditions in the basin but trends in consumptive use by the states. The State of Kansas is concerned that as Nebraska's consumptive use escalates, shortages to Kansas will increase in frequency and duration. While Attachment G shows that Kansas' use of its allocation is significantly below that allowed by the Compact, two factors must be noted. First, the Compact methods do not include legitimate uses of water by Kansas below the State line. Secondly, Kansas' use of water in the Republican River is limited by surface water availability (see 1991 example below).

3. Current Lack of enforcement mechanism.

Kansas has long been concerned that, as the most downstream state, it could be dispossessed of its Compact allocation. The Compact's current procedure of estimating consumptive use by each state at the end of the calendar year allows no opportunity to preempt overuse. Because of this inability to prevent future damage from occurring, Kansas has requested since 1974 that the Compact Administration develop an administrative procedure that would deal with times of water shortage and overuse by a State.

B. Expressions of Kansas' Concerns to the Compact Administration

1. History and overview of Kansas' complaints to the Compact Administration.

Beginning in 1974, Kansas began to inquire as to how the Compact Administration would handle shortages of water supply on the River. This issue and other related issues were discussed at several Compact meetings between 1974 and 1979. A special meeting in 1979 identified major areas of contention, several which went unanswered until a special meeting in 1986. That special meeting was devoted to discussion of each State's perspective on the meaning of "virgin water supply", the methods of estimating consumptive use and adjusting allocations, and the potential for an administrative mechanism for allocating supplies of the basin. Ultimately, areas of disagreement precluded any meaningful action.

Since 1985, Kansas has consistently expressed the concerns noted in Section A above to the Republican River Compact Administration. Despite a number of discussions at the Compact Administration meetings and a significant amount of work by the Compact's Engineering Committee, Kansas' concerns remain unresolved.

After significant work of the engineering committee and the Compact Administration did not lead to any agreement regarding Kansas' concerns, Kansas was challenged to present a written proposal to the Administration. Kansas' proposal was presented at the July 1989 annual meeting and is summarized below.

Nebraska began to claim in 1990 that groundwater was not apportioned by the Compact. This led to an agreement that a review of Compact historic documents of this issue was appropriate.

2. Groundwater inclusion in Compact allocations.

Historical documents were exchanged between the three states prior to the June 1993 annual meeting. A brief on whether groundwater is a part of the virgin water supply was submitted by Kansas at the June 1993 annual meeting. Kansas, having examined historical documents in its possession prior to May 1993, clearly showed that groundwater was included in the original Compact negotiations. For example, in drafting the provisions of the Compact, the negotiators met with representatives of the Bureau of Reclamation and the Bureau of Agricultural Economics. C.T. Judah, a Bureau of Reclamation engineer, reported to the Commissioners that the areas to be served in Nebraska by the Bostwick Project had been computed and that these figures included everything irrigable or irrigated in the basin below the Harlan County Dam. Mr. Judah reported that 28,000 acres of the total 33,000 acres could be served by Bureau works involving gravity canals and 5,000 acres by pumping "from wells or streams".

The Bureau of Agricultural Economics conducted a detailed investigation which determined the underground water supply, potential lands for irrigation, limits of pumping life, costs per acre for irrigation using groundwater, and other factors. Harry Burleigh of the Bureau of Agriculture Economics requested that the Commissioners state whether the development of the underground water supplies he had outlined would "in the opinion of the Commission, exceed the allotments of water to each state which the Commission may have agreed upon." Mr. Burleigh added that "his department did not want to recommend developments of underground water supplied in excess of the allocations of water to each state."

The Commissioners concluded that the groundwater developments then being considered were within the interstate apportionment figures the Commissioners were considering. M.C. Hinderlider, the Colorado Commissioner, wrote to George Knapp of Kansas and Wardner G. Scott of Nebraska that:

"It is my understanding that Mr. Knapp will address a letter to Engineer Burleigh of the Bureau of Agricultural Economics, advising him that the Commissioners are in agreement that the estimated amount of ground water which may be developed in each of the tributary basins of the Republican River basin are within the allocations which the Commission has tentatively made."

As directed by the Commission, Mr. Knapp wrote to Mr. Burleigh confirming that the figures presented to the Commissioners by Mr. Burleigh were within the total estimated annual consumptive use of the virgin water supply envisioned by the Compact.

Although the brief by Kansas was submitted to the Compact Administration at the 1993 annual meeting, the resolution to accept its conclusions failed to overcome Nebraska's objections. As a result, the Legal Committee has been directed to look at all documents including historical and present, and determine whether agreement can be reached that groundwater was part of the virgin water supply as originally conceived by the negotiators. If agreement is not reached by March 1, 1994, each member of the Legal Committee may submit their own memorandum to the Compact Administration at the next Compact meeting.

C. 1991 as an Example of Damages to Kansas

1991 serves to illustrate the damages that Kansas faces and will face as a result of the trends noted above. As a result of significant reductions of inflow into Harlan County Dam, water supply availability was reduced. Deliveries to the Kansas-Bostwick Irrigation District in 1991 were only 6 inches, 9 inches less than the full delivery of 15 inches. Kansas' established minimum desirable streamflow targets for the Republican River were not met in late 1991 and early 1992 and resulted in junior wells along the lower Republican River being shut off for 6 months.

During 1991 reductions of inflow into Milford Reservoir occurred resulting in a protracted period where Milford stayed below the top of conservation pool with negative impacts to recreation and wildlife.

V. Suggestions Toward Resolution

A. Provisions of 1989 Proposal by Kansas

As noted above, Kansas presented its proposal for improved administration of the Compact in 1989. This proposal included the following provisions: use of the original Compact allocations (as opposed to annually adjusted allocations) until information is available to show long-term average annual virgin water supply has varied by more than 10% in any sub-basin; continued annual estimation of consumptive use for each sub-basin according to established methods; requiring each state within one year to halt further development of both groundwater and surface water in those sub-basins that have exceeded their original allocations in any of the prior three years; requiring each state within five years to come into compliance with its sub-basin allocations; and requiring each state to report to the Compact Administration at each annual meeting concerning actions it has taken to bring each sub-basin into compliance.

This proposal was defeated with Kansas and Colorado agreeing with its passage and Nebraska voting no.

B. Alternative Mechanisms for Resolution of Compact Problems.

The Republican River Compact, as discussed above, allows for the Compact members to pass rules and regulations governing the Compact and the Compact's enforcement. We believe this flexibility allows for methods to be adopted and implemented by the three states to resolve the current disputes. To date, Nebraska has rejected the proposals offered by Kansas and backed by Colorado. Although Kansas has requested that Nebraska bring alternative proposals to the table, Nebraska has declined to do so.

If the administrative process fails, Kansas' primary alternative is to file an action in the Supreme Court of the United States. The U.S. Supreme Court has sole jurisdiction over conflicts between states and would be the alternative Kansas must turn to when, and if, all reasonable efforts through the administrative process have failed to remedy the damage caused by Nebraska's violations of the Compact's terms.

VI. Conclusion

Kansas has taken aggressive action, under its state law, to stay in compliance with the terms of the Republican River Compact. Virtually the entire Republican River Basin in Kansas, both upstream and downstream of the Kansas-Nebraska stateline, has been closed to new groundwater appropriations for some time and the small areas that remain open are managed on a safe yield basis. Most of the upstream tributaries to the Republican River are closed to new surface water appropriations and on the downstream portion only surplus flood flows and non-summer flows may be appropriated.

Kansas believes that the physical reality, as well as a review of historic documents, supports its assertion that both surface water and groundwater are allocated pursuant to the terms of the Republican River Compact.

Colorado is in compliance with the Compact. Kansas has always been under its total allocations and is actively dealing with the one or two sub-basins where overuse has occurred in some years. It is imperative that Nebraska take aggressive action to manage the use of both surface water and groundwater in the Republican River Basin in order to stay in compliance with the Compact. The Compact itself gives Nebraska that authority. Flexibility exists with the Compact to adopt mechanisms to address current disputes. In addition, the U.S. Supreme Court has held that states are bound by amounts fixed by decree and that each state may not allow withdrawals greater than those amounts.

Kansas continues to be concerned with Nebraska's overuse of its Compact allocation, a subject Kansas has raised often with the Compact Administration. Kansas' concerns must be resolved and it would prefer to resolve them within the Compact Administration.

Attachment B

Overview of Compact Allocation

Table A-1 below provides an overview of Republican River Compact allocations to each state by sub-basin. The basin's total virgin water supply was estimated by the Compact negotiators to be 478,900 acre-feet (AF) and this entire amount was allocated to the various states. For each sub-basin a portion of the virgin water supply was assigned to be used in the sub-basin and a portion was allocated downstream to the Republican River mainstem below Harlan County Dam. The table also shows the percentages of the total virgin water supply sources in each sub-basin and the percentage of the virgin water supply that is allocated to be used in its sub-basin of origin as well as the portion allocated to the mainstem.

There is significant variance in the percent of a sub-basin virgin water supply that is allocated downstream. This percentage varies from 90.9% for Medicine Creek to 0% for the Arikaree River and Beaver Creek. A total of 175,500 AF or 37% of the virgin water supply is allocated from the upstream basins to the mainstem.

72% of Kansas total allocation is to be used in the reach below Harlan County Dam. Consumptive use in excess of Compact allocations in basins upstream from Harlan County will directly impact Kansas' ability to use the majority of its Compact allocations.

The sub-basins projected to supply the greatest quantity of water to the mainstem are Medicine Creek with 46,200 AF and Frenchman Creek with 45,700 AF. Kansas' upstream sub-basins of Prairie Dog Creek, Sappa Creek and Beaver Creek were envisioned to contribute 12,900 AF, 38,000 AF, and 100 AF, respectively, to the reach below Harlan County Dam.

Table A-1
Summary of Virgin Water Supply and Sub-basin allocations

| BASIN | ORIGINAL AF | % OF TOTAL | IN SUB-BASIN ALLOCATIONS TO EACH STATE | | | | % ALLOCATED TO SUB-BASIN | AF ALLOCATED TO MAIN STEM |
|-----------------------|----------------|---------------|---|---------------|---------------|---------------|-----------------------------|------------------------------|
| | | | CO | KS | NB | Total | | |
| Prairie Dog | 27600 | 5.8 | | 12600 | 2100 | 14700 | 53.3 | 12900 |
| Sappa Creek | 21400 | 4.5 | | 8800 | 8800 | 17600 | 82.2 | 3800 |
| Beaver Creek | 16500 | 3.4 | 3300 | 6400 | 6700 | 16400 | 99.4 | 100 |
| Medicine Creek | 50800 | 10.6 | | | 4600 | 4600 | 9.1 | 46200 |
| Red Willow Creek | 21900 | 4.6 | | | 4200 | 4200 | 19.2 | 17700 |
| Driftwood Creek | 7300 | 1.5 | | 500 | 1200 | 1700 | 23.3 | 5600 |
| Frenchman River | 98500 | 20.6 | | | 52800 | 52800 | 53.6 | 45700 |
| S.F. Republican River | 57200 | 11.9 | 25400 | 23000 | 800 | 49200 | 86.0 | 8000 |
| Rock Creek | 11000 | 2.3 | | | 4400 | 4400 | 40.0 | 6600 |
| Buffalo Creek | 7890 | 1.6 | | | 2600 | 2600 | 33.0 | 5290 |
| Arikaree River | 19610 | 4.1 | 15400 | 1000 | 3300 | 19700 | 100.5 | 0 |
| N.F. Republican (CO) | 44700 | 9.3 | 10000 | | 11000 | 21000 | 47.0 | 23700 |
| N.F. (NB) & Main Stem | 94500 | 19.7 | | 138000 | 132000 | 270000 | 285.7 | |
| TOTALS | 478900 | 100 | 54100 | 153100 | 238500 | 478200 | | 175500 |

Exhibit 4, Attachments A - H are the same as Exhibit 3, Attachments A - H. Exhibit 4, Attachment I, which was not included with Exhibit 3, follows.

1991 Computed Consumptive Use within the
Republican River Basin (Acre Feet)

| 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 |
| Die Dog Cr. | | | | 15720 | 3420 | 19140 8680 * | 1310 | 270 | 1580 1450 * | 17030 | 3690 | 20720 10130 * |
| Cr. | | | | 9060 | 70 | 9130 11520 * | 17170 | 1280 | 18450 11520 * | 26230 | 1350 | 27580 23040 * |
| Cr. | 0 | 0 | 0 4030 * | 8050 | 180 | 8230 7820 * | 11730 | 0 | 11730 8190 * | 19780 | 180 | 19960 20040 * |
| Cr. | | | | | | | 4970 | 960 | 5930 3270 * | 4970 | 960 | 5930 3270 * |
| Willow Cr. | | | | | | | 3190 | 950 | 4140 3420 * | 3190 | 950 | 4140 3420 * |
| Wood Cr. | | | | 0 | 0 | 0 290 * | 2220 | 20 | 2240 690 * | 2220 | 20 | 2240 980 * |
| Whman Rv. | | | | | | | 35960 | 13160 | 49120 44930 * | 35960 | 13160 | 49120 44930 * |
| Fork of the Republican Rv. | 5850 | 6440 | 12290 17730 * | 8800 | 220 | 9020 16050 * | 590 | 0 | 590 560 * | 15240 | 6660 | 21900 34340 * |
| Cr. | | | | | | | 0 | 0 | 0 3210 * | 0 | 0 | 0 3210 * |
| Cr. | | | | | | | 630 | 370 | 1000 1550 * | 630 | 370 | 1000 1550 * |
| Cr. | 4930 | 0 | 4930 9330 * | 130 | 0 | 130 610 * | 420 | 0 | 420 2000 * | 5480 | 0 | 5480 11940 * |
| Republican Rv Colorado | 710 | 3130 | 3840 8300 * | | | | 0 | 3200 | 3200 9130 * | 710 | 6330 | 7040 17430 * |
| and Main Stem Republican Rv. Blackwood Cr. Nebraska* | | | | 50 | 46800 | 46850 125980 * | 80260 | 84560 | 164820 121040 * | 80310 | 131360 | 211670 247020 * |
| TOTALS | 11490 | 9570 | 21060 39390 * | 41810 | 50690 | 92500 170950 * | 158450 | 104770 | 263220 210960 * | 211750 | 165030 | 376780 421300 * |

(* indicates adjusted allocations from Table 1)

Attachment I - Computed Consumptive use within the Republican River Basin

RESOLUTION
of the
REPUBLICAN RIVER COMPACT ADMINISTRATION

June 9, 1994

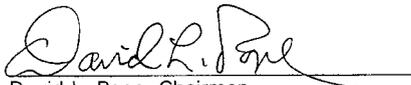
to

Robert D. Kutz

WHEREAS, Robert D. Kutz, Area Manager of the Nebraska-Kansas Area Office, Bureau of Reclamation, United States Department of Interior, has worked with members of the Republican River Compact for over fifteen years;

WHEREAS, Mr. Kutz, through his expertise, has consistently provided relevant technical information, and other valuable assistance to the Republican River Compact Administration and its Engineering Committee; and

NOW, THEREFORE, BE IT RESOLVED that the Republican River Compact Administration would like to acknowledge its gratitude and appreciation to Robert D. Kutz for his service to the citizens of the states of Colorado, Kansas and Nebraska.

A handwritten signature in cursive script, reading "David L. Pope", written over a horizontal line.

David L. Pope, Chairman
Republican River Compact Administration

KANSAS RESOLUTION #1

WHEREAS the Republican River Compact defines the virgin water supply (VWS) as the water supply within the Basin undepleted by the activities of man;

WHEREAS the Compact also defines beneficial consumptive use (CU) as that use by which the water supply of the basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated areas;

WHEREAS the attached graphs are prepared by the State of Kansas based on the Compact's annual estimates of VWS; and

WHEREAS the Compact's annual estimates of VWS for the upper sub-basins demonstrate that the majority of sub-basins evidence a steadily declining estimate of VWS.

THEREFORE THE REPUBLICAN RIVER COMPACT ADMINISTRATION DIRECTS:

THAT the Engineering Committee (Committee) review the Compact's annual VWS estimates and gaging station data to identify sub-basins which evidence declines in estimated VWS;

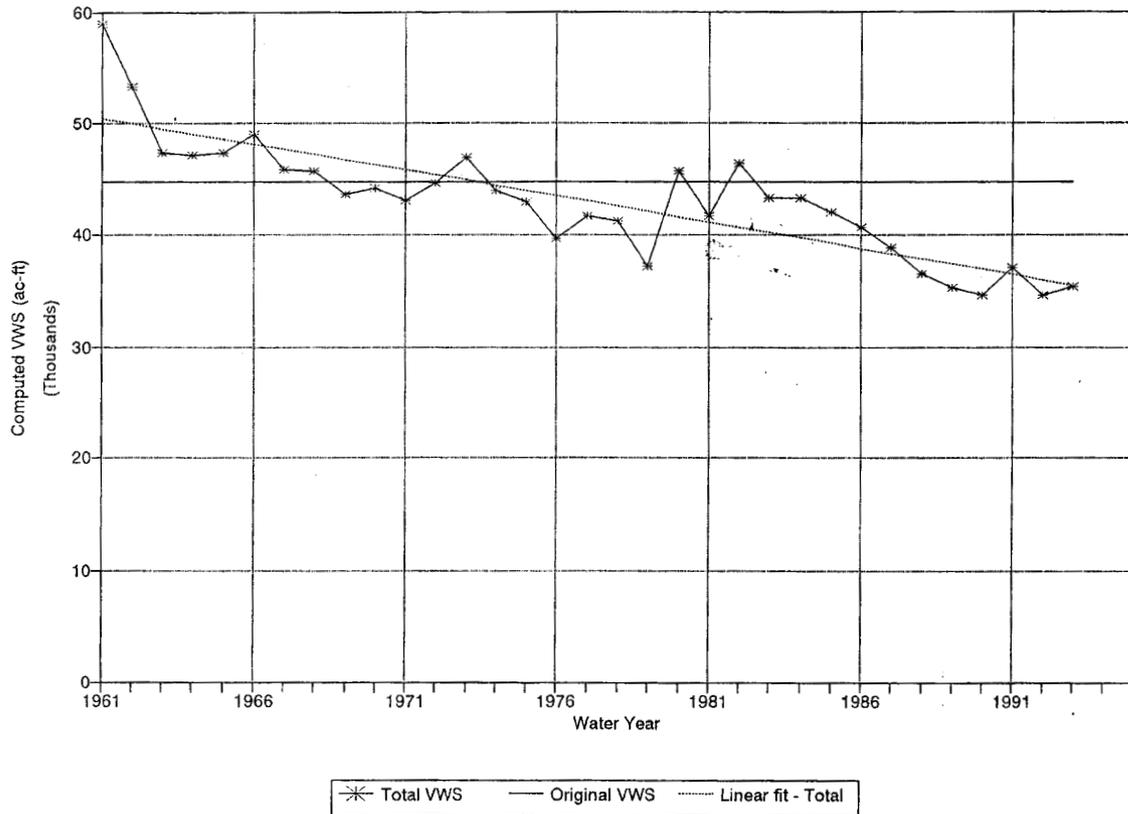
THAT the Committee summarize its conclusions from the review of these records including the magnitude of the historical decreases in VWS by sub-basin;

THAT the Committee provide for the timely exchange of relevant reports, models, data and other sources of information available within their state;

THAT the Committee review such information and summarize its conclusions in report form as to the probable causes and magnitudes of stream depletions caused by the activities of man in each sub-basin not accounted for in current Compact calculations; and

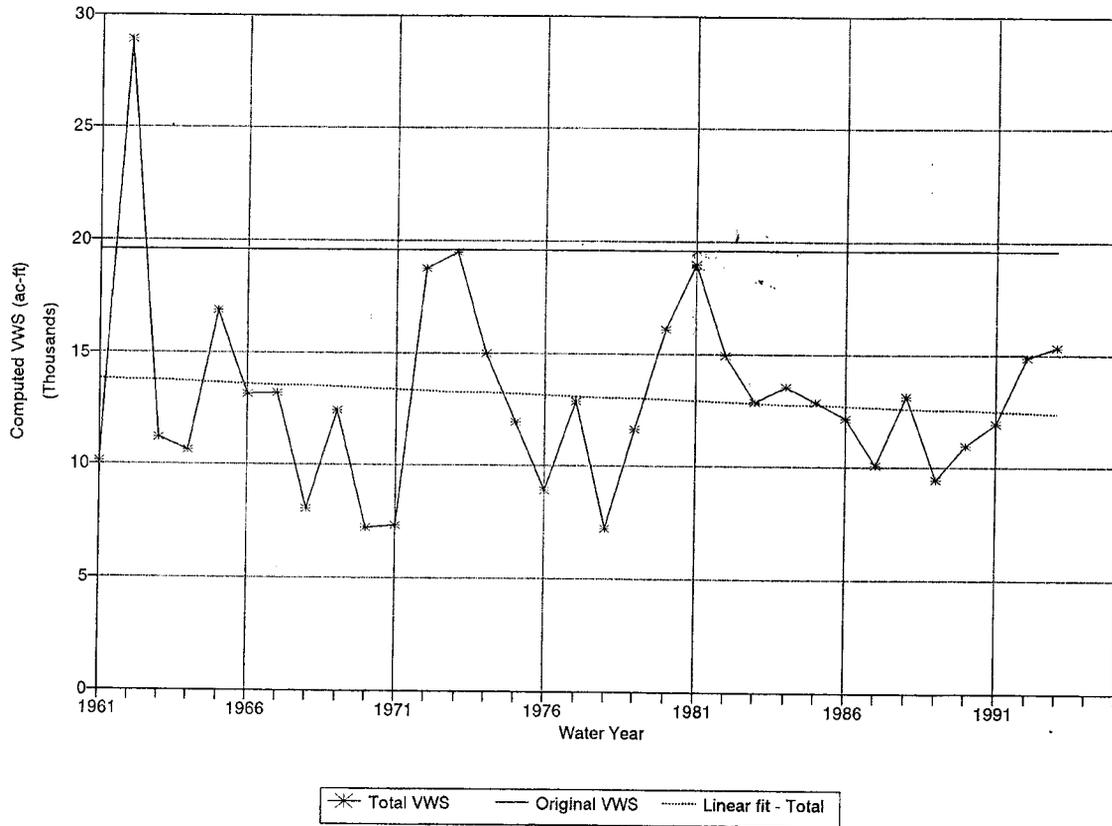
THAT this work be completed by the Committee and the report provided to the Administration by December 1, 1994.

North Fork Republican River Sub-Basin Annual Computed VWS and Original VWS

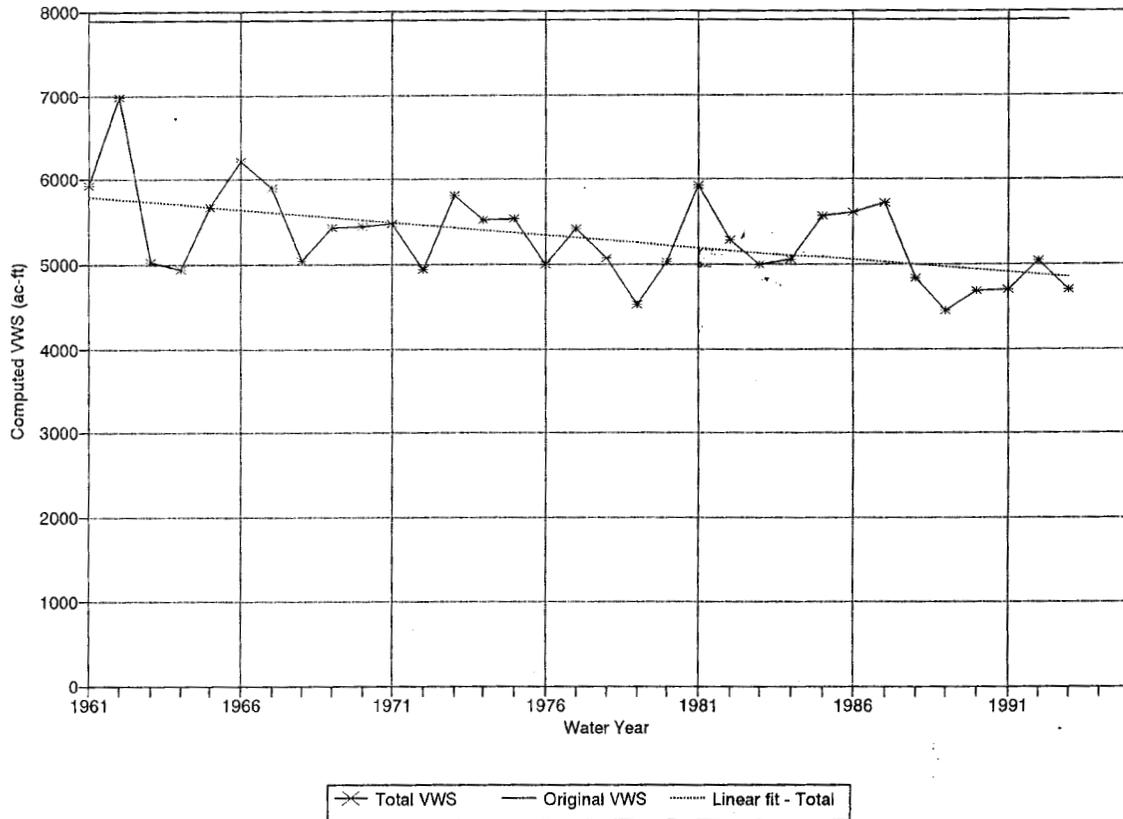


Arikaree River Sub-Basin

Annual Computed VWS and Original VWS

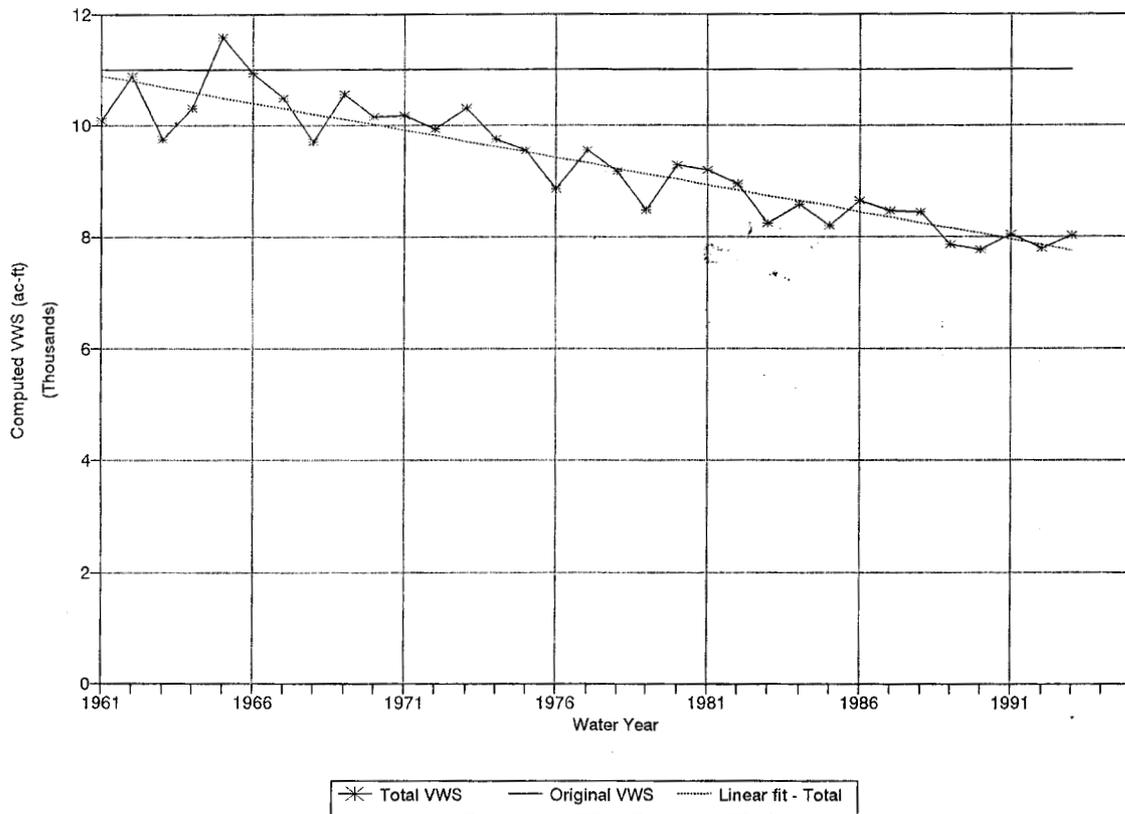


Buffalo Creek Sub-Basin Annual Computed VWS and Original VWS



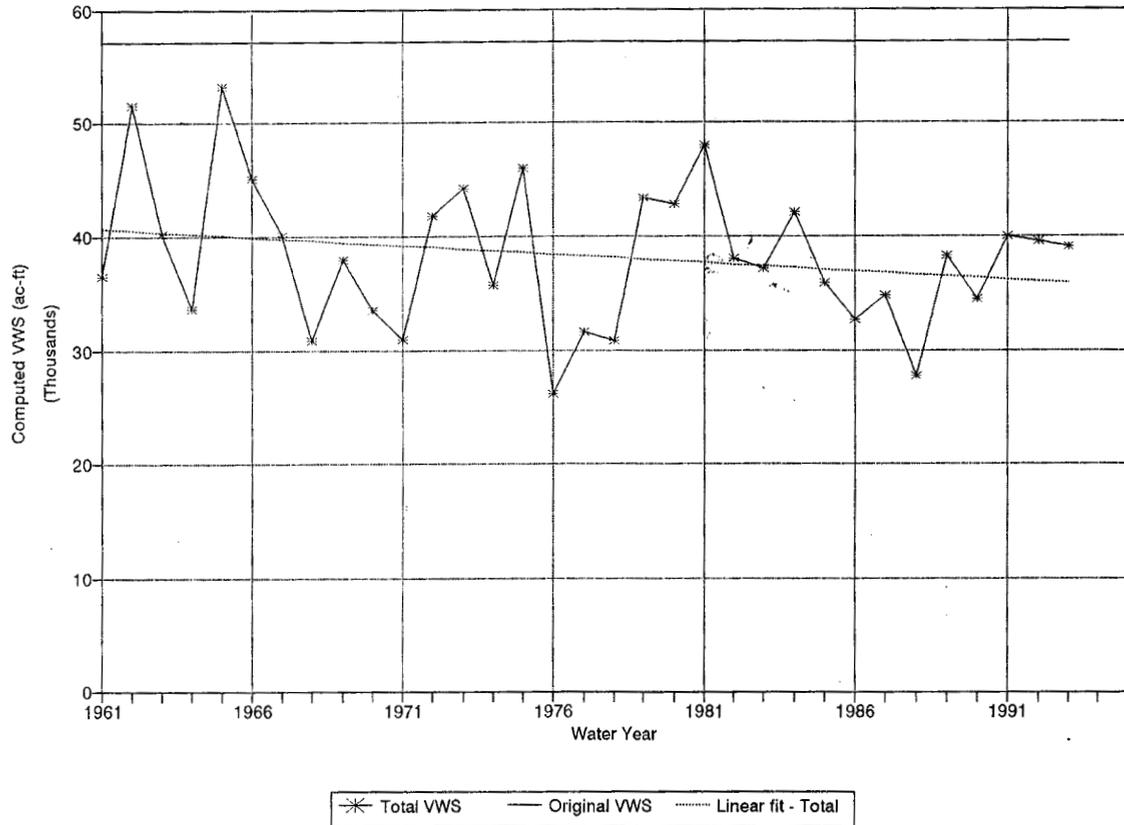
Rock Creek Sub-Basin

Annual Computed VWS and Original VWS



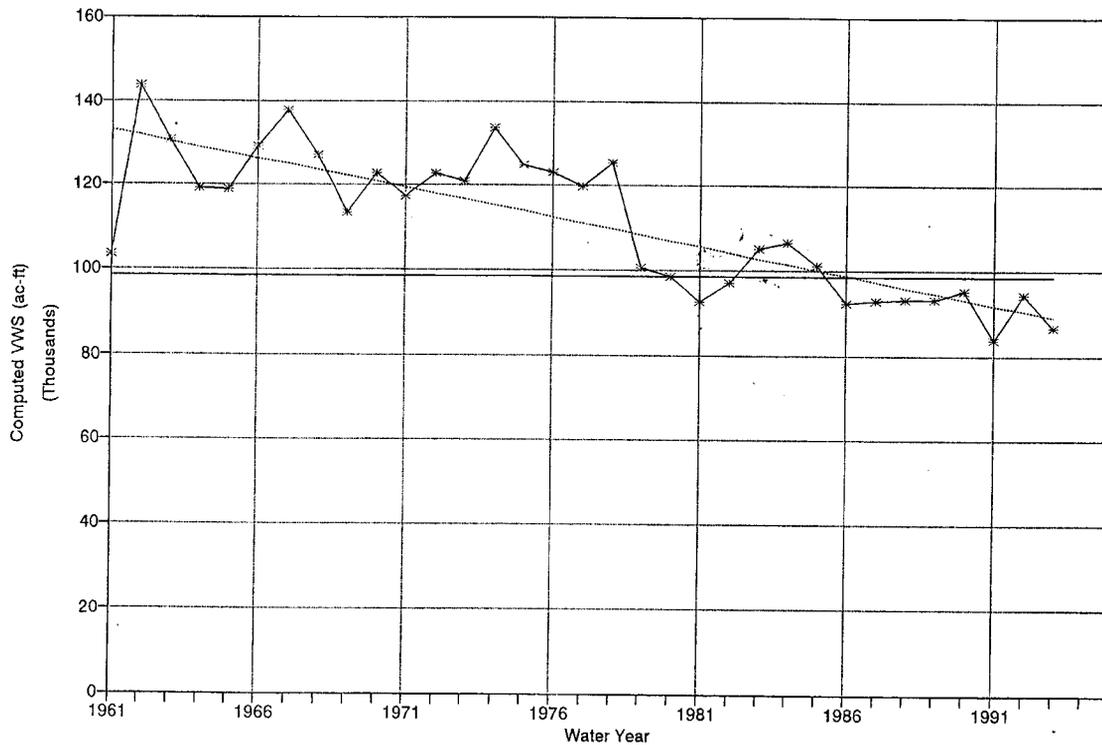
South Fork Republican River Sub-Basin

Annual Computed WWS and Original WWS



Frenchman Creek Sub-Basin

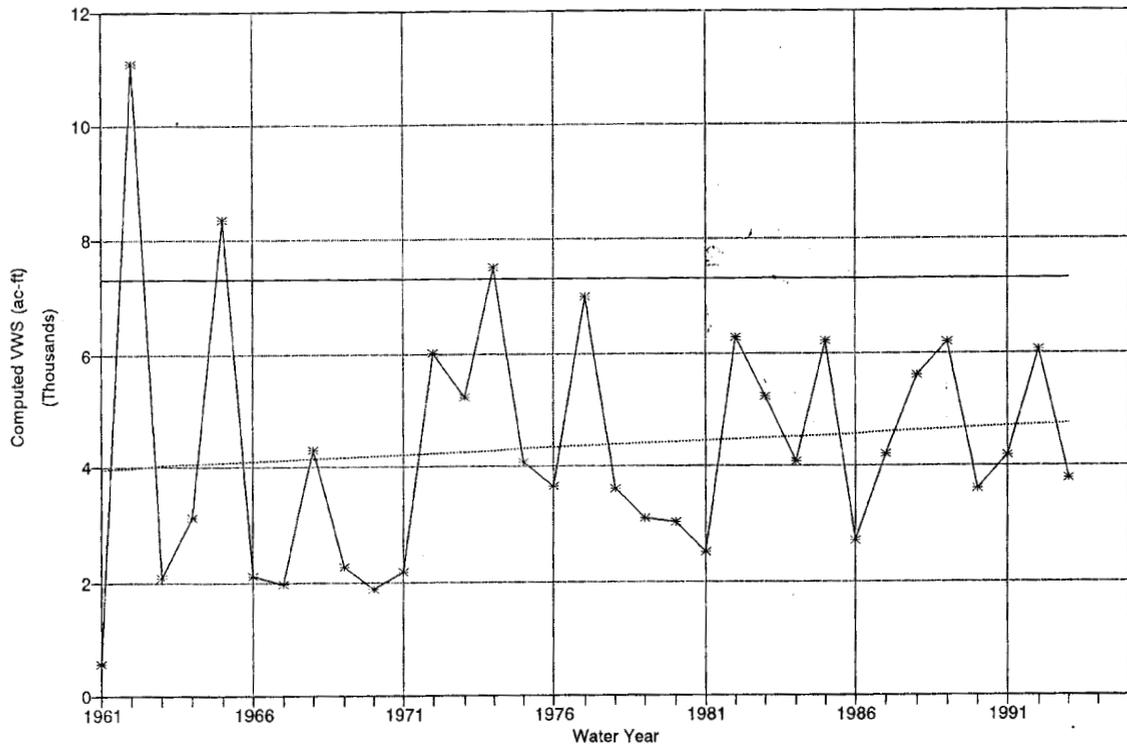
Annual Computed VWS and Original VWS



* Total VWS — Original VWS Linear fit - Total

Driftwood Creek Sub-Basin

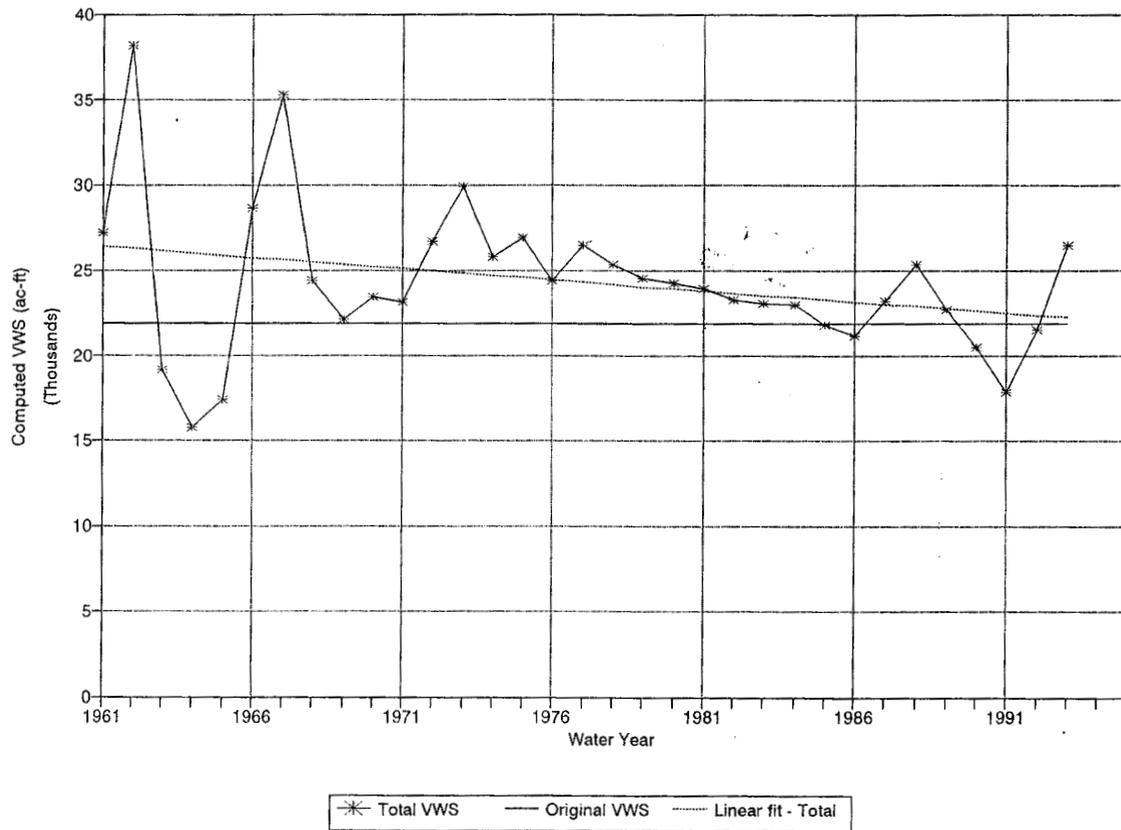
Annual Computed VWS and Original VWS



* Total VWS — Original VWS Linear fit - Total

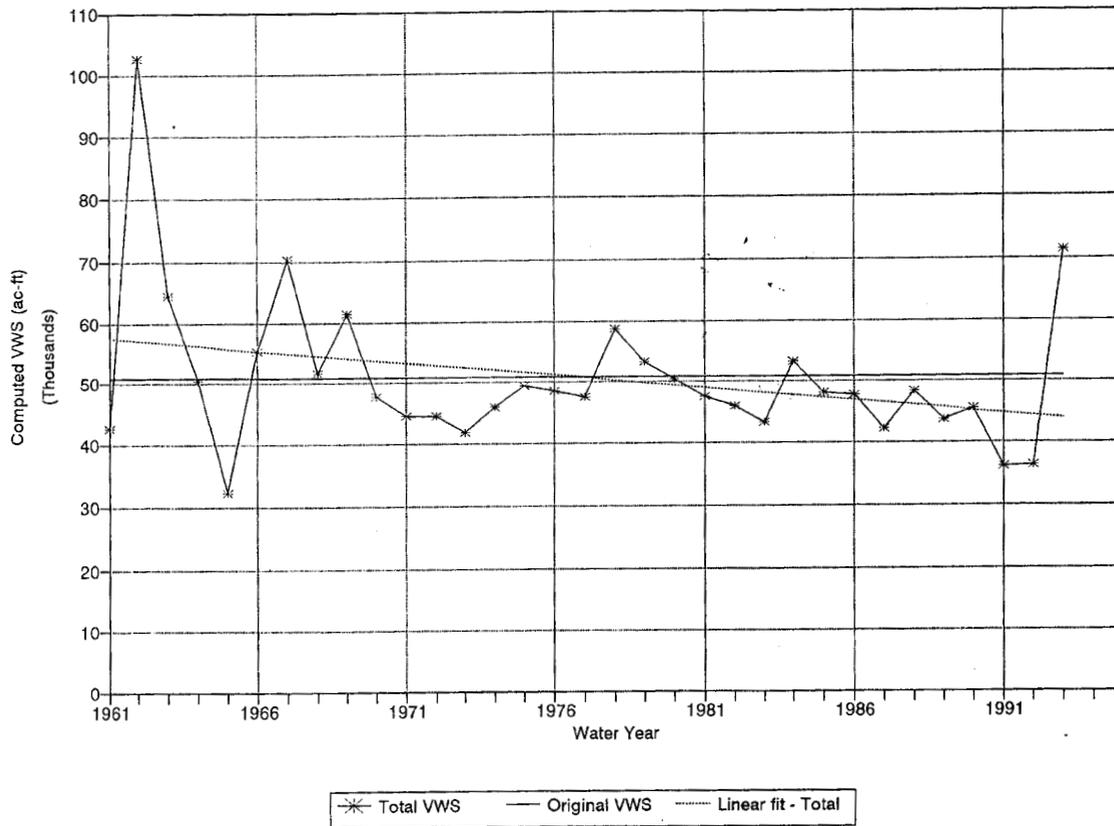
Red Willow Creek Sub-Basin

Annual Computed VWS and Original VWS



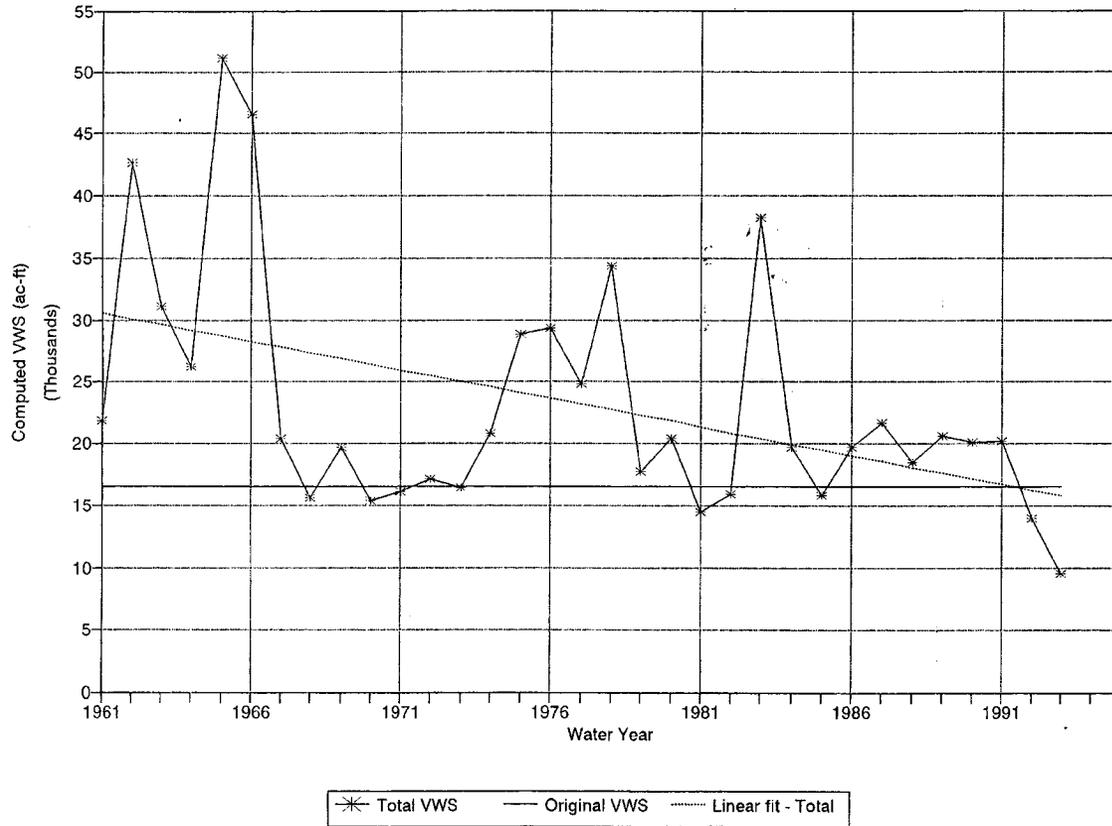
Medicine Creek Sub-Basin

Annual Computed VWS and Original VWS



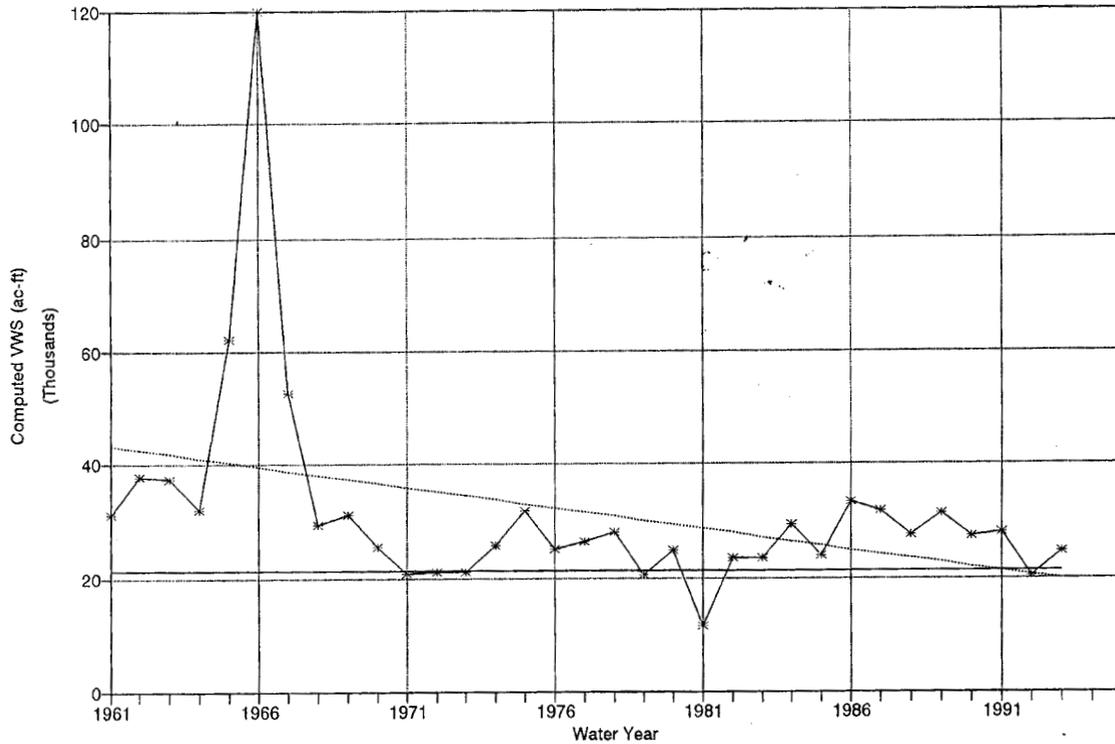
Beaver Creek Sub-Basin

Annual Computed VWS and Original VWS



Sappa Creek Sub-Basin

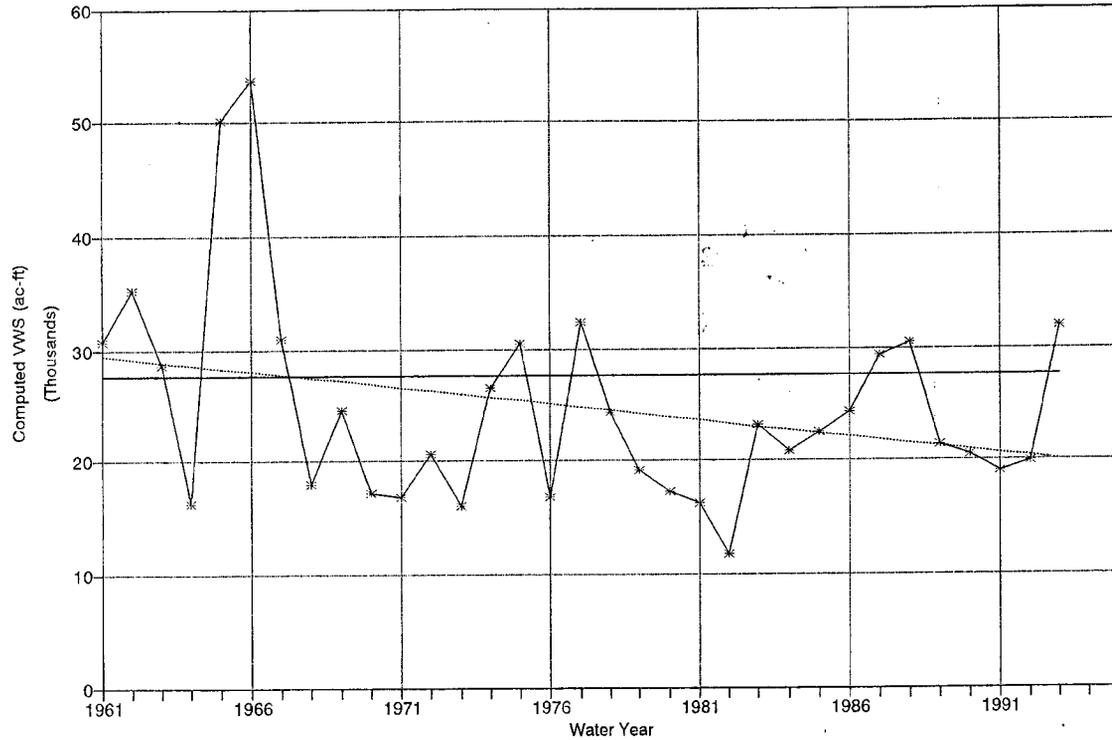
Annual Computed VWS and Original VWS



* Total VWS — Original VWS Linear fit - Total

Prairie Dog Creek Sub-Basin

Annual Computed VWS and Original VWS



* Total VWS — Original VWS Linear fit - Total

KANSAS RESOLUTION #2

WHEREAS the Compact was created to bring about the most efficient use of the waters of the basin and to allow a forum for resolution of such concerns;

WHEREAS Article IV of the Republican River Compact provides Kansas with the right to direct all or any portion of its mainstem allocation at or near Guide Rock, Nebraska;

WHEREAS the Kansas Bostwick Irrigation District has a contract with Bureau of Reclamation providing for deliveries of water stored in Harlan County Reservoir and regularly calls for releases from said storage;

WHEREAS Kansas Bostwick Irrigation District diverts its water at Guide Rock;

WHEREAS the Kansas Bostwick Irrigation District seeks to match its requests for storage releases to its actual requirements but has, at times, significant difficulty in predicting what calls will be necessary from storage, in part due to uncertainties in other demands on the River between Harlan County Dam and its diversion works at Guide Rock;

WHEREAS the Nebraska Department of Water Resources considers any flow over the Guide Rock diversion dam to be surplus flows, thus preventing it from regulating upstream appropriators at such times;

WHEREAS the full amount of calls by the Kansas Bostwick Irrigation District frequently fails to reach Guide Rock, due in part to the lack of regulation by Nebraska of appropriators between Harlan County and Guide Rock;

WHEREAS such shortages require the Kansas Bostwick Irrigation District to increase its calls on storage to ensure an adequate supply for its users, which leads to future depletion of Kansas water supplies in Harlan County Reservoir;

WHEREAS the resulting shortages appear to also affect Nebraska Bostwick Irrigation District;

WHEREAS concerns have been expressed by the Kansas Bostwick Irrigation District to the Nebraska Department of Water Resources regarding whether the releases of storage to the Kansas Bostwick Irrigation District are adequately protected during calls;

THEREFORE THE REPUBLICAN RIVER COMPACT ADMINISTRATION DIRECTS:

THAT the Engineering Committee (Committee) interview both the Nebraska and Kansas Bostwick Irrigation Districts' personnel regarding their concerns and collect and review of any records the Districts make available;

THAT the Committee summarize its findings, including the specific circumstances and nature of the concerns raised above;

THAT the Committee summarize the Nebraska Department of Water Resources policies and procedures utilized in the protection of storage releases from Harlan County Dam and

administration of water in the reach below Harlan County during times of calls by the Bostwick Irrigation Districts;

THAT the Committee provide the Administration with its recommendations to improve the efficiency of calls on storage by the Bostwick Irrigation Districts;

THAT the Committee provide a recommendation regarding what rates of flow over the Guide Rock diversion dam are considered reasonable operational spills and under what conditions such should be allowed; and

THAT the Committee provide a final report to the Compact Administration by March 1, 1995.