Kansas's Responsive Expert Report
Concerning Haigler Canal and Groundwater Modeling Accounting Points

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This Report responds to the key assertions and proposals of the Nebraska report by Schneider and Williams, *Expert Report on Accounting Issues: Haigler Canal and Groundwater Model Accounting Points,* dated January 20, 2009 ("Schneider Report").

I. Haigler Canal issues

The Schneider Report's proposal to modify the Haigler Canal accounting fails to provide a complete accounting of the water introduced into the Arikaree River system from the Haigler Canal.

Principally, the Schneider Report includes an incomplete analysis of the impact of the proposed changes in accounting on the compact gage on the Arikaree River at Haigler. Table 1 attached illustrates the insufficiency of Nebraska's analysis and the problem of the proposed methods. Columns A – H are the values from Table 2 of Nebraska's report. Column I values are the gage values for the compact gage on the Arikaree River, and Column J is the sum of the spillback values and the assumed return flows from the Haigler Canal system to the Arikaree basin. As shown in Column K, from 2001 to 2006 the assumed spillback and return flows are greater than the actual gage values.

This illustrates that Nebraska's analysis and proposal are incomplete, needing an assessment of transit losses occurring within the reach of the Arikaree River between the spillback gage and the Arikaree gage and analysis of how they should be included in the accounting. In addition, an analysis of whether all or some of the spillback values are part of the assumed return flows or waste from the Haigler Canal and its associated laterals entering the Arikaree River above the Arikaree gage is needed. To correctly and appropriately evaluate the water supply for the Arikaree sub-basin, these factors must be included in the accounting.

Because of the shortcomings of the Schneider Report, Nebraska's proposal to change Haigler Canal accounting should be rejected.

II. Groundwater Model Accounting Points

Article III of the Republican River Compact refers to accounting sub-basins by name, implicitly based on the assumption that each sub-basin extends to the confluence of the tributary with the main stem of the Republican River. The only exception to this is the North Fork, which is separated into two at the Colorado-Nebraska stateline with the Nebraska portion included as part of the Main stem sub-basin. The Final Settlement Stipulation (FSS) and the Accounting Procedures establish accounting points that are consistent with Article III of the Compact. As a result, all measurements should be made from accounting points that are as close as possible to the confluence of the tributary and the main stem, and that minimize overlapping impacts on the tributaries and main stem calculated by the Republican River Groundwater Model.

Section III.A.1 of the Accounting Procedures sets forth the following calculation of the annual Virgin Water Supply for the sub-basins:

> The annual Virgin Water Supply for each Sub-basin will be calculated by adding: a) the annual stream flow in that Sub-basin at the Sub-basin stream gage designated in Section II, b) the annual Computed Beneficial Consumptive Use above that gaging station, and c) the Change in Federal Reservoir Storage in that Sub-basin; and from

> that total subtract any Imported Water Supply Credit. The Computed Beneficial Consumptive Use will be calculated as described in Subsection III. D. **Adjustments** for flows diverted around stream gages and **for Computed Beneficial Consumptive Uses in the Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Main Stem shall be made as described in Subsections III. D. 1 and 2 and IV. B.**" (Emphasis added.)

Thus, the FSS clearly determines that the accounting point should be located, so far as practical, at the confluence of the sub-basin and the main stem.

Nebraska's proposed changes to the accounting points for the Frenchman Creek, South Fork Republican, and Driftwood Creek sub-basins distort the accounting by shifting Nebraska's use of tributary water from these sub-basins to the main stem. That shifting changes the location of where water use is assigned and redistributes the computed water supply between the main stem and the subbasins, incorrectly changing the States' allocations.

However, Kansas does not disagree with the Schneider Report's proposed change in the location of the accounting point with respect to the North Fork gage. This change should be corrected by action of the RRCA.

The Schneider Report asserts that its proposals are necessary to improve RRCA accounting. However, Nebraska has consistently resisted other changes to improve the Accounting Procedures when such changes could create negative impacts on Nebraska's accounting and compliance. Here are two examples. First, Nebraska continues to assume a value of groundwater irrigation recharge (currently set at 20%) that does not reflect the improved efficiency of center pivot irrigation systems, which dominate groundwater irrigation in the Basin, and the greater operational efficiencies that have resulted from Nebraska's limiting groundwater irrigation to multi-year allocations. Second, , Nebraska assumes that all wells within a Nebraska county pump groundwater at the same average quantity, even though it has the data to assign specific quantities by well. Kansas has repeatedly called on Nebraska to modify its accounting to reflect these changes. Nebraska has refused to change these values, any and all of which would significantly improve the accuracy of the RRCA Groundwater Model.

Finally, Kansas is opposed to the retroactive application of any changes to the Accounting Procedures agreed to by the RRCA or recommended by the Arbitrator as a result of these proceedings. Any accounting changes must be applied only to the future.

III. Conclusion

For the reasons set forth above, the Arbitrator should not approve any of the Accounting Procedures changes proposed in the Schneider Report. Kansas' agreement or disagreement with any of the changes is not based on any resultant values or the magnitude of the change, but on whether the change can be expected to correct an error in the final results of the yearly accounting of the States' allocations and CBCU.

Table 1 - Analysis of Impact of Nebraska's proposal on the Arikaree water supply estimate

All values in AF/year

A	B	C	D	E	F	G	H	I	J	K
Year	Stateline Flows Haigler Canal	Current Estimate of Return Flows to Main Stem (40%)	Spillback Flows Haigler Canal	Proposed Net Diversion	Proposed Return Flows (40%)	Proposed Return Flows to the Main Stem (51% of Return Flows)	Proposed Return Flows to the Arikaree River (49% of Return Flows)	Arikaree gage value	Spillback + Assumed Returns flows to Arikaree Basin	Difference
1995	3,837	1,535	509	3,328	1,331	679	652	6,440	1161	5,279
1996	5,351	2,140	1,938	3,413	1,365	696	669	5,667	2607	3,060
1997	4,917	1,967	1,119	3,798	1,519	775	744	2,950	1863	1,087
1998	6,553	2,621	1,601	4,952	1,981	1,010	971	2,699	2572	127
1999	6,458	2,583	2,650	3,808	1,523	777	746	6,805	3396	3,409
2000	5,847	2,339	488	5,359	2,144	1,093	1,051	3,631	1539	2,092
2001	5,447	2,179	406	5,041	2,016	1,028	988	553	1394	(841)
2002	5,092	2,037	289	4,803	1,921	980	941	231	1230	(999)
2003	5,763	2,305	1,670	4,093	1,637	835	802	1,060	2472	(1,412)
2004	3,703	1,481	655	3,048	1,219	622	597	341	1252	(911)
2005	4,107	1,643	1,338	2,769	1,108	565	543	1,151	1881	(730)
2006	4,961	1,984	741	4,220	1,688	861	827	1,060	1568	(508)
Average	5,170	2,068	1,117	4,053	1,621	827	794			

Columns A-H from Nebraska's Table 2. Proposed Return Flows by Sub-basin (in Acre-feet).

Column I from RRCA accounting spreadsheet

Column J = Column D + H

Column K = Column I - J