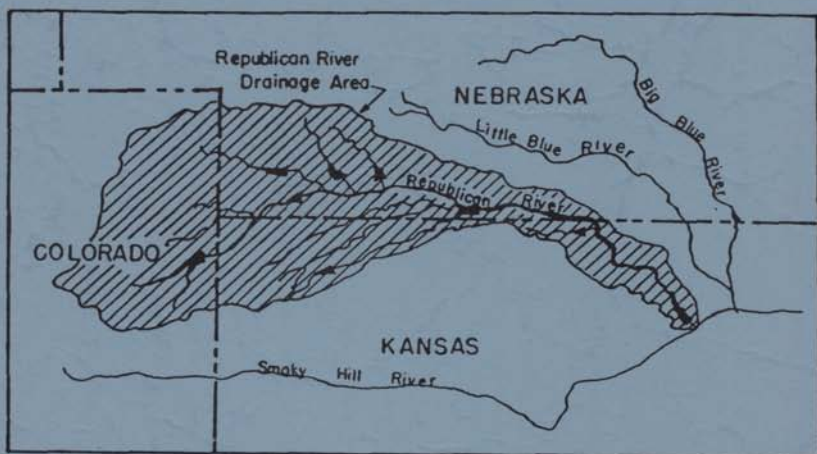




REPUBLICAN RIVER COMPACT ADMINISTRATION

THIRTIETH ANNUAL REPORT



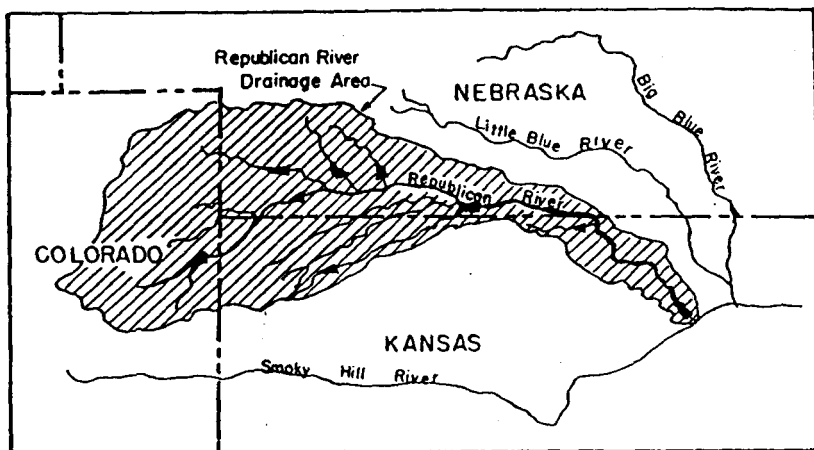
For The Year 1989

Red Cloud, Nebraska

June 28, 1990

REPUBLICAN RIVER COMPACT ADMINISTRATION

THIRTIETH ANNUAL REPORT



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THIRTIETH ANNUAL REPORT

REPUBLICAN RIVER COMPACT ADMINISTRATION

In conformity with the Rules and Regulations of the Republican River Compact Administration, the Thirtieth Annual Report is submitted as follows:

1. Pursuant to Rule 12, as amended, this report covers the period from July 21, 1989, to June 28, 1990.
2. Members of the Republican River Compact Administration are the officials of each of the states who are charged with the duty of administering the public water supplies, and are as follows:

Jeris A. Danielson, State Engineer, Colorado

J. Michael Jess, Director, Department of Water Resources,
Nebraska

David L. Pope, Chief Engineer-Director, Division of Water
Resources, State Board of Agriculture, Kansas

3. The Thirty-first Annual Meeting of the Administration was held on June 28, 1990, at Red Cloud, Nebraska. The minutes of the meeting are included in this report.
4. During the period covered by this report, one meeting of the Engineering Committee was held. A report from that committee together with summary tabulations of the computed annual water supply and consumptive use for the 1989 water year in the Republican River Basin were presented and accepted by the Administration and are included in this report.
5. Reports were received from the Bureau of Reclamation on operation and administration of their projects in the basin of the Republican River and by the U. S. Geological Survey on their gaging stations in the same basin.
6. By consensus, J. Michael Jess, Nebraska member of the Administration, served as Chairman from July 1990 to July 1991.

MINUTES
31ST ANNUAL MEETING
REPUBLICAN RIVER COMPACT ADMINISTRATION

The meeting was called to order by Chairman J. Michael Jess at 9:15 a.m. on June 28, 1990, in the Driver's Examination Room of the Webster County Courthouse in Red Cloud, Nebraska. Those in attendance were:

<u>Name</u>	<u>Agency</u>	<u>Location</u>
J. Michael Jess	Nebraska Commissioner	Lincoln, Nebraska
David L. Pope	Kansas Commissioner	Topeka, Kansas
Robert Bishop	Engineer Advisor	Lincoln, Nebraska
Gerald Hilmes	Engineer Advisor	Topeka, Kansas
Hal D. Simpson	Engineer Advisor	Denver, Colorado
Leland E. Rolfs	Div. of Water Resources	Topeka, Kansas
Scott E. Ross	Div. of Water Resources	Topeka, Kansas
James Bagley	Div. of Water Resources	Topeka, Kansas
Russell Oaklund	Dept. of Water Resources	Cambridge, Nebraska
Ann Bleed	Dept. of Water Resources	Lincoln, Nebraska
Mary Lonowski	Dept. of Water Resources	Lincoln, Nebraska
Keith VanderHorst	State Engineer's Office	Denver, Colorado
Alan Berryman	Div. of Water Resources	Greeley, Colorado
Bob Kutz	U.S. Bureau of Reclamation	Grand Island, Nebraska
Dennis E. Allacher	U.S. Bureau of Reclamation	McCook, Nebraska
Glenn Engel	U.S. Geological Survey	Lincoln, Nebraska
Wayne Heathers	Middle Republican NRD	Curtis, Nebraska
Paul E. Pritts	Bostwick Irrigation Dist.	Red Cloud, Nebraska
Robert Pore	McCook Daily Gazette	McCook, Nebraska

Chairman Jess asked for introductions of persons in attendance.

Approval of Minutes

Chairman Jess noted that minutes of the 30th Annual Meeting had been distributed, reviewed and signed by all commissioners and asked for corrections or additions. Commissioner Pope noted the proposal submitted by Kansas at that meeting was too lengthy to include in the published minutes but asked if it was mentioned in the record. He was assured it was. No motion was made.

Report of the Chairman

Jess reported on the one ground water control area located in Nebraska counties of Chase, Perkins and Dundy. This control area, in existence since 1978, contains approximately 2,500 wells—most tapping the Ogallala Aquifer. The control area is managed by the Upper Republican Natural Resources District. Modifications to the rules and regulations were made in the past year but dealt mainly with procedural items and did not significantly impact control area activity. An average withdrawal of 14 inches per year per well is still allowed for irrigation within the area.

Jess noted no significant legislation during the past legislative session which impacted water resources in general or water interests in the Republican River Basin in particular. Outside the Republican River Basin an application from the Nebraska Game and Parks Commission for an instream flow designation was approved. The approval was appealed to the Nebraska Supreme Court. A Court ruling on this matter is anticipated in the fall of 1990.

Jess noted the past year was a fairly dry year throughout Nebraska with the Republican Basin being no exception. Russell Oaklund, Division Engineer, reported that the administration for 1989 was as described on page 7 of the 29th Annual Report. The restrictions mentioned in that report were removed in September 1989. Administration for 1990 began on June 19 when permits on Frenchman Creek above the Culbertson Canal Diversion were closed, and the seven permits below that diversion were regulated. As of June 23, 1990, junior permits on Red Willow Creek were closed and senior permits were regulated. Mainstem permits on the Republican River from Trenton Dam to Cambridge Diversion Dam were closed. Mainstem permits from Harlan County Dam to Guide Rock Diversion Dam were regulated. Oaklund advised that administration on Medicine Creek will begin once

the water in Harry Strunk Lake drops below the flood pool. The reservoir levels were reported down from the previous year.

Robert Bishop, Operations Chief, reported that the Naponee Canal was reviewed for adjudication last year, and the Department was considering canceling approximately 80 acres of that project's water right.

Concluding the report, Jess noted that a site was selected in Boyd County in northeast Nebraska for a low-level radioactive waste disposal site.

Colorado Report

Due to Commissioner Danielson's inability to attend the meeting, Hal Simpson was authorized to represent him and to present the Colorado report.

Simpson introduced Keith VanderHorst, a staff engineer in the Water Supply Branch. VanderHorst has been assigned as the Colorado staff engineer on the Republican River Compact. Alan Berryman, Division Engineer for the South Platte and Republican River Basin compacts, was also introduced. Berryman has responsibilities for water administration on the Republican River in Colorado.

Simpson then reported that Colorado met its obligations in the four sub-basins in the Republican Basin.

With respect to legislation, Simpson noted a bill was passed that deleted a required charge for dam inspections. Also, an amendment to the chemigation act, effective July 1, 1990, was passed providing for a surcharge on all herbicides and pesticides in Colorado, with part of these funds going to the establishment of a state-wide monitoring network on ground water quality.

Legislation passed the previous year requiring gravel pit operators to replace or augment evaporation losses on over-appropriated streams becomes effective July 15, 1990. Simpson noted that all operators or owners have to file

evaporation mitigation plans by that date. Very few plans have been submitted to date.

Simpson reported that two years ago, his agency was authorized to establish a Ground Water Monitoring Cash Fund. An additional fee of \$35 per well permit was assessed to all new applications or replacement wells. This fee is used in several areas in ground water management. A key area is monitoring ground water levels. Colorado is monitoring 700-800 wells in the Ogallala Aquifer. They're still seeing an average of 1-foot declines in the water levels in the aquifer, although levels are not dropping as sharply as a few years ago. Simpson attributed that to changing cropping patterns and above-average rainfalls. With drier conditions, a more rapid decline in water levels may occur in the future.

Simpson noted the Legislature budgeted no additional funds for the State Engineers Office and no additional staff has been hired. With current drought conditions, a tight situation with regard to water administration is anticipated. Supplemental funds may need to be requested next year.

Simpson reported that 1989 was a dry year in the Republican Basin. All four sub-basins had allocations adjusted downward due to the low runoff. He anticipates the same for 1990, although good spring rains occurred in certain areas in the basin.

Kansas Report

Pope reported no major legislation was passed. Two bills modifying filing fees for changes in points of diversion and establishing a fee for extensions of time were enacted. Environmental legislation relating to storage tanks and recycling were also passed. Due to budget cutbacks, a tight operating budget is anticipated.

Pope noted a severe drought in 1988-89. However, the eastern part of the state has received significant rainfall in 1990 resulting in most reservoirs being filled with some going into the flood pool. There are still some problems in the western part of the state. Although an active water administration schedule was anticipated in 1989, especially on the lower Republican, it did not end up being necessary. Minimum desirable stream flow criteria at the Clay Center and Concordia gages were never met for the required seven consecutive days and timely rainfall and/or adequate stream flow occurred although the water supply was still less than average.

Regarding administrative actions in the upper part of the basin, Pope reported that the alluvial valleys had effectively all been closed to new ground and surface water appropriations since 1984. In addition, a considerable part of the drainage in this basin area is included within the Northwest Kansas Ground Water Management District No. 4, whose boundaries include most of the Ogallala Aquifer. Rules and regulations for the District regulate well spacing and provide for an allowable depletion policy which is currently based upon one percent per year. These policies or earlier versions have continually been in effect for about 10 years. The District is reviewing the adequacy of its long-term management policies. In February 1990, it requested and Kansas approved a one-year, district-wide moratorium on new wells. During this year, the District will try to develop new policies to determine if there are any areas where additional water may be appropriated. It has also begun a depletion/reduction program, which examines problem areas within the District as far as water level declines are concerned. The District's current goal is to develop management programs to reach safe yield in 10 to 20 years.

Pope noted that trends in the water level decline in the Ogallala Aquifer in Kansas are on the average similar to levels reported by Colorado.

Regarding lower basin activities, Pope reported minimum stream flow standards are now in place at Clay Center and Concordia, Kansas. Also, a contract between the state of Kansas and the Kansas River Water Assurance District concerning use of Milford Reservoir storage water has now been signed. Additionally, due to concerns about the interrelationships between ground water and surface water use, effective March 20, 1990, a one-year moratorium is in effect in the lower basin on all new permits. This will allow Kansas to complete assessments on new appropriations in that area.

State-wide, Pope reported a continued emphasis on compliance and enforcement activities. Fines have been levied on about 1,700 water users who failed to report by the deadline for filing water use reports. Kansas has also completed and published a report on municipal water use. A similar report is anticipated for irrigation use in the future. Additionally, a state water plan implementation fund of about \$16 million was created by the legislature.

Bureau Report

Bob Kutz, Project Manager, reported that in attempting to contract the control of the conservation capacity of Cedar Bluff Reservoir to Kansas, the Bureau felt congressional authorization was needed. Legislation was subsequently introduced called the Bureau of Reclamation Omnibus Bill. This legislation stalled in the House due to two controversial amendments. The first, called the Miller amendment dealt with large corporation involvement in Reclamation activities and redefined operating entities. Kutz felt this would have little impact on Bureau projects in Nebraska, Kansas and Colorado.

The second amendment, named the Gejdenson Amendment, required farmers participating in crop reduction programs to pay full-cost pricing on water received from a federal project if their contracts are amended within specified

time frames. With many farmers in the Republican Basin states having to renew their contracts before this decade is out, Kutz felt this would have tremendous financial impacts on Midwest grain farmers. He noted most full-cost pricing would average between 60 to 80 dollars per acre above what the farmers are paying now for their irrigation water. Kutz distributed copies of this amendment and full-cost pricing computations on thirteen Bureau projects.

Other legislation being monitored by the Bureau includes a water appropriation budget package.

The Bostwick Irrigation districts' appeal to the Court of Appeals was denied. Those districts are now responsible to make Operation & Maintenance payments through the Bureau to the Corps of Engineers.

Kutz distributed a summary on the states' ground water recharge demonstration projects. The York Project in Nebraska is the most advanced, with the Wood River site still pending. Colorado's three project sites are the Plains Arikaree, Frenchman and Denver Basin. Kansas has two active sites---Equus Beds and Smoky Hill.

Kutz reported that construction activity is continuing on the North Loup Project with the Davis Creek Regulating Reservoir 75 percent complete. The Bureau is also funding 75 percent of the cost of a major fish hatchery being constructed below Calamus Reservoir.

The Bureau has completed the study of the drainage problems of the upper Courtland Canal. If arrangements can be settled with the Bostwick Irrigation districts, the Bureau may do some final lining of the canal in Nebraska.

Regarding planning activities, Kutz reported the South Platte/Frenchman diversion study report has been distributed. The Bureau provided technical assistance to the state of Kansas in optimizing the operation of Corps dams including data collection. Kutz also noted the completion of a major study of

the central Platte area in Nebraska known as the Prairie Bend Project. Due to changes in the project sponsor's plans, that study will need to be reanalyzed.

A three-part agreement was signed in early 1990 by the Bureau, the Nebraska Game and Parks Commission and the Mirage Flats Irrigation District to establish a larger dead pool in their reservoir to conserve fishery.

Dennis Allacher of the Bureau reported on operations and maintenance in the Republican River basin. In 1989, precipitation varied from 73 percent of normal at Harry Strunk Lake to 111 percent of normal at Bonny Reservoir. For the fourth consecutive year, all irrigation districts in the basin received some project water. Full supplies were received by all districts except Almena, Frenchman Valley and H&RW. Allacher noted that overall, canal diversions were slightly below the 10-year averages.

Allacher reported for 1990 the total precipitation through May varied from 103 percent of normal at Enders Reservoir to 144 percent of normal at Lovewell Reservoir. June precipitation to date is 12 percent of normal at Swanson Lake to 113 percent of normal at Lovewell. All but Lovewell are below 15 percent for the month of June. At the end of May, most reservoirs were slightly ahead of last year. Exceptions are Harlan County and Enders. Enders is at the lowest end-of-May level since the first time the reservoir filled. Allacher noted irrigation releases have started for 1990 in some districts.

The only major maintenance activity scheduled for 1990 is completion of the painting of the spillway gates at Webster Dam. Other maintenance is routine or normal.

Allacher reported that a public safety review is being done on all of the Bureau reservoirs and diversion dams. All dams were inspected in 1988. The next scheduled inspections will be done by the Bureau regional office in 1991.

Special safety inspections were conducted June 11-12, 1990, on Bonny, Red Willow and Enders dams. Allacher reported an additional toe drain was added to Bonny Reservoir to alleviate the danger of piping potential at higher elevations. The Bureau is also planning on implementing an Early Warning System, adding some pressure relief wells, and enlarging the outlet works to improve evacuation. Drilling has been done at Enders, Norton, Cedar Bluff and Webster reservoirs with instrumentation being added at Medicine Creek, Trenton and Norton dams. It's planned to install piezometers at Red Willow and Cedar Bluff dams in the future.

Geological Survey Report

Glenn Engel, Chief of the Hydrologic Data Section, reported that the Survey again received federal funding for ten gaging stations in the Republican Basin operating in 1989 and 1990. The stations are operated in cooperation with the Nebraska Department of Water Resources. No changes in the operating budget are anticipated in the near future. Six of those gaging stations have satellite hookups enabling direct readout of records at near-real time transmission. The records from those gaging stations were provided to the Engineering Committee for use in their computations.

Engel noted that 1989 was a low flow year. Generally, all the gaging stations in the Republican Basin were below average with some close to 50 percent below average.

The Survey is involved in a new project with the Upper Republican Natural Resources District to refine a ground water model developed in the late 1970's for use in the District's control area.

Engineering Report

Bishop, chairman of the Engineering Committee, gave the committee report which is included in the 30th Annual Report along with the Computed Annual Virgin Water Supply and Consumptive Use tables shown in Exhibits A and B of the report.

Bishop reported the 1989 Virgin Water Supply (VWS) was down 5 percent from the previous year. Colorado used 65 percent of its adjusted allocation, Kansas used 44 percent of its adjusted allocation, and Nebraska used 112 percent of its adjusted allocation.

Bishop noted that changes in the formulae were made over the past two years. Copies of the formulae books were distributed.

A lengthy discussion followed on Nebraska's procedure for reporting use of water from wells and how consumptive use is defined. Bishop noted that consumptive use in Nebraska is considered use by wells sited within one mile of either side of a flowing stream. Based on this, more research was done. It was concluded that 10,000 AF in the Republican tributaries of Red Willow and Medicine creeks should not be charged to Nebraska due to the fluctuations of alluvial width in these basins. Wayne Heathers, Manager of the Middle Republican Natural Resources District, indicated that he agreed. Bishop noted the issue will be given further study, and the number of wells will be adjusted from those sited within one mile of the river to those within the alluvium. Bishop reminded the members that original formulae categorized two types of well use---wells pumping from the alluvium and upland wells. The latter are not to be included in the Committee's computations. Simpson indicated Colorado has been using the one-mile criteria, but is now mapping the alluvium to determine if wells are alluvial. Jerry Hilmes noted that Kansas has always used wells in the entire alluvial valley in its computation of consumptive ground water use.

Pope moved to receive the Report. Simpson seconded. Motion was approved.

Unfinished Business

Jess gave the floor to Pope who summarized Kansas' concerns about administration of the Compact. These included the current after-the-fact accounting system, inaction on occurrences of consumptive use exceeding adjusted allocation, and questionable methodology in how virgin water supply and adjusted allocations are calculated. Pope reminded the members of Kansas' proposal presented at the 1989 Compact meeting which addressed these issues. He asked for respective member's responses to that proposal.

Jess reported that the proposal was presented to and discussed with Nebraska irrigation and natural resources district officials at a February 7, 1990, meeting. Jess noted those entities were not favorably impressed with the proposal.

Colorado and Kansas did not conduct similar meetings. Simpson noted that Colorado has been curtailing well development since 1965 to protect surface rights, and this is more of a controlling factor than the Compact itself.

Pope indicated his appreciation that Nebraska officials met with the irrigation districts but repeated his concerns about both short and long-term depletions to Kansas' water supply and the effectiveness of the compact administration in addressing this noting that Colorado and Kansas had taken definite action to deal with water management issues and additional ground water development. He felt Nebraska was obligated to comply with the Compact and had not done so, noting few restrictions on well development in over-allocated areas.

Copies of Bureau of Reclamation archival material were obtained and distributed. Jess responded that he disagreed with the Engineering Committee Report's characterization of Nebraska water consumption being in excess of its allocation in view of the historical material provided by the Bureau. Jess said this material suggested to him that ground water was not to be included as part

of the determination of each state's allocation. He noted that if Nebraska's adjusted allocation was compared to the consumptive use for surface water in the state, Nebraska was within its allocation limits.

In noting that the three Compact states differ in their laws applicable to water use and administration, Jess said Nebraska does not require permits for ground water use and without such enabling legislation, regulation of ground water use is not possible. Jess reported that this issue has been discussed with key Nebraska legislators. He suggested that since Nebraska takes the position that ground water was not to be included under this Compact, little interest in legislation regulating its use has been shown.

A discussion followed on historical records research that had been done. Simpson noted that material Colorado recently discovered (a U. S. Department of Agriculture report by Harry Burleigh) suggested that ground water was included. This report included a mapping of ground water areas and was provided to negotiators to show where ground water development might occur. It noted that ground water provided base flow to the system. Jess requested Colorado provide copies of their historical material for review by each state. Upon review, Jess said consideration would be given to developing a proposal.

Pope disagreed with Nebraska's interpretation of the Compact noting it refers to "all activities of man" in its definition of Virgin Water Supply. He stressed the effect of ground water use on stream flow is considerable, its impact recognized, and action should be taken to deal with this use. Pope repeated that each member should comply with its entitled allocations with whatever appropriate means available. Simpson agreed that each member should strive for compliance.

Pope asked Simpson if any of the historical material required analysis. Simpson responded that the material in reference contained only meeting minutes

and reports. No computation sheets were found, but further research will be done. Kutz also responded that the Bureau will also conduct more extensive research. It was suggested that each member state conduct their own research and provide copies to each other. Jess requested the research be completed and copies distributed before the end of 1990. Pope asked the Engineering Committee to coordinate this effort.

New Business

Pope moved that the Engineering Committee be assigned its normal computations but noted Kansas' continuing objection to its methodology. Simpson seconded. Motion passed.

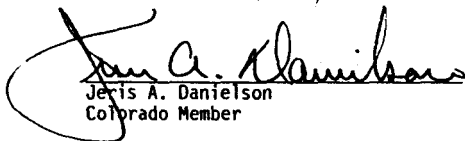
The next meeting will be held in Colorado with the exact location to be decided later. Tentative dates suggested for the meeting were July 11 and 12, 1991.

Members were reminded of the upcoming Nebraska Water Conference Tour sponsored by the University of Nebraska. They were also reminded of the rotation of the Compact Administration and Engineering Committee chairmanships to the host state.

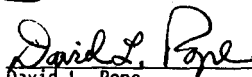
Simpson moved to adjourn. Pope seconded. Motion passed. The meeting adjourned at 11:45 a.m.



J. Michael Jess
Nebraska Member (Acting Chairman)



Jervis A. Danielson
Colorado Member



David L. Pope
Kansas Member

REPORT OF THE ENGINEERING COMMITTEE
TO THE
REPUBLICAN RIVER COMPACT ADMINISTRATION
FOR THE 1989 WATER YEAR

The Engineering Committee met in Lincoln Nebraska on May 2, 1990, to complete work assignments made by the Administration at the July 21, 1989, annual meeting. Those in attendance were as follows:

Bob Bishop
Russ Oakland
Jerry Hilmes

Nebraska Department of Water Resources
Nebraska Department of Water Resources
Kansas Division of Water Resources

Representatives from Colorado did not attend due to scheduling conflicts and the fact that the Compact Administration did not require any special assignments of the Engineering Committee this year. The Engineering Committee performed normal computations for Virgin Water Supply and Consumptive Use of the 1989 water year. The results of those computations are shown on Table 1, 1989 Computed Annual Virgin Water Supply and Table 2, 1989 Computed Consumptive Use.

From Table 1, it can be seen that the compact allocations were adjusted upwards for three basins, Sappa Creek, Beaver Creek, and the main stem where ground water use dominates. The compact allocations were adjusted downwards for eight basins due to below average surface supplies.

As shown on Table 2, Colorado did not exceed its Compact allocation of consumptive use in any basin. Kansas exceeded its Compact allocation in two basins. Nebraska exceeded its Compact allocation in six basins.

Computations were made by computer and were available for review by the Committee. Upon reviewing the computations, it was noted several changes were needed because of corrections made in the entry data. Corrected data were entered and final computations were made.

Revised formulae as approved by the Administration in 1989 were used for computing the consumptive use of the Medicine Creek, Red Willow and Main Stem basins. For comparative purposes, consumptive use computations were also made using the "old" formulae for these basins.

During review of the entry data, it was noted there were variances in the reported stateline flow for the Courtland Canal. Mr. Bishop advised the gaging station was operated by the U.S. Geological Survey; therefore, the Committee agreed to use data reported by the Survey for Courtland Canal stateline flow.

The Committee reviewed Nebraska's procedure for reporting use of water for wells pumping from alluvial aquifers. It was agreed that no changes were needed at this time.

The Committee agreed to publish, in a separate report, revised formulae. The revised formulae are a result of changes in computing the consumptive use for Medicine Creek, Red Willow and the Main Stem basins.

The next meeting will be held during the first part of May, 1991 at a place to be announced later.

Robert G. Bishop

Robert G. Bishop, Nebraska

Gerald E. Hilmes

Gerald E. Hilmes, Kansas

Hal D. Simpson

Hal D. Simpson, Colorado

Table 1

1989 Computed Annual Virgin Water Supply and
Original and Annual Adjusted Allocations

EXHIBIT "A"

Sub-basin and the Original Compact Virgin Water Supply	Computed Annual Virgin Water Supply Republican River Basin 1989 (Acres Feet)			Comparison of Original Compact Allocations and 1987 Adjusted Allocations (Acres Feet)								
	Ground Water	Surface Water	Total Basin	Colorado		Kansas		Nebraska		Total Basin		
				Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	Compact Alloc.	Adj. Alloc.	
Prairie Dog Cr.	27600	15870	5510	21300		12600	9770	2100	1630	14700	11400	
Sage Cr.	21400	29670	2570	31240		9500	12650	6200	12650	17600	25700	
Beaver Cr.	16300	19770	650	20620	2300	4130	6400	6000	6700	2360	16460	20510
Medicine Cr.	50800	11180	32460	43640				4600	3950	4600	3950	
Red Willow Cr.	21900	4990	17690	22680				4200	4200	4200	4200	
Driftwood Cr.	7300	1630	4550	6180			500	420	1200	1020	1700	1440
Frenchman Rv.	92500	32600	60500	92100				52600	52800	52600	52800	
South Fork of the Republican Rv.	57200	14960	23250	30310	25400	17020	23000	15410	600	540	49200	32970
Rock Cr.	11000	120	7740	7860					4400	3150	4400	3150
Buffalo Cr.	7650	600	3360	4460				2600	1470	2600	1470	
Arikaree Rv.	19610	5730	3740	7470	15400	7440	1050	480	3360	1590	19760	9510
N.F. Republican Rv in Colorado	44700	630	34490	25320	10900	7960			11000	8690	21000	16590
N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska	94500	91340	91300	172670			138000	164850	132000	158390	270000	323240
TOTALS	478990	226290	278640	506930	54100	36490	190300	211760	234500	258660	478900	506930

Table 2

1989 Computed Consumptive Use within the
Republican River Basin (Acres Feet)

EXHIBIT "B"

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.				15970	3970	19740 9770 ‡	1210	220	1430 1630 ‡	17380	4070	21170 11400
Sappa Cr.				9280	190	9470 12850 ‡	20520	1140	21660 12850 ‡	25600	1330	31130 25700
Beaver Cr.	0	0	0 4130 ‡	9660	40	9700 8000 ‡	10110	260	10390 8380 ‡	19770	320	20090 20510
Medicine Cr.							12150	920	13070 3950 ‡	12150	920	13070 3950
Red Willow Cr.							4590	660	5250 4200 ‡	4990	660	5650 4200
Driftwood Cr.				0	0	0 420 ‡	1630	0	1630 1020 ‡	1630	0	1630 1440
Frenchman Rv.							32600	17180	49780 52800 ‡	32600	17180	49760 52600
South Fork of the Republican Rv.	6620	7920	14540 17020 ‡	8340	0	8340 15410 ‡	0	0	0 540 ‡	14560	7920	22880 32970
Rock Cr.							120	0	120 3150 ‡	120	0	120 3150
Buffalo Cr.							600	560	1160 1470 ‡	600	560	1160 1470
Arikaree Rv.	4640	0	4640 7440 ‡	250	0	250 480 ‡	840	0	840 1590 ‡	5730	0	5730 9510
N.F. Republican Rv in Colorado	830	3680	4510 7900 ‡				0	3320	3320 8690 ‡	630	7000	7830 16590
N.F. and Main Stem of Republican Rv. incl. Blackwood Cr. in Nebraska				270	45700	45970 144250 ‡	27760	59050	186810 158390 ‡	86630	144750	232780 323240
TOTALS	12090	11600	23690 36490 ‡	43570	49890	93470 211780 ‡	172530	123530	296060 258660 ‡	228290	184930	413220 566930

‡ indicates adjusted allocations from Table 1)