Response to the Kansas Report on the Nebraska Plan for Alternative Water-Short Year Administration

James C. Schneider, Ph.D.

Nebraska Department of Natural Resources

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Qualifications and Compensation

I have prepared this expert report on behalf of the State of Nebraska. A true and accurate copy of my curriculum vitae is attached hereto as Appendix A. The opinions contained in this report are made to a reasonable degree of scientific certainty. In preparing this report, I utilized theories and methodologies that are accepted within the scientific community and which have been subject to peer-reviewed analysis and publication.

I have prepared this report as a part of my regular duties as an employee of the State of Nebraska and have received no compensation outside of my normal salary and benefits.

James C. Schneider, Ph.D.

1.0 Introduction

Nebraska's proposed Alternative Water-Short Year Plan (Plan)[1], after being submitted to the Republican River Compact Administration (RRCA) and rejected by the State of Kansas, is now subject to the current arbitration pursuant to Section VII.B.1 and VII.C of the Final Settlement Stipulations (FSS). Mr. Barfield has issued a report on behalf of the State of Kansas outlining their objections to the Plan.[2] This report is largely an expression of what Appendix M of the FSS (Appendix M) should say, according to Mr. Barfield. Little, if any, of this is actually contained in Appendix M, as even Mr. Barfield concedes. As has become his common practice, Mr. Barfield reads extensive requirements into the sparse language of Appendix M and generally ignores the larger context in which Appendix M is placed. In short, I disagree with every one of Mr. Barfield's conclusions, none of which are supported by Appendix M, the FSS, or the Republican River Compact.

This report will:

1) Provide a discussion of the relevance of Appendix M within the general context of the Republican River Compact (Compact) and the FSS;
2) Demonstrate that the Plan is clearly in compliance with the express requirements of Appendix M; and
3) Demonstrate that Appendix M is in fact the necessary tool for increased water availability for Kansas water users, based on when those water supplies are actually needed.

2.0 The Relevance of Appendix M

Contrary to Mr. Barfield's view, Appendix M does not exist in a vacuum. It is not designed to operate independently from Nebraska's broader Compact compliance efforts. While Mr. Barfield apparently reads Appendix M as an abstract, independent tool for reducing Computed Beneficial Consumptive Use (CBCU) for the mere fact of doing so, his reading is oversimplified and myopic.

Fundamentally, for Appendix M to achieve anything substantive it must be viewed as a Compact compliance tool, not an abstract means to reduce CBCU. This is clearly how Special Master McKusick envisioned it.[3] Nebraska agreed to the condition in the FSS that it would be held to a two-year average above Guide Rock. As a tradeoff, Nebraska was provided a mechanism to utilize a three-year average when that average would be more favorable (i.e., the third year improved the average). However, Nebraska would still be required to improve what would otherwise be a negative two-year balance by one-half of the shortfall, and would only be required to do more if those actions did not produce a positive three-year average. Appendix M is just the vehicle through which Nebraska formalizes those compliance efforts so that compliance can be assessed in this modified manner.

Sections III.J and table 5D of the RRCA Accounting Procedures and Reporting Requirements (Accounting Procedures) clearly demonstrate that the process for developing and implementing

[1] NDNR, 2013.
[2] Barfield, 2013.
[3] See Second Report of Special Master McKusick at pp. 28, 50-52, 64-68 (describing the use of a three-year average for calculating Compact compliance).

an Alternative Water-Short Year (AWSY) Plan through Appendix M translates directly into the compliance test for Nebraska under Water-Short Year Administration, stating:

> *Nebraska will be within compliance with the Compact as long as the three- year running average difference in Column 8* [of Table 5D] *is positive and the sum of the previous year and current year deficits above Guide Rock are not greater than the expected decrease in Computed Beneficial Consumptive Use under the plan.*

Therefore, it is obvious that the entire purpose of Appendix M is to help Nebraska achieve Compact compliance through reducing its CBCU. The reduction in CBCU is allowed to be reduced by as much as half of what would otherwise be required through a strict two-year test. The problem with the implementation of this modified test is that Compact accounting is retroactive in nature. It is not finalized until August of the year following the applicable compliance year. Thus, it is literally impossible to know exactly how much CBCU reduction is required in any given year to comply with the Compact that year until the following year. This is why Nebraska must retain flexibility under any Appendix M plan so that it can implement any number of alternatives that have the practical effect of reducing CBCU to the point that Compact compliance is ensured – but no further.

Requiring an AWSY Plan to contain a fixed reduction in CBCU results in a situation where the plan in no way ensures that Nebraska will be in compliance with the Compact and the FSS. Consider the following example: Nebraska could be faced with a situation where it would otherwise incur (i.e., with no additional actions) an overuse of 20,000 acre-feet during a water-short year after incurring an overuse of 20,000 acre-feet the year before the water-short year. Without an AWSY Plan, Nebraska would be forced to change its accounting outcome in that water-short year by a total of 40,000 acre-feet, changing it from an overuse of 20,000 acre-feet to an underuse of 20,000 acre-feet. If Nebraska had an approved AWSY Plan that contained a fixed reduction of 10,000 acre-feet (the maximum amount suggested by Mr. Barfield[4]), its implementation would not result in compliance, even if the extra year that was brought into the three-year average had an underuse of 50,000 acre-feet. This is because the AWSY plan would fall short in terms of the reduction in CBCU, leaving a two-year sum of deficits of 30,000 acre-feet which does not balance against the expected reduction in CBCU from the AWSY Plan of only 10,000 acre-feet. Therefore, the implementation of the plan in this example would in fact create a lose-lose situation (i.e., Nebraska is out of compliance and Kansas does not receive its full allocation), not the "win-win for both Nebraska and Kansas"[5] that Mr. Barfield feels that Appendix M should provide.

Conversely, requiring a plan to contain a fixed reduction in CBCU could very easily erode or completely erase the benefit to Nebraska provided by the potential for an AWSY Plan as bargained for. For example, suppose that Nebraska would otherwise incur an overuse of its allocation during a water-short year of 2,000 acre-feet, and that Nebraska overused its allocation by 3,000 acre-feet in the year before. Without an AWSY Plan, Nebraska would be forced to change its accounting outcome in that water-short year by a total of 5,000 acre-feet, changing it from an overuse of 2,000 acre-feet to an underuse of 3,000 acre-feet. If Nebraska had an approved AWSY Plan that contained a fixed reduction of 5,000 acre-feet (the minimum amount

[4] Barfield, 2013, pg. 6.
[5] Barfield, 2013, pg. 2.

suggested by Mr. Barfield[6]), its implementation would provide no benefit whatsoever to Nebraska, even if the extra year that was brought in for the three-year average had an underuse of 10,000 acre-feet. This is due to the fact that Nebraska must reduce its CBCU by 5,000 acre-feet with or without the implementation of that AWSY Plan, even though the specific conditions should have allowed Nebraska to take actions that resulted in only half of that amount (i.e., 2,500 acre-feet) under an AWSY Plan. In other words, there would be no additional "flexibility for Nebraska's test of compliance during Water-Short Year Administration,"[7] as Mr. Barfield claims Appendix M would provide.

What Mr. Barfield really desires is a CBCU reduction plan that is so large (e.g., shutting down 302,000 acres of irrigated land in the Nebraska portion of the Republican River Basin[8]) that it will permanently eliminate the threat that Nebraska would ever violate the Compact under any of the potential compliance tests. In other words, Kansas wants to ensure Nebraska "overcomplies" in every year, thus changing the clear terms of the agreement contained within the FSS. It is clear that only such a drastic and utterly unnecessary act will satisfy Kansas and its view of Appendix M. Mr. Barfield has so far failed in imposing this so-called "remedy" on Nebraska during the current U.S. Supreme Court trial, and should not be allowed to use Appendix M as a back door for his desired outcome for water regulation in Nebraska. Such water management is neither prudent nor required by Appendix M, the FSS, or the Compact.

3.0 Nebraska has Fully Complied with the Express Requirements of Appendix M

As noted, and as acknowledged by Mr. Barfield, Appendix M contains little in the way of substantive mandates Nebraska must satisfy in order to invoke its provisions. Contrary to Mr. Barfield's implication, this does not mean Kansas has the right to unilaterally fill in the blanks. It simply means Nebraska's threshold to invocation of Appendix M is low.

3.1 The Projected Water Supply Requirement

Appendix M requires that the projected water supply in Harlan County Lake be less than 130,000 acre-feet prior to invoking Appendix M. There is no dispute that this was the case when Nebraska invoked its Plan during the spring of 2013.

3.2 The Plan Must Reduce CBCU

Appendix M also requires that Nebraska submit a plan for reduction of CBCU. Mr. Barfield apparently contends that most of the activities contemplated under the Plan are not reducing CBCU. In this matter, Mr. Barfield's views on what Appendix M "requires" are simply based on his "understand[ing of] the intent of Appendix M."[9] Therefore, Mr. Barfield dismisses the basic provisions of the integrated management plans (IMPs) that call for reductions in groundwater uses and administration of surface water uses. Indeed, this year surface water users were not allowed to divert natural flow

[6] Barfield, 2013, pg. 6.
[7] Barfield, 2013, pg. 2.
[8] Barfield, 2011.
[9] Barfield, 2013, pg. 4.

until early July in Nebraska. This is an explicit manifestation of CBCU reductions contemplated by surface water administration that Mr. Barfield simply dismisses.

Mr. Barfield also ignores the purchase of surface water rights and the temporary lease of groundwater allocations that has occurred in several of the natural resource districts (NRDs). I estimate this reduced Nebraska's CBCU this year by 2,910 acre-feet.[10] Again, this is a concrete, quantifiable reduction in CBCU, calculated using the Accounting Procedures and the RRCA Groundwater Model. And, again, this action is specifically contemplated in the IMPs Mr. Barfield continues to claim are too obtuse for him to understand. Notably, they were not too obtuse for Special Master Kayatta to understand, as evidenced by his Draft Opinion approving their implementation as consistent with the Compact.[11]

Mr. Barfield then indicates, without any real explanation, that augmentation projects cannot qualify as Appendix M measures. This is nonsense. The Rock Creek Augmentation Project reduces CBCU in two ways. First, it involves the retirement of irrigated acres in the project area, and second, it offsets CBCU, which is the definitional equivalent of reducing CBCU. Specifically, CBCU is defined as "the streamflow depletion [emphasis supplied] resulting from the activities of man.…"[12] Subsection III.B.1.k of the FSS, which contains the document's first reference to augmentation, explains that augmentation wells are wells that are "acquired or constructed by a State for the sole purpose of offsetting stream depletions [emphasis supplied] in order to comply with its Compact allocations." Thus, simply stated, an offset of stream depletions equates to a reduction in CBCU by definition.

3.3 The Plan Must Describe How it Will Reduce CBCU

A plan submitted under Appendix M must "indicate the actions which Nebraska would undertake to reduce its [CBCU] from the base condition and the amount of reduction expected from those actions."[13] Kansas apparently would like this language in Appendix M to read "**expressly state precisely** the actions which Nebraska **will in fact** undertake to reduce its [CBCU] from the base condition and the **precise** amount of reduction **that will result** from those actions." Kansas ignores again the plain language of the provision. In satisfaction of this requirement, Nebraska submitted its IMPs, then, as expressly contemplated in the IMPs, followed up on March 29, 2013,[14] with further specific identification of actions to be taken by the NRDs. While these actions do in fact also involve the purchase and lease of irrigation rights by the NRDs, the planned operation of the Rock Creek Augmentation Project was indicated as the sole action as it will be more than sufficient to cover the expected decrease in CBCU of 4,530 acre-feet as specified in the letter.

Nebraska has met the requirements of this section by identifying, through its IMPs, the actions that would be taken under varying circumstances. Nebraska specifically

[10] See Appendix B.
[11] See Appendix C, pages 70-79.
[12] FSS, Section II.
[13] FSS, Appendix M, Paragraph 2.
[14] Barfield, 2013, Attachment 3.

quantified the expected reduction in CBCU attributable to those actions and did so "using methods consistent with the RRCA Accounting Procedures and the RRCA Groundwater Model."[15] That information was shared with Colorado and Kansas before they were asked to vote on the Resolution approving Nebraska's proposed Appendix M Plan. Mr. Barfield's preliminary comment that the RRCA was somehow unable to evaluate the reduction in CBCU attributable to Nebraska's actions is ridiculous. All available information was presented to the RRCA. Nebraska and Colorado (who voted in favor of the Resolution) were both clearly able to evaluate the proposal. The only difference is that Kansas apparently made no real effort to do so; a common theme within the RRCA.

3.4 Nebraska May Submit Multiple Plans

As even Mr. Barfield concedes, Nebraska may submit "one or more"[16] plans under Appendix M. Mr. Barfield criticizes Nebraska for a perceived lack of specificity, but the IMPs themselves represent a series of plans that would be implemented depending on Nebraska's Compact compliance balances and projections for an upcoming dry year. Nebraska could identify five, ten, or twenty ways to reduce CBCU and then apply those various measures in multiple combinations to develop various increments of CBCU reduction. And, theoretically, these could each be submitted individually to the RRCA for consideration and approval. As seen above, Mr. Barfield's implication that several plans would suffice would significantly limit the additional flexibility that he claims Appendix M is meant to provide. A great many plans would be needed. For example, limiting Nebraska's flexibility to only five ways to reduce CBCU, and further limiting Nebraska's flexibility to CBCU reductions up to 15,000 acre-feet in 1,000 acre-foot increments, would require Nebraska to submit thousands of plan combinations that would have to be individually approved by the RRCA. Considering the fact that it has taken Colorado five plus years in an attempt to work one augmentation proposal through the RRCA, the use of the provisions contained in Nebraska's IMPs to eliminate this ridiculous and unworkable condition is entirely appropriate.

Nor does Nebraska have to provide the exact amount of CBCU reduction that will in fact occur under any particular alternative. The language of Appendix M speaks only to the amount of reduction "expected" to be achieved. Notwithstanding this flexibility, Nebraska has established a discrete range of CBCU reductions anticipated from implementation of the IMPs of between 1 and 15,089 acre-feet. This is more than sufficient to satisfy Appendix M. More importantly, as evidenced by Colorado's vote, it is more than sufficient to provide an adequate level of confidence about the likely reduction to those interested in seeing Appendix M applied in a meaningful way.

3.5 Appendix M Timelines

Appendix M establishes an administrative process, with corresponding deadlines, which Nebraska has met in full. A plan must be submitted to the RRCA prior to August 1 and the RRCA must take action on any plans by November 1. The Plan was submitted by Nebraska to the RRCA on July 29, 2012. Nebraska must then notify the RRCA of its

[15] FSS, Appendix M, Paragraph 2.
[16] FSS, Appendix M, Paragraph 3.

intent to implement a plan by April 1 in a year when it intends to implement the plan. Nebraska informed the RRCA of its intent to implement the Plan, along with the actions Nebraska planned to take and the expected reduction in CBCU by letter on March 29, 2013, as mentioned above.

4.0 The Benefits to Kansas of Implementing Appendix M

Mr. Barfield speaks much about flexibility in his Report. And, he complains that Nebraska's efforts might thwart the interest of Kansas' water users. But, no one has been a bigger detriment to Kansas' water users than Mr. Barfield. The events of 2013 again provide a poignant example.

This spring, it became apparent that the Kansas Bostwick Irrigation District (KBID) wanted to hold water in Harlan County Lake until 2014. Specifically, Nebraska planned significant management actions designed to remain in compliance with its two-year average as required under Water-Short Year Administration. However, in spite of Mr. Barfield's repeated representations that any water that was used by Nebraska in excess of its allocation always harmed Kansas because this water was needed in Kansas, Mr. Barfield in 2013 reversed course and informed Nebraska that Kansas did not need this water. Unfortunately, because Nebraska's accounting balance in 2013 would be negatively impacted by water that remained in Harlan County Lake past December 31, 2013, Nebraska could not agree to hold that water until 2014. Instead, out of an abundance of caution and its need to ensure compliance with its two-year average, Nebraska was compelled to release water to Kansas at a time when KBID did not want the water.

Fortunately, after failed attempts to reach an accommodation with the State of Kansas, KBID reached out directly to Nebraska decision makers. As it turned out, despite Mr. Barfield's representation to the contrary, the KBID Board was interested in having this water available for potential use in 2013. With Mr. Barfield removed from the equation, Nebraska was able to accommodate a deferred release schedule to provide the KBID flexibility to use the water later into the irrigation season as needed. While Nebraska will still likely be compelled to release any water remaining unused after the irrigation season, this could be at least partially avoided through implementation of the Plan. The addition of the third year in the accounting equation would afford Nebraska the flexibility to hold more water over in Harlan County Lake. Furthermore, the reduced compliance burden this year would result in the need for more stringent limitations in 2014 should conditions remain water-short. The result could be significantly more beneficial for the KBID.

This is evident by analyzing the actual accounting balance for 2011, 2012, and the potential necessary balance for Nebraska for 2013 and going forward into 2014 under the two-year compliance requirement (table 1) versus the compliance requirement under an AWSY Plan (table 2).

Year	Balance (acre-feet per year)
2012	20,000
2013	-20,000
Average	0

Table 1. Required accounting outcome for 2013 using the two-year average with the actual estimated balance for 2012 and the resulting required minimum balance for 2013.

Year	Balance (acre-feet per year)
2011	50,000
2012	20,000
2013	-24,530
Average	15,157
Two-year (2012-2013) sum of deficits	-4,530
Expected Reduction in CBCU	4,530

Table 2. Required accounting outcome for 2013 under the Plan using the expected reduction in CBCU as sent to the RRCA by Nebraska on March 29, 2013.

The point from these tables is that Nebraska's annual balance for 2013 is allowed to be less under the Plan by 4,530 acre-feet. The practical meaning of this is that Nebraska would be able to reduce the required flows into Kansas in 2013, and Nebraska would carry a more negative balance forward, thus requiring increased reductions in CBCU in 2014. All of this would help to ensure a more plentiful water supply for KBID during 2014. Therefore, ironically, Appendix M is the path to achieve a carryover of water supplies that KBID was seeking for this year. This seems utterly lost on Mr. Barfield, who appears more concerned about pedantic points than he is about providing wet water to his constituents.

5.0 Conclusions

This report has demonstrated the following:

1) Any AWSY Plan under Appendix M of the FSS is obviously intended to result in Compact compliance by the State of Nebraska. Any interpretation that Appendix M is somehow divorced from Compact compliance is absurd.
2) The Plan presented by Nebraska is fully consistent with the provisions of Appendix M.
3) Mr. Barfield's rejection of the Plan will likely result in a reduced water supply for his own water users in 2014.

As discussed in my report on Nebraska's Rock Creek Augmentation Project, also prepared for this arbitration, Mr. Barfield's only apparent objective in his role in the RRCA is to frustrate the compliance efforts of Colorado and Nebraska. This is clear when considering the fact that he felt compelled to reject the Plan by letter[17] before the RRCA Annual Meeting in 2012, thus

[17] Barfield, 2013, Attachment 2.

precluding any meaningful dialog between the States. As shown here, his need to frustrate Nebraska's compliance efforts is even blind to the needs of his own water users. Therefore, Mr. Barfield's objections to the Plan must be viewed as nothing more than a series of hollow reasons that he has invented to justify his rejection of the Plan. Many of these reasons require Mr. Barfield to invoke what Appendix M "should" require, or require a circular reasoning that his views are correct simply because that is the way he "understand[s]" Appendix M, despite his claim that the FSS is "a very detailed, definitive and carefully crafted"[18] document.

Mr. Barfield has feigned his willingness to work with Nebraska in what he proposes as a "more productive course for Nebraska."[19] However, this would apparently require wide-ranging negotiations that would only produce one or maybe a few AWSY Plans that, as described above, may not produce compliance or be of any use to Nebraska whatsoever. This potential outcome should be rejected in favor of Nebraska's Plan which clearly meets the requirements of Appendix M of the FSS and is consistent with the purpose of the FSS, which is to provide a roadmap to Compact compliance for each state.

[18] Barfield, 2013, pg. 2.
[19] Barfield, 2013, pg. 6.

Bibliography

Barfield, D.W., November 18, 2011, Ensuring compliance by Nebraska.

Barfield, D.W., July 1, 2013, Report on the Nebraska Plan for Alternative Water Short Year Administration.

Final Settlement Stipulation, December 15, 2002, Vol. 1-5, Kansas v. Nebraska & Colorado, No. 126 Orig., U.S. Supreme Court.

Nebraska Department of Natural Resources, July 30, 2012, State of Nebraska's Plan for Reduction of Computed Beneficial Consumptive Uses under Alternative Water-Short Year Administration.

Republican River Compact, Act of May 26, 1943, ch. 104, 57 Stat. 86.

Republican River Compact Administration Accounting Procedures and Reporting Requirements, revised on August 12, 2010, Kansas v. Nebraska & Colorado, No. 126 Orig.

Second Report of the Special Master, April 15, 2003, Kansas v. Nebraska & Colorado, No. 126 Orig.

Appendix A

Curriculum Vitae for James C. Schneider, Ph.D.

Curriculum Vitae for James C. Schneider, Ph.D.

Areas of Specialization

- Water resources management and planning
- Groundwater flow modeling
- Administration of interstate water Compacts, Decrees, and Agreements
- Hydrogeology
- Statistical analysis of hydrologic data
- Surface-water hydrology
- Environmental geophysics

Education

- Ph.D. in Geology (May 2003) - University of South Florida, Tampa, Florida
- M.S. in Geology (May 1998) - Northern Illinois University, DeKalb, Illinois
- B.S. in Geology (May 1996) - Northern Illinois University, DeKalb, Illinois

Professional History

- **Deputy Director (2010-) *Nebraska Department of Natural Resources (DNR)***

  Responsibilities: Advising and assisting the Director in formulating and administering department policies, budget, organization, and work assignments; assisting in formulation of state water policies, particularly as they pertain to water quantity issues, including serving as liaison with the legislature, other state and local agencies, and public interest groups; overseeing the general administration of the department and assuming responsibility for the department's operation in the Director's absence; assisting the Director in administration of interstate compacts and decrees; serving as the State's Representative on technical committees for compacts and decrees; overseeing the work of consultants and preparing special reports related to surface water or surface and groundwater interactions; assisting the Director in reviewing permit applications and groundwater management plans; and assisting the Director in water rights hearings and analysis of permit applications; supervising the Integrated Water Management Division.

- **Head, Integrated Water Management Division (2008-2009) *Nebraska DNR***

  Responsibilities: Manage the integrated water management planning process at the Department, including oversight of surface- and groundwater related studies, development and implementation of integrated management plans, supervision of the Integrated Water Management Division and coordination with other Department Divisions, Natural Resources Districts, and other State and Federal agencies.

- **Senior Groundwater Modeler (2007) *Nebraska DNR***

  Responsibilities: Serve as NDNR groundwater flow modeling expert.

- **Senior Hydrogeologist/Geophysicist (2006)** ***SDII Global Corporation***

  Responsibilities: Manage hydrogeology and geophysics projects and prepare contract reports and publications. Serve as company groundwater flow modeling expert. Serve as company geophysics expert.

- **Staff Geologist (2003–2005)** ***SDII Global Corporation***

  Responsibilities: Conduct hydrogeology projects and prepare hydrogeology contract reports and publications. Assist senior staff as technical resource for litigation and peer reviews of technical reports. Serve as company groundwater flow modeling expert. Serve as resource to subsidence investigation group.

- **Research Assistant (1998 – 2002)** ***University of South Florida, Geology Dept.***

  Responsibilities: Conducting field research, data interpretation, geophysical surveys and groundwater model development for a variety of projects throughout Florida as well as in other states and in Jamaica. Teaching undergraduate and graduate level lab and lecture courses.

Publications

Schneider, J.C., S.B. Upchurch, J. Chen, C. Cain, J. Good, 2008. Simulation of groundwater flow in North Florida and South-central Georgia. Peer reviewed technical report issued to the Suwannee River Water Management District.

Schneider, J.C., P.H. Koester, D.R. Hallum, R.R. Luckey, and J. Bradley, 2007. Managing Nebraska's groundwater resources in the Platte and Republican River Basins using regional groundwater models. Geol. Soc. Am., 2007 Abstracts with Programs.

Upchurch, S.B., K.M. Champion, *J.C. Schneider*, D. Hornsby, R. Ceryak, W. Zwanka, 2007. Identifying water-quality domains near Ichetucknee Springs, Columbia County, Florida. Proceedings of 4th Conference on Hydrogeology, Ecology, Monitoring, and Management of Ground Water in Karst Terrains.

Schneider, J.C., S.B. Upchurch, and K.M. Champion, 2006. Stream-aquifer interactions in a karstic river basin, Alapaha River, Florida. Geol. Soc. Am. Southeastern Section, 2006 Abstracts with Programs.

Schneider, J.C. and S.E. Kruse, 2005. Assessing natural and anthropogenic impacts on freshwater lens morphology on small barrier islands: Dog Island and St. George Island, FL. Hydrogeology Journal 14: 131-145.

Schneider, J.C., S. Upchurch, M. Farrell, A. Janicki, J. Good, R. Mattson, D. Hornsby, K Champion, D. Wade, K. Malloy, 2005. Development of minimum flows and levels for Blue Spring, Madison County, Florida. Geol. Soc. Am. Southeastern Section, 2005 Abstracts with Programs.

Upchurch, S.B., K.M. Champion, *J.C. Schneider*, D. Hornsby, R. Ceryak, W. Zwanka, 2005. Water-rock interactions near Ichetucknee Springs, Columbia County, Florida. Geol. Soc. Am. Southeastern Section, 2005 Abstracts with Programs.

Schneider, J.C., S.B. Upchurch, K.M. Champion, J. Good, and D. Hornsby, 2004. Using synthesized data to quantify surface-water/ground-water relationships between Madison Blue Spring and the Withlacoochee River of North Florida. U.S.G.S Open File Report 2004-1332: 4.

Upchurch, S.B., M. Farrell, A. Janicki, J. Good, R.A. Mattson, D. Hornsby, *J.C. Schneider*, D. Wade, and K. Malloy, 2004. Development of minimum levels and flows for Blue Spring, Madison County, Florida. U.S.G.S. Open File Report 2004-1332: 6

Schneider, J.C., S.B. Upchurch, and K.M Champion, 2004. Complex surface-water groundwater interactions associated with backwater conditions on the Withlacoochee River of North Florida. Florida Scientist 67 (Supplement 1): 52.

Upchurch, S.B., K.M. Champion, *J.C. Schneider*, D. Hornsby, R. Ceryak, and W. Zwanka, 2004. Defining springshed boundaries and water-quality domains near first magnitude springs of North Florida. Florida Scientist 67 (Supplement 1): 52.

Kruse, S., *J. Schneider*, and J. Greenwood, Ejemplos del uso de métodos eléctricos y electromagnéticos para el mapeo de la salinidad del agua subterránea en zonas costeras, *II Congreso Multidisciplinario de Investigación Ambiental*, January 22-23, Managua, Nicaragua, 2004.

Schneider, J.C. and S.E. Kruse, 2003. A comparison of controls on freshwater lens morphology of small carbonate and siliciclastic islands: Examples from barrier islands in Florida, USA. Journal of Hydrology 284: 253-269.

Greenwood, J., S. Kruse, *J.C. Schneider*, and P. Swarzenski, 2002. Shallow seafloor conductivity structure from nearshore electromagnetic *surveys, Eos. Trans. AGU, 83(47), Fall Meet. Suppl., Abstract OS22B-0257.*

Schneider, J.C., and S.E. Kruse, 2001. Characterization of freshwater lenses for construction of groundwater flow models on two sandy barrier islands, Florida, USA. First International Conference on Saltwater Intrusion and Coastal Aquifers-Monitoring, Modeling, and Management, Essaouira, Morocco, 9 p.

R. Dean, B. DeArmond, M. Gerseny, M. Lesmerises, R. Csontos, M. Pollock, J. Natoli, L. Bierly, J. Nettick., J. Meyer, M. Tibbits, W. Sullivan, *J. Schneider*, S. Kruse, V. Peterson, S. Yurkovich, J. Burr, and J. Ryan, 2001. Geophysical transects across the margins of the Carroll Knob mafic/ultramafic complex, Macon County, North Carolina, Geol. Soc. Am. Southeastern Section, 2001 Abstracts with Programs, A-67.

Kruse, S.E., *J.C. Schneider*, D.J. Campagna, J.A. Inman, and T.D. Hickey, 2000. Ground penetrating radar imaging of cap rock, caliche and carbonate strata. Journal of Applied Geophysics 43: 239-249.

Schneider, J.C., 2000. Beach profile change through a tidal cycle due to groundwater-seawater interactions, Geol. Soc. Am. Southeastern Section, 2000 Abstracts with Programs.

Schneider, J.C., and S.E. Kruse, 2000. Hydrostratigraphy of a developing barrier island, St. George Island, Florida, EOS, Trans. AGU, 81, F472.

Kruse, S.E. and *J.C. Schneider*, 2000. Freshwater lens of Dog Island, FL. Technical report issued to the Barrier Island Trust.

Kruse, S.E., *J.C. Schneider*, J.A. Inman, and J.A. Allen, 2000. Ground Penetrating Radar Imaging of the Freshwater/Saltwater Interface on a Carbonate Island, Key Largo, Florida. GPR 2000: Proceedings of the 8th International Conference on Ground Penetrating Radar, Gold Coast, Australia, SPIE Vol. 4084: 335-340.

Schneider, J.C. and P.J. Carpenter, 1998. Geophysical Identification of Karst Fissures Near a Landfill in Southwestern Illinois. Proceedings from the Symposium on the Application of Geophysics to Environmental and Engineering Problems, p. 985-992.

Interstate Organizations

- **Republican River Compact Administration (2007-)**

  Responsibilities: Participate in Engineering Committee and Compact Administration Meetings representing State of Nebraska. Serve as official representative on the Engineering Committee beginning in 2010.

- **Platte River Recovery Implementation Program (2007-)**

  Responsibilities: Participate in Water Advisory Committee and in implementation of Nebraska New Depletions Plan. Represent Nebraska on the Governance Committee (Chair 2011) and the Finance Committee beginning in 2010.

- **North Platte Decree Committee (2010-)**

  Responsibilities: Nebraska alternate to the North Platte Decree Committee.

- **Interstate Council on Water Policy (2010 -)**

  Responsibilities: Represent Nebraska on Committees and at annual meetings. Elected to the Board of Directors in 2011.

Expert Witness Testimony

- **Non-binding arbitration in *Kansas v. Nebraska & Colorado,* No. 126 Orig. (2008)**

  Responsibilities: Provided deposition and trial testimony in non-binding arbitration initiated in October 2008 relating to Kansas' claims for damages and future compliance, and Nebraska's proposal to fix accounting errors.

- **Non-binding arbitration in *Kansas v. Nebraska & Colorado,* No. 126 Orig. (2010)**

  Responsibilities: Provided deposition and trial testimony in non-binding arbitration initiated in May 2010 relating to Nebraska's Crediting Issue and Colorado's Augmentation Pipeline.

- **U.S. Supreme Court litigation in *Kansas v. Nebraska & Colorado,* No. 126 Orig. (2012-2013)**

  Responsibilities: Provided deposition and trial testimony in U.S. Supreme Court litigation in 2012 and 2013relating to Kansas' claims for damages and future compliance.

Appendix B

Letter from Brian P. Dunnigan, P.E., dated February 26, 2013

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

Dave Heineman
Governor

February 26, 2013

IN REPLY TO:

Mike Clements, Manager
Lower Republican NRD
30 N. John St.
P.O. Box 618
Alma, NE 68920-0618

Dan Smith, Manager
Middle Republican NRD
220 Center Ave.
P.O. Box 81
Curtis, NE 69025-0081

Jasper Fanning, Manager
Upper Republican NRD
511 E. 5th St.
P.O. Box 1140
Imperial, NE 69033-1140

Dear Managers:

Thank you for submitting your plans of management actions prior to January 31st of this year informing the Department of the management actions your Natural Resources District (District) will take in response to the Compact Call Year initiated by the Departments forecast issued on December 31, 2012. I understand that these management actions are designed to fully mitigate any forecasted shortfall in your District, thereby eliminating the need for the additional regulatory actions that would otherwise be required, pursuant to our jointly developed Integrated Management Plans. (URNRD & LRNRD – Section 6.B., MRNRD – Section 7.B.) The Department has evaluated your District's management actions and determined that they will be sufficient to ensure that the forecasted shortfall will be fully mitigated. Attachment 1 describes the analysis of each District's management actions by the Department.

Additionally, Attachment 1 includes the Department's forecasted annual balance with these additional management actions in place for 2013. While your additional management actions do offset any forecasted shortfall for the correct compliance period (2012-2013), a negative annual balance may remain for 2013 that will carry into the next compliance period. Also included is an assessment of each District's current progress toward meeting the groundwater pumping compliance standards (twenty-five percent reduction in baseline groundwater pumping volumes) by 2015 (2011-2015 compliance period).

The Department appreciates the efforts of your District in working to ensure that the compliance standards of the IMP are achieved and looks forward to continuing to work closely with the District into the future.

Sincerely,

Brian P. Dunnigan, P.E.
Director

Enclosure

Attachment 1

The Monitoring and Studies Section each District's integrated management plan (IMP) sets forth the calculations used by the Department to forecast each District's balance of allowable groundwater depletions for the appropriate compliance period (two-year, three-year, or five-year) (Table 1). These calculations can be summarized as follows:

Two-Year Balance = Allowable groundwater depletions for the District - the District's Forecasted portion of GwCBCU NE + Current Years Balance - 3,333 acre-feet

Table 1. Summary of each districts balance for the 2012-2013 Compact compliance period[1].

Year	LRNRD	MRNRD	URNRD
2012 Provisional	2,610	8,820	2,470
2013 Forecast	-5,520	-4,290	-13,150
Two-Year Total	-2,910	4,530	-10,680

The Districts have provided plans to implement management actions to achieve a forecasted balance of greater than or equal to zero. These actions consist of:

1. A one-year lease and retirement of water use on approximately 4,200 irrigated acres in the rapid response area (LRNRD (approximately 4,000 acres) and MRNRD (approximately 200 acres);

2. An agreement to lease a portion of the Middle Republican Natural Resources District (NRD) management actions it has achieved through the purchase and retirement of the Riverside Canal Company[2], groundwater irrigation retirements, and other actions (LRNRD)[3]; and

3. The enhancement of streamflow through implementation of the Rock Creek Augmentation Project (URNRD).

---

[1] Values derived from the December 2012 forecast. The use of the 2012-2013 period assumes that 2013 will be designated as a Water-Short Year.

[2] The acquisition and retirement of the Riverside Canal Company is projected to result in 1,450 acre-feet reduction in surface water computed beneficial consumptive use. Thus, Table 1 reflects the fact that 1,450 acre-feet has been added to the MRNRD's balance for 2012 and 2013.

[3] This agreement amongst the Districts is in part provided for pursuant to Section VIII of the LRNRD IMP and Section IX of the MRNRD IMP. The URNRD plan also included this potential, although no agreement is currently in place, and it does not appear to be strictly necessary, so it was not incorporated into this analysis.

Based on the Department's review it has been determined that the yield from the management actions being taken by each District will be sufficient to ensure that the Districts are forecast to meet their allowable groundwater depletion compliance standards for 2012-2013. The calculations illustrating the effect of the District's management actions are provided below and summarized in Table 2.

Two-Year Balance = Allowable groundwater depletions for each District – the District's Forecasted portion of GwCBCU NE + Potential yield from the District's management actions (water leases/agreements, augmentation, etc.) + Current Years Balance -3,333

Table 2. Summary of 2012-2013 balances of allowable groundwater depletions, management actions and final projected 2012-2013balances.

Year	LRNRD	MRNRD	URNRD
2012 Provisional	2,610	8,820	2,470
2013 Forecast	-5,520	-4,290	-13,150
Two-Year Total (from the forecast)	-2,910	4,530	-10,680
Management Actions	2,910	-1,870[4]	10,680
New 2013 Balance (with management actions)	-2,610	-6,160	-2,470
Two-Year Total (with management actions)	0	2,660	0

Table 2 illustrates each District's new 2013 forecasted annual balance with inclusion of its current management actions. Each District is forecast to have a negative annual balance for 2013[5]. Thus, if 2013 conditions remain dry and 2014 conditions warrant a water-short year determination the Districts will likely be entering the 2013-2014 compliance period with a negative balance which would necessitate additional management actions to address any forecasted shortfalls that may be projected for 2013-2014.

In addition to the allowable depletions compliance standards, the IMPs contain compliance standards to reduce long-term groundwater pumping volumes. The Department has conducted an assessment of each District's current total estimated groundwater pumping volumes for 2011 and 2012 (Table 3). Table 3 also includes the necessary groundwater pumping volume for 2013-2015 that ensures that each District achieves the twenty-five percent reduction for the 2011-2015 compliance period. The Department will continue to review and update the 2012 pumping volumes as your meter data are finalized.

[4] This value represents the agreement between the LRNRD and MRNRD.
[5] Table 1 does not reflect the agreement between LRNRD and MRNRD. Thus, LRNRD's 2014 annual balance will be debited 1,870 acre-feet and MRNRD's 2014 annual balance credited 1,870 acre-feet.

Table 3. Summary of each District's groundwater pumping volumes and remaining groundwater pumping volumes for the 2011-2015 compliance period.

Year	LRNRD	MRNRD	URNRD
2011	137,041	201,184	356,655
2012[6]	251,596	405,360	717,345
Two-Year Total	388,637	606,544	1,074,000
Total Available Groundwater Pumping Volume for the 2011-2015 Compliance Period	909,375	1,160,531	1,992,188
Total Remaining Groundwater Pumping Volume for 2013-2015	520,738	553,987	918,188

[6] These values are based on preliminary estimates from power records. They will be updated with the actual meter readings when that data becomes available.

Appendix C

Draft Report of the Special Master, January 9, 2013

No. 126, Original

In the

SUPREME COURT OF THE UNITED STATES

STATE OF KANSAS,

Plaintiff

v.

STATE OF NEBRASKA and
STATE OF COLORADO,

Defendants

OFFICE OF THE SPECIAL MASTER

REPORT OF THE SPECIAL MASTER

_____, 2013

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REPORT OF THE SPECIAL MASTER

INTRODUCTION

In this original jurisdiction action Kansas seeks a remedy both for Nebraska's breach in 2006 of the 1943 Republican River Compact and for what Kansas claims is Nebraska's likely continued breach of that Compact in the future. Less than two years ago, the Court appointed me Special Master with direction to, among other things, direct the course of proceedings, take evidence, and submit reports as I deem appropriate. After issuing a series of case management orders directing the filing of pleadings and the conduct of discovery, after holding a testimonial hearing on all claims, and after receiving full briefing and argument including comments on a draft of this Report, I now submit this Report to the Court.

The Report identifies the issues before the Court, discusses the States' contentions concerning those issues, describes the evidence and law pertinent to the resolution of those issues, and sets forth recommendations for the Court. The recommendations address all claims in this action. If accepted, they allow the Court to enter judgment in this action disposing of all claims and defenses save for the fact that I recommend that the States be allowed one further opportunity to supplement the record on one issue that is collateral in the sense that its resolution is not necessary in order to dispose of all of the main claims and defenses.

Generally summarized, the Report recommends that the Court declare Nebraska to have breached the 1943 Compact by consuming a total of 70,869 acre-feet of water in excess of its Compact allocation in 2005 and 2006; that the Court enter judgment against Nebraska and in favor of Kansas in the amount of $5,000,000; that the Court otherwise deny Kansas' claims for relief; and that the Court order the Accounting Procedures used by the States reformed to correct a mistake, with the technical detail of the reformation to be determined by subsequent order if

not settled upon by the States. A proposed Decree embodying these recommendations accompanies this Report as Appendix A.

BACKGROUND

A. The Compact

In 1943, Congress approved the Republican River Compact (the "Compact"), an agreement among the States of Kansas, Nebraska and Colorado apportioning among themselves the waters of the Republican River Basin (the "Basin"). *See* Act of May 26, 1943, ch. 104, 57 Stat. 86. The Republican River rises in Colorado, crosses the northwestern tip of Kansas into Nebraska, and then runs through Nebraska before re-entering Kansas in its northeastern corner. Together with its many tributaries, it drains a 24,900 square mile watershed between the North Platte River to the north and the Arkansas River to the south. (K80, at KS001306).[1] Roughly 430 miles long and sparsely populated (*id.*), the Basin itself encompasses an active agricultural region producing, among other things, corn, soybeans and milo (N8208, at 4 of 11). Over 1.8 million acres of land in the Basin are irrigated with the benefit of either diverted river flow or groundwater pumping. (K80, at KS001574).

The Compact is simple and concise. It defines the Basin's average annual "Virgin Water Supply" to be "the water supply within the Basin undepleted by the activities of man." *See* Compact, Art. II. It estimates that Virgin Water Supply to equal 478,900 acre-feet[2] of water. *Id.*, Art. III; *Kansas v. Nebraska*, No. 126 Orig., Second Report of the Special Master, at 12 (Apr. 13, 2003) (hereafter "Second Report") (noting that the Virgin Water Supply in the Basin was

[1] Citations to "K__," "N__," "C__," and "J__" are, respectively, citations to exhibits admitted into evidence upon proffer by Kansas, Nebraska, Colorado, or all parties jointly. A list of all admitted exhibits is included with this Report as Appendix C. The exhibits themselves are maintained in the Special Master's file.

[2] An acre-foot is the amount of water required to cover one acre one foot deep, and is the equivalent of 43,560 cubic feet.

determined by finding the average of the "aggregate virgin water supply over an eleven year period"). It then allocates to each State its agreed-upon share of that Virgin Water Supply annually "for Beneficial Consumptive Use." Compact, Art. IV. "Beneficial Consumptive Use" is defined as "that use by which the water supply of the Basin is consumed through the activities of man . . . ." Compact, Art. II. The Compact contains no provisions for dispute resolution, nor does it address the myriad of details necessary for its administration. Rather, it calls for each State to administer the Compact through an official charged with administering public water supplies, and it acknowledges that those three officials can by unanimous action adopt rules and regulations consistent with the Compact. *See* Compact, Art. IX. The States subsequently established the Republican River Compact Administration ("RRCA") by regulations adopted in 1959 pursuant to Article IX of the Compact. (Ex. J3, at JT001154).

B. The Prior Dispute

Original Action No. 126 commenced on January 19, 1998, when the Court granted Kansas' motion for leave to file a bill of complaint. *Kansas v. Nebraska*, 525 U.S. 1101 (1998). The principal cause of that action was "the proliferation and use of thousands of wells hydraulically connected to the Republican River and its tributaries . . . ." Kansas Bill of Complaint, ¶ 7, *Kansas v. Nebraska*, No. 126 Orig. (May 26, 1998). In brief, Kansas maintained that, to the extent groundwater pumping depleted stream flow in the Basin, it constituted consumption that must be counted against the allocated share of the pumping State. Nebraska maintained to the contrary.

At the Court's invitation, Nebraska filed a motion to dismiss in order to test Kansas' assertion that groundwater pumping was subject to the Compact allocation limits to the extent the groundwater pumping depleted stream flow. 527 U.S. 1020 (1999). The Court appointed the

Honorable Vincent L. McKusick as Special Master and referred to him the motion to dismiss. 528 U.S. 1001 (1999). Nebraska's position on the motion turned out to be largely without basis. As Special Master McKusick observed, "the language of the Compact is not ambiguous. A straightforward reading of its terms yields the conclusion that a State's groundwater pumping, to the extent it depletes stream flow in the Basin, is intended to be allocated as part of the virgin water supply and to be counted as consumptive use by the pumping State." *Kansas v. Nebraska*, No. 126 Orig., First Report of Special Master, at 23 (Jan. 28, 2000) (hereafter, "First Report"). The extrinsic evidence reinforced the conclusion that there was "an unambiguous intention to include in the measurement of virgin water supply all the natural stream flow in the Basin, including that depleted by groundwater pumping of any kind." *Id*. at 34. Following Nebraska's lodging of exceptions to the Special Master's Report, the Court denied Nebraska's motion to dismiss and recommitted the case to Special Master McKusick for further proceedings. 530 U.S. 1272 (2000).

The parties thereafter entered into settlement discussions aimed primarily at determining how best to ascertain and reflect in Compact accounting the depletion of stream flows in the Basin arising from groundwater pumping throughout the Basin. On December 15, 2002, the parties executed a "Final Settlement Stipulation" ("FSS"), subject to approval by the Court. *See* Second Report, at 22-26.

In its May 19, 2003, Decree, the Court "approved" the FSS and recommitted the action to Special Master McKusick "for the sole purpose of deciding certain procedural questions arising from the completion [of a groundwater model]." 538 U.S. 720 (2003). The Groundwater Model was thereafter successfully completed and adopted by the parties, as certified in the Final Report

of Special Master. *Kansas v. Nebraska*, No. 126 Orig., Final Report of Special Master (Sep. 17, 2003) (hereafter, "Final Report").

C. The Final Settlement Stipulation

The four-volume FSS,[3] which expressly did not purport to alter the 14-page Compact, *see* FSS § I.D., resolved certain matters of Compact interpretation and enforcement and provided detailed mechanisms for determining future compliance. *See* Second Report, at 2. *See also id.* at 45 (noting that the litigation was "at least as much about ensuring compliance in the future as it [was] about damages for past violations"). Much of the detail and complexity inherent in the FSS arose from the need to account for and attribute to the respective States the impacts on stream flow of groundwater pumping from over 18,000 wells within the Basin. *See* First Report, at 18. The FSS secured for all parties the practical tools for future administration of the Compact, including its application to the complex hydrology of groundwater pumping. These tools consisted primarily of the RRCA Accounting Procedures and the RRCA Groundwater Model, each of which would have likely proved to be difficult to secure by litigation without great uncertainty, expense, and protracted delay. *See* Second Report, at 34-35. The States also waived their claims under the Compact with respect to activities and conditions occurring prior to December 15, 2002. FSS § I.D.

The FSS provides that compliance with the Compact's allocation limits is determined based on multi-year running averages in order to smooth out year-to-year deviations and to provide the parties with increased flexibility. The FSS provides for the use of a five-year

[3] The narrative text of the FSS, together with selected short excerpts from its voluminous appendices, is included in Appendix D to this Report for ease of reference. The entirety of the four-volume FSS, and the groundwater model agreed upon pursuant to its terms, are attached to Special Master McKusick's Second Report, dated April 15, 2003, and to his Final Report dated September 17, 2003, respectively. The FSS also appears at Exhibit J1.

running average for "Normal Year Administration" purposes, and a two-year running average for "Water Short Year Administration." FSS § IV.D; *id.* § V.B.2.e.i. Either 2006 or 2007 was stipulated to be the first year for ascertaining compliance, depending on whether Water-Short Year Administration was in effect in 2006, *see* FSS App. B, which turned out to be the case.[4]

While Nebraska concedes that it failed its first compliance test in 2006, the parties dispute how the precise extent of Nebraska's non-compliance should be measured. *See* Stipulation of the States Concerning Accounting of Overuse by Nebraska, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 16, 2011) (Dkt. 96). The parties also vigorously dispute the remedy to be granted.

PROCEDURAL HISTORY OF THIS RENEWED LITIGATION

The Court's docket in Original Action No. 126 remained dormant from 2003 until May 3, 2010, when Kansas filed a Motion For Leave To File Petition, Petition, And Brief In Support. In the petition accompanying its motion, Kansas alleged that it had been "damaged by Nebraska's violation of the Compact and the Decree . . . ." Petition at ¶ 22, *Kansas v. Nebraska*, No. 126 Orig. (May 3, 2010) (Dkt. 1). The petition alleged an overuse of water in the amount of approximately 79,000 acre-feet during 2005 and 2006, combined. *Id.* ¶ 19. As a remedy, Kansas asked the Court to hold Nebraska in contempt for violating the May 19, 2003, Decree, to enjoin further violations, to order Nebraska to pay Kansas the greater of Nebraska's gain or Kansas' loss resulting from the violation, to set predetermined sanctions for future violations, to order Nebraska to curtail groundwater pumping or take other equivalent action, and to be made subject

[4] "Water-Short Year Administration" is in effect when irrigation supply stores in Harlan County Lake in south-central Nebraska, the principal reservoir for points downstream, is projected to fall below a specified level. FSS § V.B.1.a.

to a river master appointed by the Court, all in addition to such other relief as might be just and equitable, plus an award of fees and costs. *Id.* at 11-12.

In response, Nebraska contended that Kansas' claims, on their own, were of insufficient significance to warrant further proceedings before the Court, but that those claims combined with other related issues Nebraska would raise justified the Court's attention. *See* Brief of State of Nebraska In Response To Kansas' Motion For Leave To File Petition at 18, *Kansas v. Nebraska*, No. 126 Orig. (July 1, 2010) (Dkt. 2).

By Order dated April 4, 2011, the Court granted Kansas' motion for leave to file a petition. The Court appointed the undersigned Special Master "to fix the time and conditions for the filing of additional pleadings, to direct subsequent proceedings, to summon witnesses, to issue subpoenas, and to take such evidence as may be introduced and such as he may deem it necessary to call for." *Kansas v. Nebraska*, 131 S. Ct. 1847 (2011).

THE COURSE OF PROCEEDINGS BEFORE THE SPECIAL MASTER

The course of proceedings before me commenced with a telephone call with counsel for the parties and the United States on April 22, 2011, and concluded with a final post-hearing argument on January 24, 2013. The completion of the pleadings, the conduct of discovery, the filing and resolution of numerous motions, and the conduct of an evidentiary hearing proceeded in accordance with a series of Case Management Orders and a Case Management Plan, as reflected on the docket.[5]

At the outset of discovery I allowed Nebraska to file a counterclaim and crossclaim pursuant to which it sought a Court-ordered change to the RRCA Accounting Procedures which,

[5] The docket itself and electronic copies of all public filings included therein are accessible on the internet at http://www.pierceatwood.com/docketfiling.aspx. A hard copy of the docket sheet itself is attached to this Report as Appendix B.

if adopted, would affect the determination of the amount of water used in 2006. *See Kansas v. Colorado*, No. 126 Orig., Case Management Order No. 2 [Corrected] at ¶ 1.1 (Aug. 9, 2011) (Dkt. 72). I also required the parties to file initial briefs explaining their respective positions on certain legal issues likely to frame discovery and development of the factual record. *Kansas v. Nebraska*, No. 126 Orig., Case Management Order No. 1 at ¶¶ 2.2, 2.3 (Apr. 28, 2011) (Dkt. 9). Over the course of the ensuing year, the parties were allowed to conduct written discovery and depositions in accord with a version of the Federal Rules of Civil Procedure modified to best fit this particular action. *See Kansas v. Nebraska*, No. 126 Orig., Case Management Plan (Apr. 28, 2011) (Dkt. 10). At the conclusion of discovery, the parties filed four motions for one form or another of partial judgment. (*See* Dkt. 212-215). I reviewed and considered all of these motions, discussed them with counsel, and took them under advisement pending the determination of related issues and the facts following a full hearing. During this process, I shared with counsel my preliminary thinking on various issues raised by their motions in order to guide and sharpen subsequent presentations and argument.

At the request of all three parties, the evidentiary hearing was held in the United States District Court for the District of Maine, commencing on August 13, 2012. The procedure for the presentation of testimonial evidence and exhibits was as follows:

First, the direct testimony of all witnesses except hostile witnesses was pre-filed in writing during the four weeks prior to commencement of the hearing. Twenty-one different witnesses, eleven of whom were experts, submitted over 550 pages of pre-filed testimony, all of which I reviewed before the hearing commenced.

Second, I allowed each of the parties to file as exhibits the written reports of their testifying experts. Seventeen such reports, totaling over 600 pages, were filed. I also reviewed these reports before the hearing commenced.

Third, the parties were allowed to submit objections to any pre-filed testimony or expert reports. Because there was no jury, I discouraged the filing of so-called *Daubert* motions. Simply put, it made the most sense to hear the expert testimony and to determine whether or not it was relevant and persuasive, thereby mooting any need to make the more refined determination of whether it was so inadequate as to be inadmissible. The parties nevertheless collectively filed eighteen motions *in limine*, primarily but not exclusively on *Daubert* grounds, (*see* Dkt. 314-26, 334-36, 338, 356), all of which I reviewed and took under consideration.

Fourth, at the hearing each witness was called to the stand to affirm and offer his pre-filed testimony. At that point, I heard and ruled on any standard evidentiary objections to such testimony.

Fifth, each party tendered its witnesses for cross-examination, followed by re-direct and re-cross if desired. At the conclusion of counsel's questioning, I then asked such questions of the witnesses as seemed necessary and appropriate to better understand the testimony offered by the witness. Live testimony was presented in this manner by twenty-one witnesses over the course of nine days.

Thereafter, the parties filed extensive post-trial briefs and reply briefs. After reviewing these briefs and the accumulated record, I circulated to counsel a draft report for comment. *See Kansas v. Nebraska*, Case Management Order No. 8 (Jan. 9, 2013) (Dkt. 414). I conducted a final non-testimonial hearing on January 24, 2013.

STATEMENT OF THE ISSUES

The pleadings, the evidence, and the arguments advanced on behalf of the parties pose two basic questions for the Court: By what amount of water did Nebraska fail to meet the applicable 2006 compliance test; and, what is the remedy to which Kansas is entitled as a result? Answering these two questions requires resolution of the following issues:

1. The Accounting Procedure Issue.

All parties agree that the Virgin Water Supply of the Republican River Basin does not include water that finds its way into the Basin as a result of man-made diversions from the Platte River Basin. The States refer to this water as "Imported Water Supply." Under certain dry conditions, the RRCA Accounting Procedures nevertheless interact with the Groundwater Model to treat the consumption of Imported Water Supply as if it were the consumption of the Virgin Water Supply of the Republican Basin. Nebraska seeks a court order modifying the RRCA Accounting Procedures to eliminate this treatment on the grounds that it mistakenly conflicts with the FSS and with the Compact itself. Kansas argues that the Court cannot change the agreed-upon RRCA Accounting Procedures without the consent of all parties and that, in any event, Nebraska waited too long to specify the precise remedy it seeks. For the reasons stated below, Nebraska has proven that the current RRCA Accounting Procedures do indeed contain a technical mistake that can be equitably reformed, but its belated proffer of a specific technical correction makes it unfair to evaluate and include that correction in the 2006 accounting year calculations.

2. The Harlan County Lake Evaporation Issue.

Each year water is stored in Harlan County Lake for release during irrigation season to the Nebraska Bostwick Irrigation District ("NBID") through the Superior Canal and to the

Kansas Bostwick Irrigation District ("KBID") through the Courtland Canal. Some of the water stored in the reservoir is lost to evaporation, which the FSS deems to be a Beneficial Consumptive Use of the water. The FSS allocates this evaporation to Kansas and Nebraska in proportion to the amount of the irrigation releases from Harlan County Lake diverted by each state's irrigation district. During 2006, in an effort to reduce the extent of its over-consumption of water, Nebraska chose not to divert to NBID any of the reservoir releases, and thus claims no responsibility for any of the evaporative losses from the reservoir that year. Kansas contends that Nebraska should still be held responsible for a share of that evaporative loss, either under a related accounting convention, or because not using the water in order to achieve Compact compliance should be deemed the equivalent of diverting the water. For the reasons stated below, Nebraska should not be liable for evaporative losses from Harlan County Lake during 2006.

3. The Non-Federal Reservoir Evaporation Issue.

The parties disagree about whether evaporation from certain Non-Federal Reservoirs located in Nebraska was properly deemed to be a Beneficial Consumptive Use of water by Nebraska. Kansas insists that such evaporation is a Beneficial Consumptive Use chargeable to Nebraska, and therefore includes the evaporation in calculating the extent of Nebraska's over-use of water in 2005 and 2006. In response, Nebraska waives any challenge to Kansas' position as far as the accounting for 2005 and 2006, but asks that the Court leave the issue open and unresolved for future years. For the reasons stated below, this action provides a suitable occasion for resolving this dispute by declaring that evaporation from the Non-Federal Reservoirs should be included in the calculation of Nebraska's overuse.

4. The Average Overuse Versus Total Overuse Issue.

In order to determine whether Nebraska exceeded its Compact allocation in 2006, one must calculate for each of 2005 and 2006 the difference between allocation and usage minus any credits, and then take the average of the results. *See* FSS, App. C at Table 5C. The parties agree that Nebraska exceeded its annual allocation in both 2005 and 2006. *See* Stipulation of the States Concerning Accounting of Overuse by Nebraska, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 16, 2011) (Dkt. 96). Nebraska argues that it is liable for an amount of water that equals the average of the two annual exceedances. Kansas argues, instead, that Nebraska is liable for the full, cumulative exceedance for the two years combined. For the reasons stated below, Nebraska's damages for its violation in 2006 should be measured by its entire overuse in the 2006 compliance period (2005 and 2006).

5. The Contempt Issue.

Kansas seeks a finding of contempt based on an argument that Nebraska has violated the Court's May 19, 2003, Decree. For the reasons stated below, no finding of contempt is possible.

6. The Remedy Issue.

Kansas also seeks injunctive relief (including the appointment of a river master), pre-set sanctions for future violations, and a monetary award for past violations. For the reasons stated below, Kansas' sole remedy is a monetary award in the amount of $5,000,000.

For ease of reference, the balance of this Report will refer to each of the foregoing issues by the shorthand, bold titles used above.

ANALYSIS

I. The Accounting Procedure Issue.

Measuring the underground flow of water and the hydrological effect of wells on that flow and on the resulting flow in rivers and streams fed by the groundwater is difficult. Depending on the precise location of the well and a variety of factors, a particular well might not impact the flow of a particular stream, or it might impact it very directly, or it might impact it only gradually over time, potentially over very many years. (*See* Ex. C-03, at CO000000456-58; N1002, at NE0500019-25). Actually measuring such impacts in the field for an area covering almost 25,000 square miles with thousands of wells and numerous streams is, as a practical matter, impossible.

The States therefore developed a computer model, the RRCA Groundwater Model ("Groundwater Model"), intended to determine the amount, location, and timing of streamflow depletions to the Republican River from groundwater pumping by simulating what happens in the real world. The Groundwater Model is, in essence, a compilation of computer codes, input files and rules that work together to create a mathematical representation of how the drafters of the Groundwater Model expect the real world to change if specified inputs change. *See* Final Report at 6, 8-9.

In addition to simulating stream flow depletions in the basin caused by groundwater pumping, the Groundwater Model simulates the stream flow accretions caused by the importation of water from outside the Republican River Basin. (C01, at CO000000400). *See* Final Report at 6, 8. Some water diverted by canals and irrigation from the Platte River in northern Nebraska seeps south into the groundwater system of the Republican River Basin. (Schneider Direct, at ¶ 12). The FSS recognizes this phenomenon, and classifies this water as

"Imported Water Supply," which is defined as "[t]he water supply imported by a State from outside the Basin resulting from the activities of man." FSS § II. *See* Second Report at 62-63; Final Report at 14. This "Imported Water Supply" that has seeped into the Basin can be consumed within the Basin by groundwater pumping, or by diversions of river flow created by the seepage of imported water. (Schneider Direct, at ¶¶ 12, 17).

The directions for using the Groundwater Model and its outputs are supplied in 114 pages of procedures referred to as the RRCA Accounting Procedures ("Accounting Procedures"). The Accounting Procedures were enacted pursuant to Article IX of the Compact, which provides that the States "may, by unanimous action, adopt rules and regulations consistent with the provisions of this compact." Compact, Art. IX. The introduction to these procedures states in relevant part:

> This document describes the definitions, procedures, basic formulas, specific formulas, and data requirements and reporting formats to be used by the RRCA to compute the Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit and Computed Beneficial Consumptive Use. . . . These definitions, procedures, basic and specific formulas, data requirements and attachments may be changed by consent of the RRCA consistent with Subsection I.F of the Stipulation.

FSS, App. C at C6. Both the Groundwater Model and the Accounting Procedures are the product of judgment and compromise in the context of imperfect knowledge. (Tr. at 722-25 (Schneider)). The Accounting Procedures were negotiated and agreed to at the time that the States executed the FSS in December of 2002. FSS, App. C. The Groundwater Model itself was not finalized until later in 2003 after the Court approved the FSS. Final Report, at 1; *see* FSS § IV.C.2 (expressing intent to complete the Model); *id.* § IV.C.3-9 (forming the Modeling Committee and directing completion of the model).

As the parties accumulated experience working with the Accounting Procedures and the Groundwater Model over time, under varying conditions, their ability to gauge the extent to

which there are previously unknown disparities between real world conditions and the picture painted by application of the Groundwater Model and the Accounting Procedures has grown. (*See* Tr. at 677 (Schreüder)). The FSS itself expressly anticipates the prospect of change: "The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation." FSS § I.F. In fact, the RRCA has modified the Accounting Procedures multiple times. (*See* Tr. at 875 (Pope); *see, e.g.*, Ex. J3, at JT002154A (44th Annual Report of the RRCA, showing changes to the Accounting Procedures, including a change to accounting of the evaporation from Lovewell Reservoir)). The RRCA, however, may act only by unanimous consent of the three States. *See* Compact, Art. IX ("Such officials may, by unanimous action, adopt rules and regulations consistent with the provisions of this Compact."); FSS § VII.A.2 ("RRCA action must be by unanimous vote.")

The accounting issue that has now become the focus of a dispute among the parties concerns the Imported Water Supply. Nebraska contends that the Accounting Procedures agreed to in 2002 mistakenly treat the consumption of imported water in some circumstances as if it were the consumption of Virgin Water Supply of the Basin, and that such a treatment is contrary to the parties' shared intent in agreeing to the procedures, and to the Compact. While Colorado concurs, Kansas does not. Nebraska therefore asks that the Court order the Accounting Procedures to be changed.

In the following subsections of this Report, I examine whether the current Accounting Procedures do have an effect contrary to what the parties intended and, if so, whether the Court can and should order the Accounting Procedures reformed to eliminate such an unintended effect over the objections of Kansas.

A. The States Clearly Did Not Intend To Treat The Consumption Of Any Material Amount Of Imported Water As If It Were The Consumption Of Virgin Water Supply.

The Compact only regulates water "originating in" the Republican River Basin. Compact Art. III (noting that the States' allocations are to be "derived from the computed average annual virgin water supply originating in" the Basin). It therefore does not regulate the use of water imported from outside the Basin, including the water imported from the Platte River. In entering into the FSS, no State sought to expand the reach of that regulation by venturing outside "the boundaries of the Compact." *See* Second Report, at 2. To the contrary, the States represented that "[t]he States agree that [imported] water should not count as virgin water supply or as a computed beneficial consumptive use."[6] (Ex. J6, at JT003086.) Computed Beneficial Consumptive Use ("CBCU") is the term adopted by the States in the FSS for the calculation of Beneficial Consumptive Use, and is defined as the "stream flow depletion resulting from" certain specified "activities of man." FSS, App. C § II. The FSS therefore unambiguously specifies that "Beneficial Consumptive Use of Imported Water Supply shall not count as Computed Beneficial Consumptive Use or Virgin Water Supply." FSS § IV.F.

The same sub-article of the FSS also states that "[d]eterminations of Beneficial Consumptive Use from Imported Water Supply . . . shall be calculated in accordance with the RRCA Accounting Procedures and by using the RRCA Groundwater Model." FSS § IV.F. One might argue that this latter sentence evidences an intent to adopt by agreement an artificial definition of "Beneficial Consumptive Use of Imported Water Supply" as meaning whatever the Accounting Procedures and Groundwater Model determine it to be, whether correct or not.

[6] Parol evidence is admissible to prove mutual mistake and obtain reformation. RESTATEMENT (SECOND) CONTRACTS § 214(d), (e).

There is no evidence, though, that the parties intended the FSS to substitute for actual conditions an artificial construct that materially varies from reality.

Rather, the evidence is to the contrary. According to Kansas' own representative who negotiated the FSS, the Accounting Procedures were "intended to properly carry out" the FSS' provisions excluding Imported Water Supply from CBCU. (Tr. at 863-66, 869-71 (Pope); Ex. J6, at JT003087-88). The parties selected the model based on a conviction that it "matches as closely as possible the actual effects of both alluvial and table-land groundwater pumping on stream flow in the Basin." Second Report, at 37. As noted by Special Master McKusick, the aim of the Accounting Procedures was to "implement the principles of the [FSS] and . . . allow the RRCA to determine compliance with the initial Compact and the [FSS] and to understand with greater precision how water in the Basin is being used and how it might be used more efficiently." Second Report, at 47-48. *See also id.* at 29 (noting "the goals of using water in the Basin with maximum efficiency and an accounting for water use as accurately as possible"). On the specific subject of imported water, Special Master McKusick's Second Report flatly stated:

> The Final Settlement Stipulation resolves this issue by providing that beneficial consumptive use of imported water will not count as computed beneficial consumptive use or as virgin water supply.

Second Report, at 64.

Nor is there any evidence that either Nebraska or Kansas was aware prior to 2007 that the specific Accounting Procedures upon which they agreed in 2003 had the effect of which Nebraska now complains. In the present proceeding, Colorado's expert, Dr. Willem Schreüder, testified that, while he "intellectually understood" in 2003 the possibility that Imported Water Supply might be counted as Virgin Water Supply, "we didn't think that it would occur, it would be of significant magnitude." (Tr. at 676 (Schreüder); *see* Tr. at 727 (Schreüder) ("[W]e didn't

believe that that was going to be a big issue."). Schreüder clarified that, when he said "we," he only spoke for himself. (Tr. at 676-77 (Schreüder)). There is no evidence that anyone else was even intellectually aware of the issue. Schreüder testified that he did not recall any discussion of that particular topic among the members of the modeling committee. (Tr. at 727-28 (Schreüder)). The testimony of Kansas' negotiator, David Pope, who "interacted extensively" with the modeling and accounting committees (Tr. at 873-74 (Pope)), is consistent on this point; he stated that "[t]here was no explicit discussion of" whether consumption of imported water would result from the application of the accounting procedures and the model in tandem. (Tr. at 877 (Pope)). While all parties agree that the modelers in 2003 certainly understood that many characteristics of the groundwater system were nonlinear, there is no evidence that they understood how the nonlinearity would manifest itself in this instance.

Correctly observing that Nebraska bears the burden of proving a mistake, Kansas argues that the absence of testimony by those individuals who participated for Nebraska in drafting the Accounting Procedures in 2002 constitutes a fatal failure of proof. Normally, this would be a strong point. Here, though, if one concludes as I do that the parties were sincere in their descriptions of the FSS to Special Master McKusick and to the Court, then it is clear that none of them believed in 2003 that the procedures would treat material amounts of Imported Water Supply as if it were Virgin Water Supply of the Basin. Moreover, if any Nebraska representative in 2002 had concluded that the Accounting Procedures would mislabel a substantial amount of Imported Water Supply as Virgin Water Supply, there is no reason why he would not have then raised the point to secure a correction. All parties were in agreement on the principle that Imported Water Supply not be so treated.

Nor is there any evidence that such a mistreatment of Imported Water Supply was being traded off for some benefit to Nebraska. While Kansas correctly asserts that, as a general matter, the parties made bargains and compromises in the course of negotiating the FSS, the Accounting Procedures, and the Groundwater Model (Tr. at 875-77 (Pope)), there is simply no evidence that such an unexplained deviation from a foundational principle was part of one such bargain. To the contrary, Pope's testimony suggests that Kansas was not aware in 2003 that the procedures would treat the consumption of imported water in some circumstances as if it were the consumption of Virgin Water Supply. (Tr. at 873-74 (Pope)). Indeed, Larson claims not to know even to this day whether there is such an effect. (Tr. at 374-75 (Larson)). When Schneider in 2007 distributed his paper announcing that he had discovered the effect at issue, no one – including Kansas – suggested that the effect had been anticipated.

On this record, it is clear that the parties simply did not intend that the chosen procedures would have an effect contrary to a basic principle plainly stated as a basis of their agreement. In short, the parties clearly intended and believed that the words and formulae employed to express their agreement would not treat the consumption of Imported Water Supply as if it were Virgin Water Supply of the Basin.

B. The Current RRCA Accounting Procedures Treat Consumption Of Material Amounts Of Imported Water Under Some Circumstances As If It Were The Consumption Of Virgin Water Supply.

In June 2007, Nebraska informed Kansas and Colorado via letter that it had discovered that, under dry conditions, the Accounting Procedures can interact with the outputs of the Groundwater Model to treat the consumption of Imported Water Supply as if it were the consumption of the Virgin Water Supply of the Basin, thereby increasing Nebraska's CBCU.

(Schneider Direct, at ¶ 9; Ex. N1005, at 1, 73; Schreüder Direct, at 7).[7] In that letter, Nebraska asserted:

> The state of Nebraska has determined that methods used to calculate Computed Beneficial Consumptive Use (CBCU) of water in the Nebraska portion of the Republican basin have overstated the consumptive use. Imported Water Supply has been incorrectly included as part of the Virgin Water Supply. Therefore, Imported Water Supply has been incorrectly included as part of the CBCU.

(N1005, at 73). The technical analysis of how the Accounting Procedures and the Groundwater Model produce such results is detailed in reports that Nebraska's experts began generating over five years ago. *See* Ex. N1002. No Kansas expert or lay witness has offered any testimony in this action to the contrary. In its post-trial reply brief, Kansas tries to develop an argument that credits calculated under the Accounting Procedures effectively offset the treatment of some Imported Water Supply as if it were Virgin Water Supply, so that, net, there is no problem at all to be concerned with. Were this argument correct, it would have presumably been obvious to all the experts who testified, and would have presumably been the first point made by Kansas' witnesses at the hearing. Instead, in their lengthy and detailed reports and testimony, Kansas' witnesses directed their arguments to the adequacy of the remedies proposed by Nebraska and the Court's ability to mandate any change at all in the agreed upon procedures.

The testimony of Colorado witness Dr. Willem Schreüder supports the contention raised by Nebraska in its 2007 letter. Schreüder is an expert in the mathematical modeling of groundwater hydrology who holds a Ph.D. in Applied Mathematics in Computational Fluid Dynamics from the University of Stellenbosch and a Ph.D. in Computer Science in Parallel Systems from the University of Colorado at Boulder. Schreüder has maintained the official version of the Groundwater Model and performed the annual updates to the Model since 2003.

[7] "Computed Beneficial Consumptive Use (CBCU)" is a term used in the FSS to describe streamflow depletions caused by the "activities of man" covered by the Compact. FSS § II.

(Schreüder Direct, at 2). Schreüder agrees with Nebraska's experts that, "[u]nder the current accounting procedures, Nebraska is charged for the consumption of . . . imported water as CBCU." (Schreüder Direct, at 9).

Schreüder reaches that conclusion as follows. Groundwater pumping by Nebraska counts as CBCU to the extent it depletes stream flow. (Schreüder Direct, at 7; *see* FSS, App. C § III.D.1). The extent of that depletion is calculated by comparing the results of a Groundwater Model simulation run with all Nebraska pumping on and a model run with all Nebraska pumping off. (Schreüder Direct, at 7, 9). The difference is the reduction in streamflow, which cannot exceed the total flow of the stream (*i.e.*, when the stream runs dry, further pumping causes no further depletion). Imported Water Supply, however, can create stream flow in what would otherwise be a dry riverbed. (Schreüder Direct, at 7, 8-10). Hence, running the model simulations as presently run without eliminating Imported Water Supply can result in a higher difference between the two runs, leading to a higher CBCU, part of which would therefore include the consumption of Imported Water Supply. (Schreüder Direct, at 7, 9; C-01 at CO000000415 ("[T]he Nebraska pumping impacts for the Swanson-Harlan reach are greater with the imported water supply than without the imported water supply. . . . [T]his is primarily caused by the fact that in the absence of well pumping in Nebraska, more of the imported water supply reaches Harlan County Reservoir, than when the wells are operating at historical levels.").

Kansas has put on no evidence to show that the Accounting Procedures, as currently constituted, do not charge Nebraska with the consumption of imported water. In opposing Nebraska's claim, Kansas presented the testimony and expert reports of Steven P. Larson, a consulting hydrologist who holds a Masters in Civil Engineering from the University of Minnesota. (Larson Direct, at 2). Larson was on the Kansas team that negotiated components of

the FSS. (Tr. at 727 (Schreüder)). He subsequently was retained by Kansas in 2007 to address Nebraska's contention that the current Accounting Procedures treated the consumption of some Imported Water Supply as if it were the consumption of Virgin Water Supply. (Tr. at 343-44 (Larson); K127). In his written submissions, Larson did not state whether he agreed or disagreed with the factual assertion that the current Accounting Procedures treat the consumption of some Imported Water Supply under dry conditions as if it were the consumption of Virgin Water Supply under the Compact. When asked point blank whether he challenged that assertion, he replied that "I'm not sure," (Tr. at 374 (Larson)), though he acknowledged that it was possible that Nebraska was being charged for the consumption of imported water (Tr. at 352-53 (Larson)). He implausibly claimed that in the five years that have passed since Nebraska first made the assertion that it was being charged with the consumption of imported water, he has not addressed the assertion directly "because I think it takes a fair amount of model run evaluation to do that; and I haven't been able to do that …." (Tr. at 374-75).

Based on this record, it is clear that the current Accounting Procedures do sometimes treat the consumption of some Imported Water Supply as if it were the consumption of the Virgin Water Supply of the Basin. It does so by including imported water when running the model simulations used to calculate CBCU. For the year 2006, the amount of Imported Water Supply consumption counted as CBCU was 7,797 acre-feet. (N1004, at 6 of 60).

C. The Court Should Order The RRCA Accounting Procedures Reformed To Correct The Error In The Manner In Which They Treat Imported Water As If It Were Virgin Water Supply Under The Compact.

Given the foregoing, Kansas' central argument for rejecting Nebraska's request is that a deal is a deal, and the Court cannot rewrite a contract after-the-fact. While Kansas in this manner aptly summarizes a principal tenet of the law of contracts, that tenet is subject to narrow

but well-established exceptions. On a proper showing, courts do reform contracts to correct certain types of mistakes. *See Philippine Sugar Estates Dev. Co. v. Gov't of Philippine Islands*, 247 U.S. 385, 389 (1918) ("It is well settled that courts of equity will reform a written contract where, owing to mutual mistake, the language used therein did not fully or accurately express the agreement and intention of the parties."); *Hearne v. Marine Ins. Co.*, 87 U.S. 488, 490 (1874) ("The reformation of written contracts for fraud or mistake is an ordinary head of equity jurisdiction"). *See also* RESTATEMENT (SECOND) OF CONTRACTS § 155 (1981); 27 RICHARD A. LORD, WILLISTON ON CONTRACTS § 70:20, at 257 (4th ed.). The questions to be addressed next, therefore, are: is reformation even available here, where the agreement is between States; if so, has Nebraska satisfied the traditional requirements for reformation; and, finally, are there any reasons why the Court should nevertheless decline to grant the specific relief requested?

1. Reformation of the RRCA Accounting Procedures is an available form of remedy in this action.

Were the Accounting Procedures part of the Compact itself, the availability of reformation as a possible remedy could be problematic. The Court has never expressly reformed a compact. Because a compact requires congressional approval in order to be effective, it remains not simply a contract, *see Texas v. New Mexico*, 482 U.S. 124, 128 (1987) ("[A] compact is, after all, a contract."), but becomes as well "law of the United States," *Texas v. New Mexico*, 462 U.S. 554, 564 (1983); *see Cuyler v. Adams*, 449 U.S. 433, 438 (1981). And courts are not in the business of reforming laws. *See Heckler v. Mathews*, 465 U.S. 728, 742 (1984).

The closest the Court has come to expressly reforming a compact was in resolving a dispute concerning the 1949 Pecos River Compact between Texas and New Mexico. *See Texas*, 462 U.S. 554. A central issue in that case was the meaning of the term "1947 condition" as used in the Pecos River Compact. Under the Pecos River Compact, the parties agreed that "New

Mexico shall not deplete by man's activities the flow of the Pecos River at the New Mexico-Texas state line below an amount which will give to Texas a quantity of water equivalent to that available to Texas under the 1947 condition." *Id.* at 559. The Pecos River Compact further stated that "[t]he term '1947 Condition' means that situation in the Pecos River Basin as described and defined in the Report of the Engineering Advisory Committee." *Id*. (internal quotation marks omitted). The Report of the Engineering Advisory Committee included a study setting forth the engineers' baseline calculations of 1947 conditions to be used as a measure for determining variances for later years based on differing conditions. *Id.* at 558-60. Unfortunately, it turned out that the study was substantially in error. *Id.* at 560; *see Texas v. New Mexico*, No. 65 Orig., Report of Special Master on Obligation of New Mexico to Texas under the Pecos River Compact, at 15, 37 (Sep. 14, 1979). These errors led to the filing of an original action. *Texas*, 462 U.S. at 560-62. In that original action, the Court confirmed *per curiam* and without explanation, over the objection of a single justice, a report of the special master interpreting the term "1947 Condition" as not being what was described in the erroneous study included in the Report, but rather as the real condition that the parties had intended to use, despite the fact that the Pecos River Compact expressly defined the term "1947 Condition" in terms of the engineering report. *Texas v. New Mexico*, 446 U.S. 540 (1980); *see Texas v. New Mexico*, No. 65 Orig., Report of Special Master, at 35-36. In short, the Court eliminated the impact of a mistaken incorporated attachment not by reforming the attachment, but by adopting an interpretation of the Compact that essentially eliminated the incorporation of the mistaken attachment. And in the same original action, the Court reversed another, later ruling of the special master by noting that "unless the Compact to which Congress has consented is somehow

unconstitutional, no court may order relief inconsistent with its express terms." *Texas*, 462 U.S. at 565.

Texas v. New Mexico thus weighs expressly against any judicial rewriting of a compact to correct an error, but at the same time eliminates the impact of that error by acquiescing in an application of the Court's interpretive power that is so robust as to be almost indistinguishable from the act of rewriting. That approach was possible because, in rejecting the reference to the appendix as defining the "1947 Condition," the special master had handy an alternative definition that required no crafting: the actual "1947 Condition." In effect, by interpreting the term "1947 Condition" to mean the actual condition, the special master (and thus presumably the Court in confirming his finding) read the Compact, including its appendix, as containing an ambiguity due to the disparity between the term as construed in the text and the term as defined in the appendix. That ambiguity was then resolved in favor of the reading that comported with the parties' actual intent.

Here, a potentially more direct approach beckons. The error at issue appears in no part of any compact, and thus its correction requires no reformation of any law. While the FSS is certainly an agreement between several states, it neither received nor required any congressional approval. The only agreements between states that require congressional approval under the Constitution's Compact Clause, U.S. Const., Art. I, § 10, cl. 3, are those that alter or affect the rights of the respective states in a manner that encroaches upon or interferes with the supremacy of the United States. *See United States Steel Corp. v. Multistate Tax Comm'n*, 434 U.S. 452, 468, 471 (1978); *New Hampshire v. Maine*, 426 U.S. 363, 369-70 (1976); *Virginia v. Tennessee*, 148 U.S. 503, 519 (1893). The FSS did not reallocate any rights of the respective States. To the contrary, "[t]he States agree that this stipulation and proposed consent judgment are not intended

to, nor could they, change the States' respective rights and obligations under the Compact." FSS, § I.D.

The FSS is thus more akin to the parties' agreement that was at issue in *Wisconsin v. Michigan*, 295 U.S. 455 (1935). There, after the Court apportioned the parties' respective rights in their boundary dispute, the parties themselves agreed on the language of a detailed decree intended to reflect and implement that prior apportionment. *Id.* at 457-60. When the parties later discovered that the agreed-upon language of the decree contained errors, *id.* at 460, the Court ordered the decree re-written over the objection of one of the parties in order to accord with the parties' intent that the decree implement the apportionment accurately. *Id.* at 463. While the FSS is not itself a decree, it is a settlement agreement that served as the express basis for the Court's May 19, 2003, Decree and that was expressly intended to reflect the prior allocation of rights among the States as reflected in the Compact and this Court's Order of June 29, 2000. *See Kansas*, 530 U.S. 1272. *Wisconsin* therefore instructs that an agreement such as the FSS may be reformed by the Court if reformation is otherwise appropriate.

For these reasons, I find that the FSS is not solely by its nature immune to reformation even if one assumes that compacts cannot be reformed by court order. To the contrary, for the very reason that the Constitution does not allow states to make on their own a binding agreement changing their respective rights in a manner that encroaches upon or interferes with the supremacy of the United States under a pre-existing compact, the FSS might be viewed as especially amenable to reformation to the extent that it mistakenly alters the Compact.

2. Reformation is also the appropriate form of remedy in this action.

The equitable remedy of reformation of a contract is appropriate where the "writing . . . fails to express the agreement because of a mistake of both parties as to the contents or effect of

the writing." RESTATEMENT (SECOND) OF CONTRACTS § 155. *See Philippine Sugar Estates Dev. Co.*, 247 U.S. at 389; 27 WILLISTON ON CONTRACTS § 70:20, at 257. As such, in order to obtain reformation, Nebraska must show both that the States agreed to preclude the inclusion of Imported Water Supply in a State's CBCU, and that they mutually erred in settling upon language (in the Accounting Procedures) that failed fully to effect that agreement. *See* RESTATEMENT (SECOND) OF CONTRACTS § 155, cmt. a. *See also Hearne*, 87 U.S. at 491; 27 WILLISTON ON CONTRACTS § 70:21, at 259-60. These elements must be established by clear and convincing evidence. *See* RESTATEMENT (SECOND) OF CONTRACTS § 155, cmt. c. *See also Philippine Sugar Estates*, 247 U.S. at 391; *Hearne*, 87 U.S. at 491; 27 WILLISTON ON CONTRACTS § 70:20, at 258. As explained in sections I.A & B of this Report, above, Nebraska has clearly established both of these elements: the parties did not intend that the Accounting Procedures should treat Imported Water Supply as if it were Virgin Water Supply, and the current Accounting Procedures nevertheless have exactly this unintended effect under some circumstances.

These conclusions do not mean that Nebraska is necessarily entitled to the relief it seeks. "Since the remedy of reformation is equitable in nature, a court has the discretion to withhold it . . . on grounds that have traditionally justified courts of equity in withholding relief." RESTATEMENT (SECOND) OF CONTRACTS § 155, cmt. d. I therefore turn now to considering the numerous remaining arguments that Kansas has advanced for withholding any equitable relief on this claim by Nebraska.

a. Kansas' objections to allowing Nebraska even to file a counterclaim are without merit.

After Nebraska gave notice to the Court that it intended to raise its own claims in response to Kansas' petition, and in the exercise of the authority assigned to me to "fix the time

and condition for the filing of additional pleadings," *Kansas*, 131 S. Ct. 1847, I instructed Nebraska to file promptly a motion for leave to file any counterclaim it wished to file, together with a copy of the proposed counterclaims. *See Kansas v. Nebraska*, No. 126 Orig., Case Management Order No. 1, ¶ 1.5 (Dkt. 9). Nebraska complied with my instruction by filing a motion to raise by way of counterclaim two matters that bore directly on determining the amount of water Nebraska used in 2006: the Accounting Procedures Issue, and the Harlan County Lake Evaporation Issue. *See* Motion for Leave to File Counterclaims of the State of Nebraska, *Kansas v. Nebraska*, No. 126 Orig. (May 31, 2011) (Dkt. 21). Nebraska alleged that the water volume at stake in resolving these two issues collectively accounted for a differential of 18,000 acre-feet in the parties' respective calculation of the amount of Nebraska's otherwise admitted over-use in 2006. *See* Nebraska's Answer and Counterclaims, *Kansas v. Nebraska*, No. 126 Orig. (May 31, 2011) (Dkt. 22).

Kansas filed an opposition to Nebraska's motion arguing, among other things, that Nebraska should not be permitted to raise the Accounting Procedure Issue in this action at all, because it was supposedly beyond the scope of the proceeding.[8] In an oral ruling of July 18, 2011, as subsequently confirmed in writing, I rejected Kansas's position that the counterclaim should not be allowed. *See Kansas v. Nebraska*, No. 126 Orig., Case Management Order No. 2 [Corrected], at 1-2. Kansas has indicated that it reserves whatever right it has to seek review of my ruling. *See* Kansas Post-Conference Submittal at 1-2, *Kansas v. Nebraska*, No. 126 Orig. (July 23, 2011) (Dkt. 57). I therefore set forth my reasoning as follows.

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[8] Kansas has conceded that resolution of the Harlan County Lake Evaporation Issue is a necessary predicate to resolving Kansas' own claim. *See* Kansas Opposition to Nebraska's Motion for Leave to File Counterclaims at 16, *Kansas v. Nebraska*, No. 126 Orig. (June 30, 2011) (Dkt. 41) ("Kansas agrees that the dispute regarding how evaporation from Harlan County Lake is allocated among the States … will need to be addressed and resolved in Kansas' claims against Nebraska.").

Proposed new claims in an original action, whether asserted by counterclaim or otherwise, "must be scrutinized closely in the first instance to see whether they would take the litigation beyond what [the Court] reasonably anticipates when [the Court] granted leave to file the initial pleading." *Nebraska v. Wyoming*, 515 U.S. 1, 8 (1995). "Accordingly, an understanding of the scope of the litigation as envisioned under the initial pleadings is the critical first step" in considering motions to change or add claims. *Id.*

Kansas' initial pleading accepted by the Court asserts that Nebraska overused its Compact allocation in 2006 and seeks a remedy for that overuse. *See* Petition, at ¶¶ 19-27 (Dkt. 1). Kansas' petition by itself therefore necessarily puts at issue the amount of Nebraska's overuse in 2006. That amount, in turn, was not settled by the RRCA precisely because, among other things, the parties disagreed on whether the Accounting Procedures needed to be changed. (N8005, at 21-22 of 49; Barfield Direct, at 28). Kansas's own claim can therefore only be resolved by deciding which party is correct regarding whether the Accounting Procedures applicable to calculating Nebraska's use in 2006 should be changed. By raising the Accounting Procedure Issue, Nebraska thus drills into the scope of the litigation as initially pleaded by Kansas. Moreover, were I not to have allowed Nebraska to file its pleading, and the Court were later to disagree with that conclusion, it would be necessary to remand the case for further proceedings. Conversely, there was relatively little down-side to letting the parties present now all of their competing arguments that bear on the final accounting for 2006.

Finally, Kansas also argues, in the alternative, that the counterclaim fails to give notice that Nebraska would rely on a theory that the Accounting Procedures contain a mistake. Kansas is to some limited extent correct. Nebraska formally labeled its claim as merely a "Breach of Compact and FSS." *See* Answer and Amended Counterclaim and Crossclaim, *Kansas v.*

Nebraska, No. 126 Orig. (July 25, 2011) (Dkt. 58). Nevertheless, the factual allegations contained in Nebraska's answer, its affirmative defenses, and its counterclaim repeatedly allege that the Accounting Procedures contain a "mistake," *id*. at 5, and a "discrepancy," *id*. at 11. The pleading expressly asserts that the controversy over the alleged discrepancy creates continuing uncertainty and harm, and asks that the Court issue an order "incorporating Nebraska's accounting change …." *Id*. at 23. This was fair notice for pleading purposes that Nebraska sought an order changing the procedures to correct a mistake.[9] *See generally Erickson v. Pardos*, 551 U.S. 89, 93 (2007). Certainly over a year before trial and as discovery was only just beginning Kansas knew Nebraska sought the reformation of the Accounting Procedures on the grounds that their treatment of Imported Water Supply was contrary to the parties' agreement set forth in the Compact and FSS. *See* Kansas' Brief Re Changes to the RRCA Accounting Procedures, *Kansas v. Nebraska*, No. 126 Orig. (June 15, 2011) (Dkt. 33).

b. It matters not whether Nebraska could have discovered the error in 2003 when the FSS was finalized.

Citing section 154 of the Restatement (Second) of Contracts, Kansas argues that Nebraska knew that there was a theoretical chance that the Accounting Procedures and the Groundwater Model might classify some Imported Water Supply as Virgin Water Supply under some dry circumstances, failed to do the work necessary at the time to determine the likelihood and magnitude of such an effect, and thus bore the risk that its beliefs about the effect of the Accounting Procedures might prove erroneous. The principles of section 154, however, are applicable to claims of unilateral mistake under section 153, *see* RESTATEMENT (SECOND) OF

[9] In a brief (Dkt. 29), Nebraska asserted that it "is not seeking to 'reform' the Compact or the FSS." In the context of a pleading that sought an order changing the Accounting Procedures, I construed that statement to mean that Nebraska is not seeking to make any change in the Compact or the language of the FSS itself, distinguishing the Accounting Procedures, to which Nebraska has from the outset of this case sought a change.

CONTRACTS § 154 cmt. a, which is not at issue here. Under section 157, fault by a party seeking reformation for a mutual mistake concerning the effect of the parties' written expression precludes reformation only when the fault rises to the level of a failure to act in good faith. *See* RESTATEMENT (SECOND) OF CONTRACTS § 157 & cmt a. There is no evidence Nebraska lacked good faith in agreeing to the FSS.

c. The Court can reform the RRCA Accounting Procedures without having to retract its May 19, 2003, Decree and reject the entire FSS.

Kansas points out that the FSS includes a non-severability clause, providing that "[t]he agreement of the States to the terms of [the FSS] is based upon the inclusion of all the terms [t]hereof, and the rights and obligations set forth in [the FSS] are not severable." FSS § VII. As explained by Special Master McKusick, the clause was intended to make clear that "[t]he agreement of each of the States to the terms of the Final Settlement Stipulation depends upon the inclusion of all its provisions . . . . If the Court declines to approve the Final Settlement Stipulation in the form submitted, the States have agreed that the entire Final Settlement Stipulation will be null and void." Second Report, at 30; *see id.* at 74 (recommending that the Court "preserve the bargain that the compacting States have struck" by "approv[ing] the Final Settlement Stipulation as a single whole").

Kansas argues that because the parties' agreement precluded the Court from rejecting any portion of the FSS when presented as the basis for securing the dismissal of the prior action, it follows that the Court cannot now change any single portion of the FSS. In so arguing, Kansas implicitly concedes that the Court can relieve a party of the effect of a true mistake in the language the parties used to document their agreement. *See* Kansas' Brief Re Changes to the

Accounting Procedures, at 5, *Kansas v. Nebraska*, No. 126 Orig. (June 15, 2011). But the Court can only do so, Kansas argues, by rejecting the FSS as a whole.

This argument misapprehends the nature of the type of reformation at issue here. Nebraska seeks reformation not to change any portion of the parties' actual agreement. Rather, Nebraska carries the burden of making a clear showing that the parties by mistake used language that failed to convey the meaning they intended. *See* RESTATEMENT (SECOND) OF CONTRACTS § 155 cmt. a ("The province of reformation is to make a writing express the agreement that the parties intended it should."). "In short, reformation fixes a mistaken writing; it is not meant to fix a mistaken agreement." *One Beacon Am. Ins. Co. v. Travelers Indem. Co. of Ill.*, 465 F.3d 38, at 42 (1st Cir. 2006).

A clause precluding severability reflects the fact that the agreement contains trade-offs, such that it would be unfair to delete one part of the agreement that might be the "quid" for another retained part of the agreement that is the "quo." *See In re Charter Commc'ns, Inc.*, 691 F.3d 476, 486 (2d Cir. 2012) (noting that "a nonseverability clause may be one indication that a particular term was important to the bargaining parties"). Here, for example, if there were evidence that the parties knew that the Accounting Procedures had the effect that they did, yet were retained because Kansas gave ground on some other point, then it would be both improper and unfair to change the agreement after the fact by "reforming" the procedures. As discussed in Section I.A above, however, there is no evidence that Kansas viewed the inclusion of some Imported Water Supply as CBCU to be a benefit that it believed it was getting. To the contrary, the evidence is that the parties thought that the Accounting Procedures would not have this effect, and said so much at the time. *See In re Charter Commc'ns, Inc.*, 691 F.3d at 486 (noting that a court "cannot rely on [a nonseverability] clause to the exclusion of other evidence").

Given their mutual recognition that the FSS was not intended to conflict with or go beyond the boundaries of the Compact, it is difficult to see how the parties could have agreed to treat Imported Water Supply in this manner on other than perhaps a *de minimis* basis unless there was indeed some offsetting reversal of this effect, to which no expert for any party has pointed.

Nor is there any evidence of a less direct trade-off. Although Kansas has not argued the point, I have considered the possibility that perhaps Kansas in agreeing to the FSS had in mind a bottom line amount of water that it believed the Accounting Procedures would generate from use of the Groundwater Model, and acceded to a variety of other terms only because it thought it was getting such an amount. There is no evidence, however, of any such calculation. Rather, the parties agreed to the terms of the FSS and the Accounting Procedures before the Groundwater Model was completed, and Kansas offers no evidence that it employed any draft of the Model to justify any such trade-off.

Kansas also tries to buttress its non-severability argument by contending that because the RRCA can change the Accounting Procedures only by unanimous consent, it should follow that no one can change them absent unanimous consent. This argument stretches a negative inference too far. It is fair to infer that, in view of the unanimity clause, fewer than all three states cannot of their own accord change the Accounting Procedures even though no express language so states. It goes too far to infer also that the Court cannot reform the Accounting Procedures at the behest of fewer than all the parties. After all, one can say that contracts generally can be changed by unanimous consent of the contracting parties, and generally may not be changed by fewer than all such parties. Yet, it hardly follows that contracts generally are therefore immune to reformation where otherwise appropriate.

None of this is it to say that a technical appendix to an agreement such as the FSS is subject to reformation simply to reflect better judgments or accommodate new facts. Reformation here requires a clear showing that a document need be rewritten to correct an error of expression – in words or math – that so materially conflicts with the actual agreement. Nor is the Court likely to entertain requests that it correct *de minimis* errors. *See Texas v. New Mexico*, 462 U.S. 554, 570 (1983) (The Court has "substantial discretion to make case-by-case judgments as to the practical necessity of an original forum in this Court.") Equity in this manner balances the competing goals of honoring the terms chosen by the parties to prove and document their agreement and saving them from mutual error should they unwittingly employ terms that materially run contrary to the agreement itself.

3. The record provides no adequate basis for fairly determining now whether the specific technical change in the RRCA Accounting Procedures urged by Nebraska is appropriate.

The real impediment to granting Nebraska now the relief it seeks arises from the fact that Nebraska has proceeded in a manner that has greatly reduced the effectiveness of the adversarial process as a tool for assessing the proffered technical remedy. After realizing that the current Accounting Procedures were charging it with the consumption of imported water, Nebraska in June of 2007 proposed a technical change to which the parties have since referred as the "five-run proposal" (or, sometimes, the "five-run solution"). (Schneider Direct, ¶ 42; Tr. 616-17 (Schneider); N1005, at 1, 73-77).[10] Nebraska followed up by presenting its five-run proposal to an engineering subcommittee of the RRCA, which could not reach agreement on it. (Ex. N1006

[10] Page 1 of Exhibit N1005 states that one can find on page 13 of the cited attachment included in that exhibit a highlighted mark-up showing the precise language change proposed. In fact, there is no such page 13 numbered as such, nor any text elsewhere highlighting the changes. To ascertain the changes (and I do not suggest that the reader need now do so) one can compare the language on page 16 of Exhibit N1005 with the language on page C20 of Appendix C to the FSS.

at 2-3). When Kansas subsequently produced a memorandum from its expert, Steve Larson, criticizing the proposal for failing to satisfy certain criteria identified by Kansas (Ex. N1002 at NE0500082-85), Nebraska dropped the five-run proposal, developing in its place an alternative solution informally called the "sixteen-run proposal" that was designed to address Kansas' expressed concerns regarding the five-run proposal, (Schneider Direct, ¶ 52; Tr. at 620-22, 623-24 (Schneider)).

When Kansas also balked at that, Nebraska initiated the FSS' dispute resolution process. Under the FSS, "any matter relating to Republican River Compact administration, including administration and enforcement of the FSS in which a State has an Actual Interest, shall first be Submitted to the RRCA." FSS § VII.A.1. The FSS further provides that after a matter is submitted to the RRCA, the RRCA "will attempt to resolve any dispute submitted to the RRCA pursuant to this Section VII." *Id.* § VII.A.7. If the RRCA is unable to resolve the dispute, then "the dispute shall be submitted to nonbinding arbitration unless otherwise agreed to by all States with an Actual Interest." *Id. See also* Second Report, at 68-70. "At the conclusion of this process, the State raising the matter will have exhausted its administrative remedies." Second Report, at 70. Nebraska took the first step of the dispute resolution process by formally presenting the sixteen-run proposal alone to the RRCA. (N1001, at 4; Schneider Direct, ¶ 58). After the RRCA failed to reach agreement on the matter, Nebraska proceeded to non-binding arbitration. (Schneider Direct, ¶¶ 59, 60; N1002, at 325.) In that arbitration, it presented the 16-run proposal as the sole relief sought. (*Id.*)

Upon later filing its counterclaim in this action, Nebraska again sought as its relief the sixteen-run proposal, *see* Answer and Amended Counterclaims and Cross-Claim of the State of Nebraska, Ex. A., *Kansas v. Nebraska*, No. 126 Orig. (July 25, 2011) (Dkt. 58), and thereafter

submitted an expert designation advocating only the sixteen-run proposal (N1002). After all expert reports were exchanged, all discovery set to close, and a date set for trial, Nebraska entered an agreement with Colorado on April 10, 2012, that Nebraska would drop the sixteen-run proposal and advocate in its place the five-run proposal, which Colorado in turn agreed to support. (Ex. N1009). Nebraska and Colorado at the time agreed to delay informing either Kansas or me of the material and belated change in the relief Nebraska sought to seek.

On May 16, 2012, Nebraska announced that it would drop its advocacy for the sixteen-run solution and seek as a remedy the five-run proposal, which it described as simply a "subset" of the sixteen-run proposal. *See* Notice of Stipulation and Request for Status Conference, *Kansas v. Nebraska*, No. 126 Orig. (May 16, 2012) (Dkt. 216). Over the objection of Kansas, I allowed Nebraska to pursue this change, reserving for later consideration whether Nebraska had satisfied any obligations under the dispute resolution process agreed to in the FSS. *See* Report of June 7, 2012, Telephone Conference of Counsel, *Kansas v. Nebraska*, No. 126 Orig. (June 12, 2012) (Dkt. 236). At the time, Nebraska had not yet disclosed to me the fact that it had intentionally delayed announcing its change of course, which I learned only when I ordered Nebraska to file with me the stipulation in which Nebraska and Colorado had documented their agreement.

Nebraska says that the five-run proposal is simply a "subset" of the sixteen-run proposal. As evidenced by the fact that Colorado opposed the sixteen-run proposal, but supports the five-run proposal, the two proposed remedies are nevertheless materially different. (*See* Tr. at 679-80, 685-88, 748-49 (Schreüder) (describing different effects of five- and sixteen-run proposals)). The Accounting Procedures themselves, the Groundwater Model, and the interaction between them are technically complex. As evidenced by the very mistake Nebraska seeks to remedy,

ascertaining how the Accounting Procedures work under all conditions is not a simple matter. Schreüder himself, after all, was unable to anticipate without time and study the material error created by the original procedures. (Tr. at 677, 718-21 (Schreüder)). Even now, Schreüder confesses that he is not certain that the five-run proposal would have been adopted as the appropriate technical fix back in 2003. (Tr. at 731 (Schreüder)). Fairly assessing the five-run proposal as a proposed remedy warrants a full opportunity for consideration and debate.

Instead, Nebraska has shielded its five-run proposal from the extended and multiple examinations and defense to which it would have been subject had it been presented to the RRCA, to the arbitrator, and in Nebraska's counterclaim. Kansas' expert, Larson, claimed that the five-run proposal is not in any meaningful sense merely a subset of the sixteen-run proposal and that its effects are uncertain because it relies on a baseline condition that has never been calibrated to the historical conditions. *See* Initial Response to Nebraska's New Proposal for Changes to the Accounting Procedures, *Kansas v. Nebraska*, No. 126 Orig. (Aug. 7, 2012) (Dkt. 353). Larson further testified that the time allotted between Nebraska's belated change and the remedy sought in the August hearing precluded any opportunity to do the studies that would be necessary to confirm whether the alleged uncertainties created by the five-run proposal were real and material. (Tr. at 377 (Larson); C08).

Nebraska replies that Larson saw the five-run proposal in 2007, that Colorado has always mentioned it as an alternative possible remedy, and that Kansas would long ago have analyzed it fully had it been proceeding in good faith. There may well be something to this. Kansas' principal position has been that no remedy is needed or appropriate. It is also difficult to believe that Kansas has not assessed the underlying problem more than Larson allows to have done. And it may well be that Nebraska pursued the sixteen-run remedy partly in an attempt to meet

Kansas' objections in good faith (Schneider Direct, ¶ 52; Tr. at 620-21, 623-24 (Schneider)). All that being said, Nebraska alone fully controlled whether and when it would also ask that the five-run proposal be adopted over Kansas' objection. And it was Nebraska alone that exercised that control in a manner that insulated the five-run proposal from the scrutiny and development that it would have otherwise received in, first, the pre-litigation dispute resolution proceedings, and then again over the course of this action.

Finally, treating the issue of timing as a technical matter of procedure rather than the pragmatic facilitation of a fair and informed adjudication, Nebraska argues that, having raised in arbitration the basic claim of an error in the Accounting Procedures, it was not obligated to specify the remedy that it now seeks. In some circumstances, it is certainly true that a party might refine its remedy request once in court without frustrating the purposes to be served by pre-litigation dispute resolution. Kansas, here, for example has changed the damage analysis it presented in arbitration. Courts are well suited to assessing damages, and thus the benefit to parties and court of an assessment of damages by the RRCA and the arbitration is not great. Conversely, here even the arbitrator, who served as head of engineering services for a state water resource authority, recommended that the matter of a proper technical fix be referred to the RRCA Technical Groundwater Modeling Committee to develop a recommendation for the RRCA to consider. Brief of State of Nebraska in Response to Kansas' Motion for Leave to file Petition at App. 105. It is the cumulative impact of Nebraska both rejecting that advice and then only raising its new request at the eleventh hour in the litigation that creates the problem.

The end result is that there is no considered testimony or evidence in the record carefully addressing and rebutting Larson's testimony concerning possible deficiencies in the five-run proposal that warrant further evaluation. In this manner, Nebraska has precluded the Court from

being able to rule on the merits of Nebraska's newly chosen remedy with assurance that Kansas has had its fair say about that remedy.

4. The fair resolution is to close the books on Accounting Year 2006 under the current RRCA Accounting Procedures while allowing additional time within which to settle upon a solution for correcting the RRCA Accounting Procedures for years subsequent to 2006.

Sitting in equity in an original action, the Court has ample leeway to fashion a remedy that achieves a fairly balanced result rather than taking an all-or-nothing approach. *See Ohio v. Kentucky*, 410 U.S. 641, 648 (1973); *Hecht v. Bowles*, 321 U.S. 321, 329-30 (1944). Here, Nebraska is the primary source of delay. Even apart from that delay, as the party who breached the Compact in 2006, Nebraska comes before the Court with less than clean hands in seeking to change the rules for 2006. Some weight can also be assigned to the fact that Nebraska did not even first raise a challenge to the Accounting Procedures until June of 2007, long after the States made all decisions they made in dealing with the 2006 season. For all of these reasons, the Court in exercising its equitable discretion should close the books on 2006 rather than postpone calculation of a judgment until after a new accounting procedure can be settled upon.

At the same time, as explained in the prior sections of this Report, it is clear that there is an error that should be reformed going forward. Assuming reformation is otherwise appropriate, nothing Nebraska has done warrants a permanent loss of the opportunity to align the effect of the Accounting Procedures with the parties' clear intent. Kansas, too, has played less than forthrightly on this issue, claiming not to see the clear error, and criticizing proposed solutions without advancing any concrete alternative that would correct the error.

On such a record, closing the books on 2006 under the current Accounting Procedures, while declaring them nevertheless mistaken and ultimately amenable to correction for subsequent years if a fair correction is possible, seems most fair. As a practical matter, it also

seems reasonably likely that rejection of Kansas' basic position – that the Accounting Procedures are immune to reformation – will lead the parties to engage more on the merits of the remedy than they have to date.

Accordingly, the Court should find that Nebraska has not preserved the opportunity to have the Accounting Procedures reformed for the 2006 accounting year, but that it may in this proceeding pursue its effort to secure declaratory relief resolving the parties' ongoing controversy for subsequent years for which the accounting has not been finalized.[11]

II. The Harlan County Lake Evaporation Issue.

Harlan County Lake (sometimes referred to as Harlan County Reservoir) is a federally managed reservoir located in Nebraska. The lake gathers and stores water for release back into the Republican River during irrigation season for diversion through the Courtland Canal to the Kansas Bostwick Irrigation District ("KBID") and through the Superior Canal to the Nebraska Bostwick Irrigation District ("NBID"). (*See* K80, at KS0001323; K3). Under the Compact, the evaporation of water from Harlan County Lake is a Beneficial Consumptive Use of water. *See* Compact, Art. II. In adopting the Accounting Procedures, the States have agreed that that evaporation from Harlan County Lake "will be charged to Kansas and Nebraska in proportion to annual diversions made by the [KBID] and [NBID] during the time period each year when irrigation releases are being made from Harlan County Lake." FSS, App. C § IV.A.2.e.1.

It is undisputed that during the period of time when irrigation releases were being made from Harlan County Lake in 2006, no diversions were made by NBID. (*See* Tr. at 428 (Barfield)). Rather, in an attempt to mitigate the extent of its overconsumption of water in 2006, the State of Nebraska entered into an agreement with NBID pursuant to which NBID forewent

[11] [I will discuss with counsel on January 24 the procedure and timing for getting a resolution on the remedy, and then supplement this Draft Report accordingly.]

its right to make the diversions during that season and also surrendered all rights to the storage supply in Harlan County Lake so that the supply could be released for the benefit of Kansas. (Dunnigan Direct, ¶ 26; Ex. N4002, at NE0061551-53).

Under the plain language of the Accounting Procedures quoted above, 100% of the total net evaporation from Harlan County Lake for 2006 would normally be charged to Kansas. Kansas, however, recoiled at this conclusion, triggering a source of impasse on closing the accounting books for 2006. (Barfield Direct, at 28). Kansas tenders three arguments in support of its position that the Harlan County Lake evaporation during 2006 should still be split between the two States notwithstanding the absence of any relevant diversions by NBID.

Kansas relies, first, on an exception in the Accounting Procedures to the general rule that allocation of Harlan County Lake evaporation be charged on the basis of proportional annual diversions. That exception states as follows:

> In the event Nebraska chooses to substitute supply for the Superior Canal from Nebraska's allocation below Guide Rock in water-short year administration years, the amount of the substitute supply will be included in the calculation of the split as if it had been diverted to the Superior Canal at Guide Rock.

FSS, App. C § IV.A.2.e.i. The solecistic combination of the infinitive "to substitute" followed by the prepositions "for" and "from" renders the sentence difficult to parse, as the drafters clearly could not have meant that Nebraska would substitute a supply for a canal. *See* H.W. FOWLER, A DICTIONARY OF MODERN ENGLISH USAGE 599 (2d ed. 1965). In context, it is likely that the drafters had in mind a scenario in which Nebraska foregoes diversions into the Superior Canal, while replacing that foregone supply with supply obtained from its allocation below Guide Rock. And this is more or less how Kansas seems to read the sentence, albeit by employing "substitute" as a transitive form of "replace." *See* Kansas' Brief re Amount of Nebraska's Exceedance, at 11,

Kansas v. Nebraska, No. 126 Orig. (June 15, 2011) (Dkt. 32) ("to substitute its storage supply with water from below Guide Rock").

In any event, no matter how one reasonably construes the "substitute supply" exception, Kansas points to no facts that would trigger an apportionment to Nebraska of any portion of the Harlan County Lake evaporation. The best Kansas can do is point to a letter dated May 1, 2006, from the Acting Director of Nebraska's Department of Natural Resources, Ann Bleed. (Ex. K59). In this letter, Nebraska formally notified Kansas that Nebraska would purchase from Nebraska Bostwick Irrigation District its right to approximately 10,118 acre-feet in storage in Harlan County Lake, and then not use that supply, thereby allowing the supply to be diverted by Kansas at Guide Rock into the Courtland Canal. (*Id.*) In the letter, Ms. Bleed also stated that Nebraska would be "supplementing water for Nebraska Bostwick Irrigation District by providing alternate supplies from below Guide Rock or from outside the Basin." (*Id.* at KS001884). Ms. Bleed estimated that this planned supplementation would eliminate the diversion of 5,000 acre-feet that would otherwise have been diverted into Superior Canal for 2006. (*Id.*) And the only specific alternate supply she identified for this foregoing diversion was "groundwater wells located below Guide Rock diversion dam." (*Id.*)

Kansas, however, offers no evidence that such an alternate supply was in fact used. Kansas made no effort to validate the assumption that a substitute supply was actually used (Tr. at 509 (Barfield)), and made no effort to quantify the substitute supply, if it actually existed (Tr. at 155 (Book)). Kansas' chief engineer, David Barfield, agreed that, to determine whether Nebraska used a substitute supply as predicted in Ms. Bleed's letter, one would look at the groundwater pumping records for 2006 in the region as compared to prior or comparable years. (Tr. at 426 (Barfield)). Those records reflect that the total CBCU from groundwater pumping

below Guide Rock during all of 2006 was only 2,341 acre-feet. (C-O1 at CO000000444). Importantly, that amount compares to the 2,800 CBCU from groundwater pumping in the same area during 2005 and 2,268 CBCU in 2004. (*Id*. at CO000000443-44). In short, the record of what actually happened is that groundwater CBCU below Guide Rock in 2006 was both quite limited (relative to the size of the foregone Harlan County Lake diversion) and normal as compared to prior years. While increased pumping might only increase CBCU marginally in the year of pumping, there is nothing about this record that would support a finding that there was any materially increased pumping in NBID during 2008. Nor is there any other evidence that would allow Kansas to point to a substitute supply, much less quantify one. As such, the evidence supports the only affirmative testimony on the point, namely, Nebraska Department of Natural Resources director Brian Dunnigan's statement that, based on his review of the data, no "substitute supply" was ever used. (Dunnigan Direct, ¶¶ 3, 27).

Unable to point to any facts that would allow the Court to find that Nebraska employed a substitute supply within any reasonable interpretation of the Accounting Procedures, Kansas falls back on a more overarching argument that by purchasing and then not consuming NBID's water supply rights during the 2006 irrigation season, Nebraska itself "used" that water supply in order to achieve Compact compliance. However, the argument that not using the water is the same as using the water finds no support in common sense. If "not using" equals "using," then why stop at the allocation of evaporation? After all, Nebraska either uses or does not use the entire supply of the Basin. Were Kansas correct, moreover, the substitute supply exception would have no purpose because, under Kansas' view, it makes no difference whether there is a substitute supply or where the substitute supply comes from. Rather, as Kansas would have it, all it need establish is that Nebraska reduced its "use" for the purpose of achieving compliance. And were

that the understanding, then when Kansas' chief engineer learned that Nebraska might not request water from Harlan County Lake in 2006, he would not have immediately presumed (as he did) that Nebraska would not be charged with a share of the lake's evaporation. (Tr. at 430-31 (Barfield); Ex. N9129).

In any event, "use" is not even the precise term that is pertinent under the parties' agreements. Section IV.A.2.e.1 of the Accounting Procedures requires that evaporation be charged in proportion "to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District . . . ." FSS, App. C., § IV.A.2.e.1. Even if one were to cast common sense aside and treat a "non-use" as a "use," there is no basis for claiming that such a use would constitute a "diversion." And even if one were to further ignore, as Kansas does, the textual difference between the Accounting Procedures' term "diversions" and Kansas' term "use," the fact remains that the Compact itself employs as the basis upon which it allocates water not the term "use," but rather the term "Beneficial Consumptive Use." *See* Compact, Art. II, IV. "Beneficial Consumptive Use" is defined to be uses "by which the water supply of the Basin is consumed through the activities of man." *Id.* (emphasis supplied). Kansas' definition of the word "use" (as being broad enough to include not using the water in order to comply with the Compact) does not fall within this definition of Beneficial Consumptive Use.

The entire structure of the parties' agreement for dealing with Harlan County Lake evaporation also cuts against Kansas' basic notion that there should be some way to charge Nebraska with responsibility for some of the evaporation associated with the Harlan County Lake. Harlan County Lake lies entirely within Nebraska. Under Article XI of the Compact, therefore, all Beneficial Consumptive Use by the United States associated with Harlan County Lake would count against Nebraska's allocation. *See* Compact, Art. XI(a). And it is undisputed

that Beneficial Consumptive Use includes water consumed by evaporation from any reservoir. *See* Compact, Art. II. The parties have agreed, however, that Kansas, in effect, would get rights to a portion of the water in the reservoir; that is to say, Nebraska would not use all the water in the reservoir. Kansas, in turn, became liable for a proportionate amount of the evaporation in the reservoir; that is to say, all of the evaporation from the water that Nebraska normally does not use. Given this structure, it should hardly be surprising that the parties also agreed that if Nebraska ends up not using any of the water stored in the Lake, thereby making it all available for diversion to Kansas, then Kansas would become responsible for all of the evaporation. The only exception to this allocation rule applies when Nebraska goes out and obtains a substitute supply for the Harlan County Lake water, and it gets that supply from below Guide Rock.

Finally, as an alternative argument, Kansas also points to a memorandum of agreement between the Nebraska Bostwick Irrigation District and Kansas Bostwick Irrigation District (the "Bostwick MOA"). (Ex. K70 (Corrected)). Signed in October of 2000, the Bostwick MOA addresses a variety of issues pertaining to the operation and maintenance of the various water supply works from which the districts benefit, including the Harlan County Dam and Harlan County Lake. Section 2 of the agreement apportioned the Corps of Engineers' operating, maintenance and replacement costs associated with the Harlan County Dam and Harlan County Lake between the two Districts based on their respective diversions. (*Id.*). In 2006, after NBID sold its rights to the subject water supply to Nebraska with knowledge that Nebraska intended not to divert any of the water, NBID entered into Amendment No. 2 with KBID. Amendment No. 2 provides that NBID would continue to share in the operating, maintenance and replacement costs to the same extent it would have had it diverted its allocated supply into the Superior Canal. (*Id.* at KS004203-05). Kansas argues that Amendment No. 2 should be read as

a waiver by Nebraska of any contention that it should not be liable for evaporative losses because it did not divert Harlan County Lake water during 2006. A better reading of the agreement is exactly to the contrary: KBID and NBID clearly recognized that there was no diversion, and agreed that NBID would nevertheless cover certain expressly specified costs as if there had been a diversion, with no proviso made for allocating evaporation in the same manner.

In sum, there is no support in the evidence or in the language of the parties' agreement to conclude that, having foregone diversions from Harlan County Lake, Nebraska should nevertheless be charged with evaporation from Harlan County Lake. The entirety of the 16,182 acre-feet of evaporation from Harlan County Lake (*see* Stipulation of the States Concerning Accounting of Overuse by Nebraska ¶ 2, *Kansas v. Colorado*, No. 126 Orig. (Sep. 16, 2011) (Dkt. 96)) should be charged to Kansas. As a result, Nebraska's CBCU under the Compact for 2006 should not include any evaporation from Harlan County Lake. Kansas' estimate of Nebraska's overuse in 2006 should therefore be reduced by 8,091 acre-feet.[12]

III. The Non-Federal Reservoir Evaporation Issue.

The Compact states that Beneficial Consumptive Use includes "water consumed by evaporation from any reservoir, canal, ditch, or irrigated area." Compact, Art. II. The FSS elaborates upon the accounting for evaporation from so-called "Non-Federal Reservoirs." The FSS defines "Non-Federal Reservoirs" as those reservoirs that have a storage capacity in excess of 15 acre-feet and that are also not listed in the definition of Federal Reservoirs contained in Section II of the FSS. *See* FSS § II. The FSS expressly specifies how to calculate evaporation

[12] The parties have not provided me the information necessary to fix precisely the amount of Harlan County Lake evaporation that Kansas improperly imputes to Nebraska. Kansas states only that it split the evaporation "based on the long-term average use of water by NBID and KBID," Kansas Post-Trial Br., at 6, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 25, 2012) (Dkt. 385), without specifying that average percentage. I therefore assume that Kansas imputed 50% of Harlan County Lake evaporation in 2006 to Nebraska.

from Non-Federal Reservoirs located in an area that contributes to run-off into the Republican River Basin above Harlan County Lake, FSS § VI.A, but is silent as to those below Harlan County Lake. From that silence arises the States' dispute.

Nebraska has maintained that one must infer from the FSS' silence on accounting for Non-Federal Reservoirs below Harlan County Lake an intent to exclude evaporation from such reservoirs altogether in Compact accounting. (J7, at JT003257-8). Kansas counters that such an inference cannot be correct because the Compact itself expressly includes evaporation from "any" reservoir in its definition of beneficial consumptive use. Kansas' Brief re Amount of Nebraska's Exceedance, at 9, *Kansas v. Nebraska*, No. 126 Orig. (June 15, 2011) (Dkt. 32). Under Nebraska's interpretation, its overuse of water in 2005 equaled 42,390 acre-feet; under Kansas' interpretation, Nebraska's overuse for 2005 equaled 42,860 (a difference of 470 acre-feet).

With the RRCA unable to resolve the dispute by unanimous action, the parties squarely presented the question for non-binding arbitration. The arbitrator framed the issue thus: "Is the evaporation from Non-Federal Reservoirs below Harlan County Lake required to be included in the Compact accounting?" (J7 at JT003257). The arbitrator issued his non-binding ruling in favor of Kansas, finding that while the Compact may arguably allow *de minimis* exceptions of small reservoirs, evaporation from any reservoir in excess of 15 acre-feet must be included in the Compact accounting. (*Id.* at JT003258-59).

Kansas' Petition sought vindication of its position. In paragraph 19, and in an attached statement, it alleged that Nebraska's overuse for 2005 was 42,860 acre-feet. Petition ¶ 19; *id.*, App. C ¶ 19 & Table 1. In an explanatory note, Kansas explained that Nebraska conceded to an

overuse of 42,390 acre-feet, the difference being that Nebraska's number was "without nonfederal evaporation below Harlan County Lake." *Id.*, App. C ¶ 19 & Table 1.

In its Answer to the Petition, Nebraska simply denied paragraph 19 of the Petition in its entirety. *See* Answer and Amended Counterclaims and Crossclaim of the State of Nebraska, *Kansas v. Nebraska*, No. 126 Orig. (Jul. 25, 2011) (Dkt. 58). In a brief filed in support of a motion to file counterclaims, Nebraska stated that it did not believe that the issue of evaporation from Non-Federal Reservoirs below Harlan County Lake is "of sufficient magnitude to warrant continued pursuit in this proceeding." Brief in Support of Motion for Leave to File Counterclaims, at 2, *Kansas v. Nebraska*, No. 126 Orig. (May 31, 2011) (Dkt. 22). Rather, Nebraska stated that it wished to leave the issue to be a "subject for later discussion by the parties." *Id.* In a subsequent filing, Nebraska stipulated that its overuse in 2005 was 42,860 acre-feet, as alleged by Kansas. *See* Stipulation of the States Concerning Accounting of Overuse by Nebraska, ¶ 1, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 16, 2011) (Dkt. 96). It now argues that, because of its stipulation, "there is no ongoing controversy about" the subject of evaporation from Non-Federal Reservoirs below Harlan County Lake. State of Nebraska's Responsive Post-Trial Brief, at 20. *Kansas v. Nebraska*, No. 126 Orig. (Oct. 15, 2012) (Dkt. 391). In short, Nebraska seeks both to moot the issue and at the same time to preserve it as unripe. Kansas disagrees and continues to seek a ruling on the issue so as to put the matter to rest. Stipulation of the States Concerning Accounting of Overuse by Nebraska ¶ 4 (Sep. 16, 2011) (Dkt. 96).

Certainly settlement is to be encouraged. *See Oklahoma v. New Mexico*, 501 U.S. 221, 241 (1991). At the same time, "the Court does have a serious responsibility to adjudicate cases where there are actual existing controversies between the States over waters in interstate

streams." *Id.* Absent resolution of this question now, Kansas cannot reliably know the extent of Nebraska's consumption each year. Nor has Kansas delayed in pressing this issue. Even if the issue had arisen heretofore only as an anticipatory question to resolve a dispute that had not yet risen in concrete form for any past year, the issue might well provide a proper occasion for the issuance of declaratory relief. *See* 28 U.S.C. § 2201. Here, however, the issue was framed concretely in the context of finalizing accounting for the first compliance period, and has ripened further through the formal dispute resolution steps upon which the parties agreed. It poses a straightforward question of contract interpretation, the answer to which requires only a reading of the FSS and the Compact, and which is unaffected by facts peculiar to any one year. There is simply no good reason to allow Nebraska to play coy by acceding to Kansas' position for the 2006 accounting period while simultaneously leaving all subsequent years in doubt.[13]

On the merits of the issue, Kansas is correct. The parties all agree that the FSS must be read as consistent with the Compact. And the Compact makes no exception for these reservoirs from its general mandate that evaporation from "any" reservoir be included as beneficial consumptive use. *See* Compact, Art. II. Whatever negative inference one might in the abstract draw from the absence of any express provision in the FSS for calculating evaporation from such reservoirs as compared to others, any such inference is overborne by the parties' express

[13] In view of Nebraska's concession on the 2005 accounting while maintaining a live controversy concerning Compact interpretation, Kansas perhaps should have sought to supplement its Petition to add a formal claim for declaratory relief *per se*. Instead, in a brief that I required each party to file before discovery proceeded apace, Kansas expressly confirmed that it sought a final resolution of the controversy. *See* Kansas' Brief Re Amount of Nebraska's Exceedance, at 8-10, *Kansas v. Nebraska*, No. 126 Orig. (June 15, 2011) (Dkt. 32). Given the simple and purely legal nature of the issue, requiring no discovery or evidence, and given that Nebraska has had a full and fair opportunity to argue the issues, I find the absence of a formal supplemental pleading to be of no significance. Simply put, if I required Kansas to file such a supplemental pleading now, nothing would be achieved other than delay.

agreement that the FSS is not "intended to, nor could [it] change the States' respective rights and obligations under the Compact." FSS § I.D.

Accordingly, the Court should resolve the parties' disagreement regarding the treatment of evaporation from Non-Federal Reservoirs in favor of Kansas. Evaporation from such reservoirs is a Beneficial Consumptive Use under the Compact and should be accounted for as such.

IV. The Average Versus Total Overuse Issue.

Prior to 2003, the States determined compliance for each year by comparing the allocation for that year with the usage for that year. *See* Second Report, at 49.[14] In the FSS, the parties opted to change that practice in favor of determining compliance for each year based on a five-year running average of annual use as compared to annual allocations or, in the case of "Water-Short Year Administration" as defined in Article V.B.1.a of the FSS, a two-year running average.[15] FSS § IV.D; *id.* § V.B.2.e.i. Averaging was intended to give "States the ability to manage the water of the Basin with greater predictability, efficiency, and flexibility." Second

[14] To be precise, the Compact regulates "Beneficial Consumptive Use," defined "to be that use by which the water supply of the Basin is consumed through the activities of man . . . ." Compact Art. II. The parties often employ the terms "use" and "consume" as shorthand for the defined term, and so will this Report where appropriate.

[15] The text of the FSS itself merely states in Section IV.D and V.B that "all Compact accounting shall be done on a five-year running average in accordance with the provisions of the RRCA Accounting Procedures" except during water-short years, when the key variables are to be "calculated on a two-year running average . . . with any water-short . . . year treated as the second year of the two-year running average and using the prior year as the first year." FSS § IV.D; *id.* § V.B.2.e.i. In turn, Section III.E of the RRCA Accounting Procedures, captioned "Calculation to Determine Compact Compliance Using Five-Year Running Averages," states in relevant part that the "results for the current Compact accounting year as well as the results of the previous four accounting years and the five-year average of these results will be displayed in [a specified format]." FSS, App. C § III.E. Section III.H of the Accounting Procedures, applicable to Water-Short Year Administration, simply requires use of a different specified tabular format, which covers only two years. *Id.* § III.H. There is also an option, not separately relevant here, for a three-year running average alternative test. FSS § V.B.2.e.ii.

Report, at 52.[16] Averaging did so, at least in part, by allowing States to manage groundwater and surface water depletions together. *See* Second Report, at 50.[17] The shorter averaging period adopted for Water Short Year Administration was intended to "prevent an upper State from heavily overusing in a dry year (when all the States needed the water the most)."[18] Second Report, at 50. The employment of multi-year running averages to measure annual compliance was presented by the parties and accepted by the Special Master, and presumably the Court, as consistent with the Compact because the allocations in the Compact were themselves derived from multi-year averages. *See* Second Report, at 51.

The States agreed to use 2003 through 2007 as the first five-year period to be averaged in order to determine Normal Year compliance. *See* FSS, App. B. They also agreed to use 2005 to 2006 as the first two-year period to be averaged to determine Water-Short Year Administration compliance (should 2006 be a Water-Short Year). *See* FSS, App. B. The year 2006 turned out to be a Water-Short Year (Barfield Direct, at 26); hence, each State needed to achieve compliance in 2006 based on the average results of 2005 and 2006, *see* FSS, App. B.

Because Nebraska's use exceeded its Compact allocation both in 2005 and in 2006, Nebraska does not dispute that it failed the FSS' compliance test and thereby breached its obligations under the Compact in 2006. The parties nevertheless disagree on how to calculate the extent of Nebraska's non-compliance for 2006; *i.e.*, by what amount of water should

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[16] According to the parties, "Averaging provides greater predictability and flexibility in the use of water." (Ex. J6, at JT003063).

[17] As the parties asserted, "Recognizing that groundwater pumping may cause stream depletions a year or more after the pumping occurs, the use of averaging in the accounting allows the States to manage groundwater and surface water together." (J6, at JT003063-64).

[18] The parties explained the decision to adopt a two-year test as follows: "And the concern there, particularly from Kansas' standpoint was if you are still in a five-year average, you may have two of these water-short years -- if Nebraska used heavily in these two short years, get a lot of rain in year three or in year four, all of a sudden we're in compliance on a five-year basis, but there were two very short years that Nebraska was using more and Kansas was using less." (J6, at JT003098).

Nebraska be found to have exceeded its rights under the Compact as implemented and administered by the FSS? Kansas contends that Nebraska's noncompliance with the Water-Short Year Administration requirements in 2006 renders Nebraska liable for "the sum of the annual overuse amounts" in the two years, which Kansas asserts to be 42,860 acre-feet for 2005 and 36,100 acre-feet for 2006. (KS, at KS000369). Nebraska contends that because the FSS makes 2006 the first year for measuring compliance, Nebraska bears no liability for its admitted 2005 exceedance except to the extent that exceedance increased the overall average for 2005 and 2006 combined. For the following reasons, Kansas is correct.

A. Absent Agreement To The Contrary, The Scope Of The Remedy Should Accord With The Scope Of The Breach.

In framing this issue, it is helpful to begin with what is conceded: Nebraska was required to comply with the Water-Short Year Administration requirement in 2006; its compliance was to be measured by its 2005 and 2006 average usage; it exceeded its 2005 annual allocation by 42,860 acre-feet; it therefore needed to use 42,860 less than its allocation in 2006 in order to comply in 2006; and it instead exceeded its 2006 annual allocation. Further, as explained in Section II of this Report, I have found that the amount by which Nebraska exceeded its annual allocation in 2006 was 28,009 acre-feet.[19] Accordingly, except to the extent a party challenges the precise determination of the amount of the 2006 over-use, all parties agree that, given its 2005 usage, to comply in 2006 Nebraska would have had to use 70,869 fewer acre-feet than it actually used. Put in simple terms, if asked what it did to breach the compact in 2006, Nebraska

[19] I reach this number by subtracting 8,091 acre-feet (one-half of the Harlan County Lake evaporation) from Kansas' overuse calculation of 36,100 acre-feet for 2006.

would most forthrightly say that during the compliance measurement period (2005 and 2006) it used 70,869 more acre-feet of water than it was entitled to use.[20]

The scope of the breach defines the scope of the remedy. *See Texas v. New Mexico*, 482 U.S. 124, 129 (1987). ("[P]arties must perform today or pay damages for what a court decides they promised to do yesterday and did not.") Absent agreement to the contrary, Nebraska should therefore be liable for the full amount of water that it used in excess of the maximum amount it could have used without failing to satisfy the first two-year compliance test in 2006. That amount is 70,869 acre-feet.

B. There Was No Agreement To The Contrary.

Nebraska argues that there was, in fact, an agreement that absolves it at least in part from its overuse. It argues that the inclusion of stream flow depletions caused by ground water pumping as Beneficial Consumptive Use under the Compact required a period of adjustment, and that the FSS therefore created a "grace period" prior to 2006 within which to make that adjustment. So, it reasons, it could not be liable directly for any noncompliance in 2005, and its 2006 non-compliance should be deemed limited to the average noncompliance of the two years. For three reasons, this argument fails.

1. There is no express language in the FSS absolving a State for any portion of its overuse post-2002.

There is no language in the FSS that states anything to the effect that Nebraska would be absolved in substantial part for any Compact exceedances between the approval of the 2003

[20] To be clear, because Appendix B of the FSS sets 2006 as the first year for Water-Short Year Administration compliance, the only purpose for the 2005 calculations is for calculation of the corresponding two-year running averages for 2006. *See* FSS, App. B. Nebraska's compliance with the Water-Short Year Administration requirements in Section V.B.2.a. of the FSS in 2005 would require calculation of two-year running averages using values from 2004 and 2005, but is not relevant because the FSS plainly established 2006 as the first year for Water-Short Year Administration compliance.

settlement and 2006. To the contrary, while the FSS waived claims "with respect to activities or conditions occurring before December 15, 2002," it provided that "[w]ith respect to activities or conditions occurring after December 15, 2002, the [dismissal of the 1999 action pursuant to the FSS] will not preclude a state from seeking enforcement of the provisions of the Compact . . . ." FSS § I.D. The FSS further stipulates that it is "not intended to . . . change the State's respective rights and obligations under the Compact." *Id.*

In an effort to infer a partial absolution, Nebraska points to Section I.B of the FSS, which provides that the "States shall implement the objections and agreements in this Stipulation in accordance with the schedule attached . . . as Appendix B." FSS § I.B. Appendix B, a two-page "Implementation Schedule," reads in relevant part:

First Year Water-Short Administration Compliance	2006 (if Water-Short Administration year, 2-year running average is 2005-2006)
First Normal Year Compliance	2007 (5-year running average from 2003-2007)

FSS, App. B. Certainly this schedule postponed the day of reckoning, thereby providing Nebraska with an opportunity to adjust its practices both to achieve compliance by offsetting early year overuse with later year underuse (Tr. at 827-28 (Pope); N8005, at 14 of 49) and to deal with the lag effect from groundwater pumping that occurred prior to 2003 (Tr. at 631-32 (Schneider)). The delay in compliance measurement was also apparently necessary to acquire the data needed to implement the FSS, including certifying irrigated acres and metering wells. (Tr. at 1331-32 (Clements)). Equally certainly, the schedule also postponed until 2006 any need to satisfy a two-year running average test, or the sub-basin allocation specifications created by the FSS for Water-Short Year Administration. In that sense, Nebraska did receive a "grace period" of several years during which it was not subject to the two-year averaging and more

specific sub-basin limitations implemented for the first time by the FSS. Kansas disputes none of that. It is an entirely different proposition to suggest that, in the event of noncompliance on the applicable day of reckoning, the breaching party would somehow be absolved of some portion of the very overuse that resulted in noncompliance. There is nothing in the Implementation Schedule to support that proposition. Further, reading that proposition into the Implementation Schedule would run counter to the FSS' provisions regarding the extent to which liability is and is not released, FSS §§ I.C. & D. *See* RESTATEMENT (SECOND) OF CONTRACTS § 203(a) (an interpretation that gives "effective" meaning to all terms preferred over an interpretation that does not). *See also* RESTATEMENT (SECOND) OF CONTRACTS § 202(1) (a contract need be "interpreted as a whole.").

Nebraska relies also on the language in subsection IV.B of the FSS stating that "all compact accounting shall be done on a . . . running average in accordance with the provisions of the RRCA Accounting Procedures." FSS § IV.B. This means, says Nebraska, that the amount of liability, not just the determination of compliance, must also be calculated using running averages. But, the RRCA Accounting Procedures themselves expressly apply only to "supply, allocations, use and compliance." FSS, App. C § I. The Accounting Procedures simply have no provisions at all directed at calculating the extent of liability. And, even if a determination of the extent of liability is "compact accounting," and must be done on a running average basis, there is nothing in the language (or the math) that would preclude using the average and then multiplying by two when applying a two year test, which product would equal the sum of the annual amounts.

More importantly, it is simply not reasonable to glean from the sparse language of the FSS' Implementation Schedule and the Accounting Procedures something so substantial as a

major absolution from liability for using materially more water than allowed by the Compact. *Cf. Whitman v. American Trucking Ass'n*, 531 U.S. 457, 468 (2001) (declining to find "elephants in mouseholes"); *Oklahoma v. New Mexico*, 501 U.S. 221, 247 (1991) ("Had the Compact's drafters intended to limit New Mexico's free and unrestricted use of the Canadian River waters . . . , they would certainly have done so more directly.") (Rehnquist, C.J. concurring in part and dissenting in part.) This observation applies with special force to an agreement that has two sections specifically devoted to addressing the extent to which any liability is and is not released. *See* FSS §§ I.C. & D. *See* RESTATEMENT (SECOND) OF CONTRACTS, § 203(c) ("[S]pecific terms and exact terms are given greater weight than general language."); 11 WILLISTON ON CONTRACTS § 32:10, at 447 ("Where general and specific clauses conflict, the specific clause governs the meaning of the contract.").

Accordingly, I find no reason in the language of the parties' agreement to conclude that Nebraska has been absolved of any part of its overuse.

2. Nor does any evidence outside the corners of the parties' agreements support Nebraska's position.

Given the absence of language in the FSS supporting Nebraska's position, resort to extrinsic evidence could well be seen as unnecessary. *See Oklahoma v. New Mexico*, 501 U.S. 221, 245 (1991) ("Accordingly, where the terms of the compact are unambiguous, this court must give effect to the express mandate of the signatory states.") In any event, the extrinsic evidence supports the conclusion I have reached. In tendering the FSS to the Court for approval after hearing the parties' explanations, Special Master McKusick cited three reasons for the adoption of running averages: 1) to better manage the delayed impact of groundwater pumping on stream flow, 2) to account for changes in stream flow caused by new practices in federal reservoirs, and 3) to maximize the States' ability to manage water sources with greater

predictability, efficiency, and flexibility. *See* Second Report, at 49-52. This list, by omission, belies any suggestion that the adoption of running averages was aimed at achieving any other purpose, much less the creation of a partial amnesty.

The running average accomplished all of the purposes cited in the Second Report by allowing the States to balance positive deviations in one year with negative deviations from another. As an upstream state, Nebraska gained much with this flexibility, especially in view of the fact that the Compact otherwise gave no credit for underuse.[21] As discussed above, the averaging also allowed Nebraska time to catch up and compensate for the anticipated higher usage it might experience in the first year or two as groundwater pumping became chargeable to it. Without averaging, it likely would have been incapable of avoiding immediate violations. With averaging, it secured the possibility of eliminating such violations by achieving offsetting reductions during ensuing years had it chosen to be more ambitious in its efforts to reduce usage.

3. Nebraska's position also fails the common sense test.

A contract should not be given a reading that would result in absurd or illogical results. *See* RESTATEMENT (SECOND) OF CONTRACTS § 204. *See also Kellogg Co. v. Sabhlok*, 471 F.3d 629, 636 (6th Cir. 2006) ("Contracts must be construed consistent with common sense and in a manner that avoids absurd results."). Adopting the position of Nebraska would violate this principle of contract interpretation.

A simple example shows why Kansas must be correct and Nebraska wrong. Imagine that Nebraska's allocation for each of 2005 and 2006 was 100 acre-feet of water and that at the end of 2005 Nebraska estimated that it had used 110 acre-feet of water (*i.e.*, 10 acre-feet too much). If

[21] But for the FSS, if Nebraska used 10,000 acre-feet less than its allocation in 2005 and 10,000 more than its allocation in 2006, it would have been liable for a breach in 2006, with no credit for the 2005 underuse.

Nebraska officials then asked themselves at that time what was the most water that they could use in 2006 to avoid breaching the Compact as implemented through the FSS, the answer would have been 90 acre-feet of water, so as to achieve a two-year running average of 100. If Nebraska then instead used 110 acre-feet again in 2006, it would have breached the Compact by using 20 more acre-feet of water than it should have used – not 10 acre-feet.

To conclude otherwise would be to establish a perverse incentive that becomes apparent once one recognizes that the remedy for a breach can be measured in volumes of water. *See Texas*, 482 U.S. at 127-28. Sticking with the above example, imagine that Nebraska officials were contemplating usage projections in late 2006, and deciding whether to eliminate pumping and cut off diversions to achieve compliance. Under Nebraska's view, those officials would have the option of cutting back from projected usage by 20 acre-feet at the end of 2006 (so as to comply) or simply foregoing only 10 extra acre-feet after January 1 as a remedy for the failure to comply in 2006. In this manner, the mismatch between what Nebraska concedes it needs to do to achieve compliance and the remedy it proposes becomes apparent.

Nebraska counters this appeal to common sense by suggesting that this measure of damages will expose it to double-counting. Imagine, for example, that 2007 turned out to be subject to Water-Short Year Administration, with an exceedance by Nebraska. Nebraska argues that, unless its 2006 overuse is determined to be the average overuse of 2005 and 2006, rather than the total overuse, then perhaps its overuse for 2007 would be the total overuse for both 2006 and 2007 – subjecting it to double-counting for the overuse in 2006. This example, while apparently advocated in another context by Kansas, ignores the fact that the accounting need recognize the practical implications that flow from deciding to use a running average measurement. Certainly the choices must not be limited to under-counting or double-counting.

The parties' disagreement arises in large part because they likely did not work through in 2003 the exact mechanics of starting to use a running average, much less starting what could turn out to be two overlapping running averages. One easily understands annual measurement. And one readily understands how a running average works when up and running. But the initial transition from an annual measurement to a running average measurement can be tricky because the initial years have no full assortment of prior years with which to be retrospectively combined. In a perfect world, the parties would have agreed upon a series of concrete examples showing how to measure remedy, how to use years falling within two-year and five-year averages combined, how to account for remedial awards in calculating the averages for later years, and so on.

The absence of demonstrative examples in the FSS nevertheless does not belie the conclusion that that any resolution of the transition intricacies should accord with the principle that, absent an effective agreement to the contrary, any State that consumes more water than it is entitled to use under the Compact should be liable for no less (and no more) than the amount of its total over use. The running averages were intended to achieve their stated purpose of allowing each state the flexibility of achieving compliance on a net basis over several years. They were not intended to increase or decrease the extent of liability for any noncompliance. Here, even Nebraska must concede that, had it performed its obligation under the Compact, as measured in 2006, it would have used more than 70,869 fewer acre-feet of water than it actually used. The scope of the remedy should therefore accord with the scope of this breach, thereby bringing Nebraska's account even for 2005-2006.

V. The Contempt Issue

A. A Finding Of Contempt Is Not Available Because There Is No Order That Nebraska Could Have Disobeyed.

In its petition, Kansas attempts to treat Nebraska's 2006 non-compliance as conduct in contempt of a decree of this Court. Petition at ¶¶ 18, 21, 27, *Kansas v. Nebraska*, No. 126 Orig. (May 3, 2010) (Dkt. 1). The decree to which Kansas points is the May 19, 2003 Decree issued in the earlier round of litigation between the parties. *Id.* at 7. Kansas argues that "the parties' entire purpose in securing entry of the Decree was to add the court's imprimatur and power to sanction non-compliance with the FSS and the Decree . . . ." Kansas Motion for an Order Holding Nebraska in Contempt, at 12, *Kansas v. Nebraska*, No. 126 Orig. (May 15, 2012) (Dkt. 212).

The problem for Kansas in seeking to secure a finding of contempt is that there is no language in the actual Decree ordering any party to comply with either the Compact or the FSS. Kansas correctly concedes that in order to secure a finding of contempt, one must show by "clear and convincing evidence" among other things, violation of a court order "requiring certain conduct by the [party being charged with contempt]." Kansas Motion for an Order Holding Nebraska in Contempt, at 9 (quoting *American Airlines, Inc. v. Allied Pilots Ass'n*, 228 F.3d 574, 586 (5th Cir. 2000)). As the Court has observed, to be enforceable in contempt, an order of the Court must state in specific terms the acts required or prohibited by the parties. *Intl. Longshoremen's Ass'n, Local 1291 v. Phila. Marine Trade Ass'n*, 389 U.S. 64, 76 (1967). Here, the Decree did nothing beyond approving the FSS, dismissing with prejudice certain claims, and recommitting the action to Special Master McKusick to decide procedural questions that might arise in connection with adoption of the groundwater model. There is simply nothing in the

language of the Decree that Nebraska could have violated, much less language that Nebraska did violate.[22]

Kansas nevertheless argues that the Court should look beyond the four corners of the Decree into the "surrounding circumstances and the intent of the parties." Kansas Motion for an Order Holding Nebraska in Contempt, at 11. Those circumstances, Kansas argues, show that the parties "bargained for the FSS . . . to be embodied in an order of the Court." *Id.* at 12. Arguably, this was indeed so, at least initially. In executing the FSS subject to Court approval, the parties initially agreed upon a proposed form of order that was captioned "Consent Judgment" and which stated that the FSS "is approved and adopted." FSS, App. A (emphasis added.) Had the Decree itself so read, perhaps one might argue that by "adopting" the FSS, the Court effectively incorporated it into the Decree.

That proposed order, however, is not what the Court signed. When the FSS was presented to Special Master McKusick, he observed that approval and adoption of the FSS was not the same as incorporating the FSS into the Court's Order. (Ex. J6, at JT003076). No party challenged that interpretation, or informed the Special Master that the intent was to secure incorporation of the FSS into the Decree. With the acquiescence of all parties (*see*, *e.g.*, Ex. J6, at JT003112), Special Master McKusick then revised the proposed order by deleting the words "and adopted," thereby eliminating any potential that the Decree might be read as incorporating the FSS. (Ex. J4, at JT003766). He also changed the title from "Consent Judgment" to "Decree." (*Id.*). On this record, going outside the language of the Court's Decree to see how

[22] For this reason, the Decree at issue is easily distinguishable from *Wyoming v. Colorado*, 309 U.S. 572 (1940), a case on which Kansas relies. In that case, the Court acknowledged the possibility of finding Colorado in contempt for violating a decree that plainly embedded the allocations and injunction in the decree itself. *Id.* at 581-82.

that language came about simply provides yet another basis for concluding that Nebraska's violation of the FSS and the Compact is not a violation of the Decree.

If Nebraska is to be held liable in this action, it must be held liable for violating the Compact as interpreted and implemented by the FSS, not for violating any court order. Similarly, any remedy to be awarded should be determined by principles applicable to breaches of a compact, not by principles applicable to violations of court orders.

B. Dismissal Of The Petition For Contempt Does Not Divest The Court of Jurisdiction.

My conclusion that Kansas' request for a finding of contempt should be rejected in view of the absence of any order that Nebraska did or even could have violated causes me to raise, *sua sponte*, a question of jurisdiction. Rather than seeking to initiate a new original action with a complaint, Kansas sought and secured an order allowing it to file a petition in the pre-existing original action bearing docket number 126. *See* Petition, *Kansas v. Nebraska*, No. 126 Orig. (May 3, 2010) (Dkt. 1). Were this an action between two private parties in a United States District Court, a determination that the facts alleged gave rise at most to a claim for breach of a settlement agreement rather than violation of a court decree would require that there be an independent basis for jurisdiction for a new action, rather than piggybacking on the jurisdiction of the prior dismissed action. *See Kokkonen v. Guardian Life Ins. Co. of Am.*, 511 U.S. 375, 379-82 (1994). This suggests that Kansas' improper continuance of the original docket might have created a jurisdictional defect if no independent jurisdiction exists.

Here, however, the Court certainly has independent original jurisdiction to hear an action between two States arising out of a significant breach of a Compact between the States. U.S. Const., Art. III, § 2, cl. 2. It would therefore seem that there is no lack of subject matter jurisdiction. Rather, there would appear to be at most a question as to whether a new docket

number should have been assigned to the action. On matters of such technical pleading detail, the Court has previously observed, albeit only in *dicta*, an inclination toward a practical approach. *Nebraska v. Wyoming*, 507 U.S. 584, 591-92 (1993) (declining to restrict the scope of the litigation to the scope of the pleadings where "nothing would prevent Nebraska from submitting a new petition if we deemed the original one deficient").[23] There is therefore no reason to recommend dismissal because of Kansas' procedural error.

VI. The Remedy Issue.

The Court's aim in an original action of this type is to find "a fair and equitable solution that is consistent with the Compact terms," *Texas*, 482 U.S. at 134, as an original action is "basically equitable in nature," *Ohio v. Kentucky*, 410 U.S. 641, 648 (1973).

> The essence of equity jurisdiction has been the power of the Chancellor to do equity and to mould each decree to the necessities of the particular case. Flexibility rather than rigidity has distinguished it. The qualities of mercy and practicality have made equity the instrument for nice adjustment and reconciliation between the public interest and private needs as well as between competing private claims.

Hecht v. Bowles, 321 U.S. 321, 329-30 (1944). "Moreover, equitable remedies are a special blend of what is necessary, what is fair, and what is workable. In equity, as nowhere else, courts eschew rigid absolutes and rules and look to the practical realities and necessities inescapably involved in reconciling competing interests." *Franks v. Bowman Transp. Co.*, 424 U.S. 747, 789-90 (1976) (internal quotation marks and citations omitted). As a result, the fashioning of an equitable remedy "rests entirely in judicial discretion . . . [though] not arbitrarily and capriciously, and always with reference to the facts of the particular case." *Texas*, 482 U.S. at 131 (quoting *Haffner v. Dobrinski*, 215 U.S. 446, 450 (1910)).

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[23] This same consideration informs my judgment concerning the technical pleading arguments addressed in sections I.C.2.a and III of this Report.

To inform the exercise of that discretion, I begin by reviewing in section VI.A, immediately following, the nature and quality of Nebraska's efforts to comply with the Compact leading up to and following its failure to satisfy the 2006 compliance test. Review of those efforts is relevant to determining both the proper measure of damages and whether there is a need for an injunction. Next, in section VI.B, I explain why the payment of money rather than the delivery of water provides the proper form of an award to Kansas on account of Nebraska's breach of the Compact. In section VI.C, I then explain why the amount of the award may take into consideration both the evidence of harm to Kansas and the evidence of gain by Nebraska. In section VI.D, I analyze that evidence of loss and gain, and then in section VI.E settle upon the amount of the recommended award. Finally, in section VI.F, I explain why no injunction should issue.

A. Nebraska's Evolving Approach To Compact Compliance.

As the following discussion details, Nebraska's compliance efforts until recently have been both inadequate and reluctant, resting in great part on wishful thinking coincident with a hesitance to take firm action that would prove sufficient to meet the challenges of foreseeably varying conditions in the Basin. Now, however, Nebraska appears to have in place the tools necessary to achieve compliance as long as it is willing to use those tools conscientiously.

1. Prior to 2007

As groundwater pumping increased during the 1990s under the control of locally governed jurisdictions, Nebraska took few meaningful steps to control it. Instead, Nebraska persisted in maintaining that the depletion of surface flow in the Basin's rivers caused by groundwater pumping was somehow not covered by a Compact that expressly applied to all acts of man that consumed the water supply of the Basin. After the Court rejected that position in

2002, Nebraska had no choice but to begin to confront the problem it had created for itself and for Kansas through unrestrained groundwater pumping.

It was "well understood" at the time of the signing of the FSS that Nebraska would have to curtail its consumption to achieve compliance. (Tr. at 828-29 (Pope)). In Nebraska's own words, it was "well known" that Nebraska could not come into compliance with the Compact "without a sufficient 'grace period' designed to facilitate development of intrastate rules that would control such consumption." Nebraska Post Trial Brief, at 47, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 24, 2012) (Dkt. 383). As explained in greater detail in section IV of this Report, above, the FSS created no such "grace period" from Compact compliance *per se*. It did, though, adopt multi-year running averages as the means of measuring compliance. Nebraska thus obtained for itself the possibility of offsetting its likely immediate annual over-consumption by taking steps to insure under-consumption in subsequent years. It was also well understood at the time that the effects on stream flow of reducing groundwater pumping are often delayed. (*See* Tr. at 220-21 (Book) (discussing lag effect of groundwater pumping); Tr. at 630-31 (Schneider) (same)). *See also* Second Report at 50. Again, in Nebraska's words, "much of the impact from ground water pumping is not felt on the streams in the year in which pumping occurs." Nebraska Post Trial Brief, at 46, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 24, 2012) (Dkt. 383). Thus, to the extent Nebraska wanted to achieve compliance by reducing consumption caused by groundwater pumping sufficient to offset anticipated 2003 over-consumption, it needed promptly to "facilitate development of intrastate rules that would control such consumption." *Id.* at 47.

Even as it bound itself to the terms of the FSS and joined in seeking Court approval of its terms, Nebraska failed to act either promptly or effectively in enacting intrastate rules that would limit consumption of the Basin's virgin water supply to the amounts allowed under the Compact.

In 2004, Nebraska's legislature did enact the Nebraska Groundwater Management Protection Act, NEB. REV. STAT. ch. 46, art. 7 (the "NGMPA"). (Tr. at 1339 (Clements)). The NGMPA required the Nebraska Department of Natural Resources ("DNR") and the Natural Resource Districts ("NRDs") to develop Integrated Management Plans ("IMPs") "sufficient to ensure that the State will remain in compliance with … any applicable interstate water compact or decree . . . ." NEB. REV. STAT. § 46-715(4)(b).

The first IMPs, however, were clearly not sufficient, either in timing or substance. They did not go into effect until 2005. (*See* Fanning Direct, at ¶ 39; Tr. at 979 (Fanning); Tr. at 1339-40 (Clements)). When they did go into effect, they simply required a 5% reduction in groundwater pumping from a representative baseline period of 1998-2002 (Dunnigan Direct, at ¶ 20), without any assurance that such a reduction would prove to be sufficient. The IMPs did purport to limit each District's consumption to a specified share of Nebraska's Compact consumption allocation (Dunnigan Direct, at ¶ 20), but contained no mechanism for pre-determining or actually achieving such a limit.

Mother Nature then provided the test that exposed the deficiencies in Nebraska's compliance efforts. From 2002 to 2006, Nebraska's available water supply was greatly reduced. (N2001, at NE050070 & Figure C4). In 2003, Nebraska exceeded its Compact allotment by 25,420 acre-feet. (Ex. K24, at KS000763). By the spring of 2004, Nebraska knew precisely by how much it had exceeded its Compact allotment for 2003, and thus knew that in order to satisfy the five-year compliance test that it would eventually be called upon to meet, it needed to find a way to use less than its Compact allotment on average over the coming years. Instead, in 2004, Nebraska again exceeded its Compact allotment by a total of 36,640 acre-feet. (Ex. K24, at KS000763). In the fall of 2004, the situation was sufficiently serious that the Department of

Natural Resources sent a letter to the Lower Republican Natural Resources District stating that, given the dry conditions, "it will be critically important to control our water use in 2005 to avoid the need for significant cutbacks in 2006." (Ex. K58). After again exceeding its Compact allotment in 2005, that time by 42,325 acre-feet (Ex. K24, at KS000763), Nebraska entered 2006 facing the added challenge manifest in the designation of 2006 as Water-Short Year Administration under section V.B of the FSS. That designation both effectively reduced Compact allotments and meant that the end of 2006 would provide the first actual day of reckoning in the form of a compliance assessment. Nebraska witnesses acknowledged that "by 2006, we could – we could clearly see that we had not done enough" and were aware that they would have to underuse in 2006 in order to be in compliance. (Tr. at 1333 (Clements)). Nebraska also knew it had not taken the steps it needed to in order to underuse in 2006 if that year was a water-short year. (Tr. at 1333, 1336 (Clements)). To its credit, Nebraska spent $3.5 million in 2006 to purchase from surface water users their rights to flow and storage of approximately 23,518 acre-feet in order to reduce the extent of non-compliance. (Ex. K116, at KS001163; Ex. N4002; Ex. K82). The net result of these efforts, however, fell woefully short.

The very dry weather between 2002 and 2006 allows Nebraska to say that it suffered some bad luck, and perhaps might have complied with the Compact had it received good luck in the form of wet years. The fact remains, though, that prior experience rendered it foreseeable that there would likely be both dry and wet periods, and Nebraska took steps adequate, at most, only for the latter.

Much of Nebraska's struggle with compliance arises from the fact that the Nebraska legislature made a policy decision – as it was entitled to do – "to maximize the amount of local control over ground water resources." (Dunnigan Direct, at ¶ 15 (citing NEB. REV. STAT. § 46-

702)). At the same time, the State (and not the local entities that controlled groundwater resources) remained responsible for Compact compliance. (Dunnigan Direct, at ¶ 15 (citing NEB. REV. STAT. § 46-702)). In this manner, Nebraska created a decision-making process in which the entities and persons who principally regulated how much water to pump from the ground were not the entities or persons who would bear the full ramifications of violating the Compact. To be specific, the irrigators who largely comprised the boards of the local irrigation districts (Tr. 1301-02 (Clements)) would be among the immediate beneficiaries of ground water pumping without being held directly responsible for any Compact exceedances that might result from that pumping. In short, the problem was that Nebraska's state government also chose not to make available to itself all the tools necessary to ensure compliance in the face of dry weather. Nebraska pretty much concedes that this is the case. *See* Nebraska Post-Trial Brief, at 15 n.4, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 24, 2012).

The attenuated nexus between the decision whether and how much to pump and the disincentives for pumping too much was likely weakened further by the lag time that generally exists between groundwater pumping and the resulting depletion of stream flow. All things being equal, groups of people may find it difficult to weigh future costs against present benefits accurately, especially where the future costs are not both imminent and certain. Nebraska's pursuit of a course of action that would achieve compliance only if the weather cooperated suggests that it was not up to the task of overcoming that difficulty without considerable prodding.

None of the foregoing is to say that Nebraska officials deliberately set out to violate the Compact. Nebraska reduced total groundwater pumping from just over 1,400,000 acre feet in 2002 to approximately 1,200,000 acre feet in 2003, then to just over 1,000,000 acre feet in 2004,

and then to approximately 900,000 acre feet in 2005 and slightly below that in 2006. (Ex. N2001, at NE0500427-28). Its purchases of surface water for compliance purposes in 2006 (Ex. K116, at KS001163; Ex. N4002; Ex. K82; N8004, at 7 of 16), its use of voluntary programs for retiring acreage from irrigation in 2005 and 2006 (Dunnigan Direct, ¶ 28; Tr. at 1304, 1339-40 (Clements); Fanning Direct, ¶¶ 16-17; Tr. at 1036-38 (Fanning); N8003, at 6-7 of 62; N8004, at 6-7 of 16), and its reduction in allocations for groundwater irrigators (N8003, at 6-7 of 62; Tr. at 981 (Fanning); Tr. at 1303-06 (Clements)) all belie a conclusion that Nebraska sought to violate the Compact. Rather, it did not timely seek to avail itself of the tools necessary to respond to the demands of dry seasons.

2. 2007 to Date

In the wake of Nebraska's admitted breach of the Compact in 2006, both Nebraska's compliance efforts and the weather changed.

Nebraska enacted legislation in 2007, LB 701, requiring the adoption of a mechanism for mandatory annual forecasts. (Dunnigan Direct, at ¶ 30). The requirement for forecasting was significant. Heretofore, the provision in the IMPs specifying that a NRD would live within its percentage allocation of the State's Compact allocation was of little actual effect because the State's allocation for each year would not be known until towards the end of the year, and even then not precisely until the spring of the following year. (Dunnigan Direct, at ¶ 24; FSS App. C., § V).

During 2007, the Department and the NRDs also negotiated and eventually adopted revisions to the IMPs for the five-year period from 2008 to 2012. (Dunnigan Direct, ¶ 21). The key change in the second generation IMPs was an increase from 5% to 20% in the pumping reduction target (from pre-FSS years 1998-2002). (Dunnigan Direct, ¶ 21; Tr. at 993-95

(Fanning)). By this time, Nebraska had also increased usage of several federal programs that induced farmers to retire acreage from irrigation. (Dunnigan Direct, ¶ 28; Tr. at 1339-40 (Clements); Fanning Direct, ¶¶ 16-17). The State had also, at significant expense, removed vegetation from over 150 miles of rivers within the Basin, thereby reducing the amount of water lost within its borders due to non-beneficial consumptive use. (Dunnigan Direct, ¶ 29).

As the weather pattern turned from much dryer than normal to much wetter than normal, these cumulative steps proved to be more than adequate. During the most recent five-year period for which data has been compiled by the RRCA (2007-2011), Nebraska used less than its Compact allocation by an average of 63,685 acre-feet per year, for a total of 318,426 acre-feet, and Nebraska's groundwater pumping dropped while groundwater pumping in Kansas and Colorado did not drop. (Ex. N2001 at NE0500413; Schneider Direct, at ¶ 13; Dunnigan Direct, at ¶ 33.) That same period, however, was a period of higher than average annual precipitation in Nebraska, although much less so in the other two States. (Barfield Direct, at 33; Ex. K54 at K5001194-95). Nebraska might also observe that from 2008 to 2011, its groundwater pumping per acre dropped even as precipitation trended downward somewhat, although the margins are not large enough to carry much weight. (*Id.*, Figure 1).

3. Looking Forward

On the whole, the record of the past five years makes clear that Nebraska now, somewhat belatedly, has in place what it needs to comply with the Compact easily in relatively wet years, and to do so by amounts that create a substantial accrued credit in the five-year running average calculations. What Kansas is really concerned about, though, is how Nebraska will fare in future dry years absent issuance of the type of injunctive relief and punitive sanctions Kansas requests. The second generation IMPs, like the first, provided no concrete method whereby the State could

readily curtail usage to ensure compliance in dry years. In the course of the parties' non-binding arbitration, the arbitrator noted this deficiency. (J7, at JT003247). Prodded by this criticism, Nebraska has adopted a third version of the IMPs.[24]

The central feature of the third generation IMPs is what Nebraska calls a "regulatory backstop" for dry years, including any potential Water-Short Year Administration. (Dunnigan Direct, at ¶¶ 42, 43). As noted above, LB 701 requires the State to forecast future water supplies in the Basin "whenever necessary to ensure that the state is in compliance with an interstate compact or decree . . ." NEV. REV. STAT. § 46-715(6). In a nutshell, the third generation IMPs provide that for years forecast to be dry, a "regulatory call" will issue from DNR requiring the complete curtailment of surface water use in the Basin and, to the extent necessary, the curtailment of groundwater pumping altogether within what is called the Rapid Response Region, defined as the region within which the pumping of groundwater that has a ten percent impact in a two-year period (in other words, where 10% of the volume of water pumped annually will manifest itself as depletion of streamflow within two years). (Tr. at 1003, 1010-11, 1018 (Fanning); Tr. 1350 (Dunnigan); Tr. at 572 (Schneider)). The third generation IMPs are also designed to achieve a pumping reduction of 25% from the baseline pumping from 1998-2002 – an additional 5% over the 20% reduction in the second generation IMPS. (N2001, at NE0500429; Tr. at 997-99 (Fanning)).

Each NRD is affirmatively required to reduce consumption by the amount of its proportionate responsibility for maintaining Nebraska compliance with the Compact. (Tr. at 1012-13 (Fanning); *see, e.g.*, Ex. N506, at NE0200621 ("The Board shall consider and adopt any additional actions necessary to meet the District's proportional responsibility for maintaining

[24] These IMPs are found in Appendix E to this Report. A detailed and substantially accurate description prepared by Nebraska officials is contained in Exhibit N2001, at NE0500455-82.

Nebraska's compliance with the Republican River Compact.")). The NRDs have the choice of several options for meeting this requirement as an alternative to a shutdown of groundwater pumping in the Rapid Response Region – for instance, they may utilize an augmentation pipeline, retire acreage, and/or order a partial shutdown of pumping in the Rapid Response Region – as long as those actions are sufficient to maintain compliance with the Compact. (Tr. at 1010-14, 1017-18 (Fanning); *see, e.g.*, Ex. N5006, at NE0200622 ("Additional controls and actions may consist of, but are not limited to incentive programs, regulations (inclusive of curtailments of groundwater pumping by wells within the Rapid Response Area), augmentation, management practices, and any other relevant activity.")). But the bottom line is that some action must be taken; if not, under their regulations, the NRDs must shut down pumping in the Rapid Response Region. (Tr. at 1013-14 (Fanning); *see, e.g.*, N5006, at NE0200622 ("For the wells within the Rapid Response Area the allocation during a Compact Call Year shall be set at the maximum allowable that would not cause the District's depletions to streamflow to exceed the District's allowable groundwater depletions.")).[25] If the NRDs refuse to take that step, the DNR retains the authority to shut down pumping in the Rapid Response Region. (Tr. at 1015-16, 1038-39 (Fanning); Tr. at 1391-92 (Dunnigan)).

To test the adequacy of the current IMPs for an extended duration of dry years, Nebraska's expert, Dr. Schneider, has run the RRCA Groundwater Model for the years 2002-2006, with all groundwater pumping shut off in the Rapid Response Region. (Ex. N2001). In other words, he has effectively run the model to see how the actual experience in those dry years

[25] Kansas spent much time and effort trying to establish the proposition that the third generation of IMPs did not place on the NRDs a requirement to take any action at all, and that the NRDs have absolute discretion to take, or not take, action in a Compact Call year. I find that the third generation IMPs unambiguously contradict this proposition. The regulations implementing the IMPs state that the NRDs "shall" take the necessary action to maintain Compact compliance, and discretion is only granted as to the manner in which compliance is achieved. (*See* N5006, at NE0200621-22).

would have been different had the groundwater reduction tool now in the IMPs been implemented. The results of this model run show that Nebraska would have lived within its Compact allocation in each of those five years by an average of 7,000 acre-feet per year. (N2001, at NE0500437; Schneider Direct, at ¶¶ 31-33; Tr. at 641-42 (Schneider)). This model run assumed no changes in surface water use from the actual surface water use in 2002-2006. (N2001, at NE0500437). Thus, there was room for a further cushion if need be. Further, this model run assumed that there would be no change in the RRCA Accounting Procedures, and that Nebraska would bear partial responsibility for the evaporation from Harlan County Lake in 2006. (N2001, at NE0500436-37 & n.29). For the reasons discussed in sections I and II of this Report, actual accounting in any future dry period would allocate Harlan County Lake evaporation differently and would likely include a change in the Accounting Procedures eliminating the current treatment of some imported water consumption as the consumption of Virgin Water Supply by Nebraska against its allocation. Additionally, the conditions in 2002 through 2006 were difficult years in which to comply with the Compact, as five of the six lowest Compact allocations in the history of the Basin occurred in those years. (Schneider Direct, at ¶ 32). For all of these reasons, the case is compelling that the current IMPs are effective even in extraordinarily dry years.

Kansas offers no credible technical critique of the results of Schneider's retrospective modeling aimed at determining what would have happened in 2002-2006 had the current IMPs been in effect and actually employed to curtail consumption. Instead, Kansas contends that the amount of groundwater pumping that will be allowed in Kansas in normal and wet years over the course of decades will accumulate what will essentially become a permanent depletion of stream flow that will eventually make compliance with the Compact impossible in dry years. Second,

Kansas contends that the IMPs are not enforceable and therefore there is no assurance that water users will actually comply with them in any meaningful manner. For the following reasons, the evidence falls short of adequately proving either of these contentions.

a. Kansas' projection of Nebraska's current practices over the course of coming decades falls short of the mark and rests on invalid assumptions.

To supports its argument that the IMPs, even if enforced, will prove insufficient over the long run, Kansas has employed the RRCA Groundwater Model in an effort to model the future effects of Nebraska's current practices and compliance tools. (Exs. K24, K54.) Nebraska, in turn, marshals an array of criticisms regarding the manner in which Kansas employs the model to project future conditions and the assumptions that Kansas has employed in making those projections. A careful study of the complex and competing expert presentations leads to the following observations.

First, Kansas' projections provide no support for any contention that Nebraska lacks the tools necessary to ensure compliance in the next decade or so. Indeed, the projections posit no material increase in annual stream flow depletions by groundwater pumping over the next ten years. (Ex. K24 at 22-29 (Figures 4-9)). Nor does Kansas claim to have predicted any likely future date of non-compliance: Kansas' witnesses expressly admitted that they could not do so. (Tr. at 299, 328-29, 372-73 (Larson); Tr. at 450 (Barfield); Tr. at 848 (Pope)). Instead, the purpose of the projections is to establish that, over the very long run, base flows within the Basin's hydrological system will gradually trend downward, eventually resulting in a long-term inability to comply with the Compact in dry periods even if no surface water at all is consumed. (Ex. K24, at 3). The span of time covered by Kansas' projection is roughly 60 years. (Larson

Direct, at 13). Significantly, Kansas' experts provide no assessment of the percentage likelihood that a Compact violation will occur within any ranges prior to the end of that period.

Second, the projections are built on several incorrect assumptions. They contain no adjustment for eliminating the charge to Nebraska for consumption of imported water. And they seem to ignore the extra 5% in pumping reductions called for by the third generation IMPs.

Third, Kansas' use of the Groundwater Model to project future conditions assumes that the future will largely replicate the past except to the extent that the new IMPs might be deemed in place and enforceable. (N2001, at NE0500424-26). To project what would have happened in a recent prior year had one factor or several factors been different is relatively easy because, by definition, all of the other factors would have remained constant. To project the results of current behavior far into the distant future is more problematic because there is no reason to assume that all other factors will remain constant. Rather, considered experience and common sense suggest that, over the long term, it is virtually certain that many other factors will not remain constant. If one goes back in time by roughly the 60 years that Kansas' projection goes forward in time, one finds that much has changed in the Basin. In 1950, for example, there were no soy beans, wheat or hay harvested in the Nebraska Republican River Basin counties. (N2001, at N0500484). By 2002, substantial volumes of all three were grown. (N2001, at N0500486). Tillage practices, which affect retention of soil moisture (Tr. at 121 (Ross); Tr. 1105 (Brzon)), have changed markedly since 1969 (N2001, at N0500488), as have planting, fertilizing, and harvesting practices (N2001, at N0500491). More recently, GPS technology has been adopted to track and plan farming procedures. (N2001, at N0500491). And there was much testimony at trial about how basic irrigation technology itself has changed, substantially affecting water conservation and return flows. (*See, e.g.*, Tr. at 85-88 (Ross); Tr. at 1106 (Brzon)). Especially

significant is the fact that Nebraska's current plans call for it to evaluate and potentially reconsider its third generation IMPs in the year 2015. (N2001, at N0500430). This means that the basic assumption underlying Kansas' projections – that the current IMPs will remain unchanged for 60 years – is unsupported, and very likely wrong. Nor is it unlikely that the Basin will experience projects or purchases augmenting the Virgin Water Supply. (Tr. at 1325-26 (Clements)).

Finally, Kansas does not offer any proof as to when a date "of no return" would be reached if one were to assume that Kansas' projections were otherwise accurate.

b. Kansas fails to establish that the IMPS are unenforceable

Kansas argues, second, that even if the IMPs are technically up to the task of ensuring compliance going forward, they are simply not enforceable and will therefore not be adequate in requiring the NRDs and others to make the sacrifices that will be necessary in order to achieve Compact compliance. Kansas contends that the IMPs are "vague," Kansas' Post-Trial Brief (Corrected), at 55, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 25, 2012) (Dkt. 382), that "there could be disputes between the DNR and the NRDs on how to proceed with enforcement through the use of various controls outlined in the IMP," *id*. at 59, and that it is not clear that the DNR would be able to enforce the IMPs in the event of a dispute with the NRDs, *id*. at 60. The scenario thus posed by Kansas is that Nebraska's DNR determines that a curtailment of a district groundwater pumping is necessary in order to achieve Compact compliance, a district then refuses to comply with the DNR's determination, and the DNR is subsequently unable to secure the reversal of that refusal within sufficient time to allow the curtailment to work.

This entire argument is based on considerable conjecture. Kansas cites no instance in the past when the DNR told the NRD to take some specific action necessary to secure compliance,

the NRD refused, and the DNR did nothing. The only NRD representatives who testified in this action disavowed any intent or inclination to refuse direction from the DNR in such matters. (Tr. at 1318, 1322 (Clements)). To the contrary, they made clear that they viewed themselves "absolutely" bound by DNR determinations in such matters under the third generation IMPs. (Tr. at 1014 (Fanning); Tr. at 1335 (Clements)).

Kansas is correct that Nebraska's statutory law is complex, and contains no express statement that the DNR may order groundwater pumping curtailments. The IMPs, however, are statutorily-mandated, *see* Neb. Rev. Stat. § 46-715, and contain express agreements between the DNR and the NRDs. Nebraska's Attorney General asserts, without qualification, that "DNR, by and through the office of the Attorney General, holds legal authority to bring such proceedings as necessary to ensure compliance with the IMPs, including shutting down wells as necessary." Nebraska's Post-Trial Brief, at 30 (citing Neb. Rev. Stat. § 84-207), *Kansas v. Nebraska*, No. 126 Orig. (Sep. 24, 2012) (Dkt. 383). Further, representatives of both the DNR and the NRDs testified that the DNR had the authority to enforce a curtailment of groundwater pumping in the Rapid Response Region. (Tr. at 1015-16 (Fanning); Tr. at 1391-92 (Dunnigan)). Even Kansas concedes that, at the least, the DNR could bring a dispute with an NRD before the Nebraska Inter-related Water Review Board under Neb. Rev. Stat. § 46-719. Kansas' Reply Brief, at 33, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 25, 2012) (Dkt. 390). Kansas posits that maybe the Water Review Board would rule against the DNR, but such an argument could be made against any enforcement scheme (*e.g.*, "maybe the court might rule against DNR"). In sum, Kansas has not carried its burden of establishing that the NRDs would likely successfully block a DNR determination that groundwater pumping curtailment is required to achieve compliance.

As an alternative argument, Kansas questions whether the surface water curtailment called for under the third generation IMPs is unlawful. Under the third generation IMPs, the first action Nebraska would likely take during the Compact call year is to issue an order on January 1 precluding all diversions of surface water until further order, thus eliminating surface water CBCU in Nebraska. (Tr. at 1350 (Dunnigan)). In Nebraska's view, the water could then be stored temporarily in Harlan County Lake for use in KBID. (Tr. at 1351-52 (Dunnigan)). However, the possibility also exists that the water could not be stored in Harlan County Lake; in such an event, the water would flow downriver, where it could be diverted by Kansas through the Courtland Canal for use in irrigation, or for storage in the Lovewell Reservoir. Should Lovewell be full, then such water flowing downriver outside of the irrigation season would flow out of Nebraska, but be of little practical benefit to Kansas. (Tr. at 1352-55, 1359-60 (Dunnigan)).

Kansas asserts that this proposed course of action would violate federal law, and that the federal government need not cooperate with Kansas to agree to a temporary storage arrangement in lieu of the current arrangement. Kansas argues, as well, that any action by Nebraska that causes water to be delivered when Kansas can neither use nor store it would violate the Compact.

The simple answer to these arguments is to note that Schneider's modeling demonstrated that curtailment of groundwater pumping in the Rapid Response Region by itself would have been sufficient to have achieved compliance in the 2002-2006 dry period. (Ex. N2001). Hence, even were Kansas' anticipatory challenge to the proposed surface water curtailments valid, it would prove too little.

Second, it is not even clear to me now exactly how Kansas claims that a surface water curtailment ordered by DNR would necessarily violate federal law. Kansas only belatedly and indirectly raised this facial legal challenge to the IMPs (as is evidenced, perhaps, by the complete

lack of any briefing on this issue by the United States). Moreover, the legal challenge assumes behavior by Reclamation that is not intuitively obvious. Without a surface water curtailment order, water flows into Harlan County Lake, and is then released as needed for irrigation downstream by KBID or NBID as they request. As envisioned under the IMPs, that unrestricted diversion would be replaced by a diversion pursuant to an agreement with Kansas to divert and store water that Kansas would then take that year. Kansas offers no evidence compelling the conclusion that such an agreement would not be reached.

Third, Kansas points to no provision in the Compact requiring Nebraska to make available to Kansas water only when and where Kansas needs it. Rather, the Compact mostly allocates the water supply in the Basin for Beneficial Consumptive Use, thereby constraining consumption. *See* Compact, Art. IV. Kansas does have the right to take a major portion of its allocation at Guide Rock, *see id.*,[26] but Nebraska is not obligated always to deliver all of Kansas' Compact allocation at Guide Rock, *see* Second Report, at 55-59. The FSS simply "secure[d] for Kansas greater access at Guide Rock to the water allocated to Kansas" consistent with Nebraska law. Second Report, at 59. There is certainly no absolute requirement that all water be delivered to Guide Rock during a particular irrigation season.

[26] Article IV provides that Kansas has the right to 138,000 acre-feet "from the main stem of the Republican River upstream from the lowest crossing of the river at the Nebraska-Kansas state line and from water supplies of upstream basins otherwise unallocated," and that Kansas has the right to "divert all or any portion" of that 138,000 acre-feet "at or near" Guide Rock, Nebraska. Compact, Art. IV. This 138,000 acre-feet is a substantial portion of Kansas' average total allocation of 190,300 acre-feet. Compact, Art. IV.

B. The Court Should Accept The States' Agreement That Nebraska Should Pay For Its Breach With Money Rather Than Water.

The foregoing discussion in Section VI.A of this Report informs evaluation of both the measure of damages, discussed next in Section VI.C, and the availability of injunctive relief, discussed in Section VI.E. First, though, it is necessary to address the form of a remedial award.

The Compact specifies no particular form of remedy. It simply allocates to each State an agreed-upon share of the subject waters. In this respect, it is a typical compact for the apportionment of interstate waters. *See, e.g.*, Pecos River Compact of 1949, ch. 184, 63 Stat. 159.

Prior to 1987, one might therefore have presumed that the remedy for the past breach of such a compact would be limited to a form of specific performance; *i.e.*, an award of water. *Texas v. New Mexico*, Report of the Special Master, at 31-32 (July 29, 1986). *See also Kansas v. Colorado*, 533 U.S. 1, 23 (O'Connor, J., dissenting) ("[U]ntil 1987, we had never even suggested that monetary damages could be recovered from a state as a remedy for its violation of an interstate compact apportioning the flow of an interstate stream."). Ordering a remedy in the form of water would have several advantages. It would eliminate the need to convert water to money, a problematic and uncertain undertaking that I discuss below. It would also finesse the otherwise nettlesome task of choosing between disgorgement and compensation in a case such as this where the economic value of using extra water in Nebraska exceeds the economic value realized downstream by Kansas when Nebraska does not use that water. All else being equal, an order that Nebraska reduce its future use in a comparable year by the amount of its past excess might both disgorge the fruits of Nebraska's breach while simultaneously restoring to Kansas only the loss caused by that breach. In *Texas v. New Mexico*, however, the Court made clear that it was free to order "a suitable remedy, whether in water or money." 482 U.S. 124, 130 (1987).

The Court also suggested that the breaching State might be allowed to elect a monetary form of remedy. *Id*. at 132.

The question whether to allow such an election is simplified here because all three States agree that the remedy should be in dollars, not water.[27] Likely all of them fear the unintended and collateral effects of any attempt to specify in an order the details of a remedial allocation. The most problematic detail would concern the timing of any remedial reduction in the upstream allocation. A gallon delivered during irrigation season in a water short year when clear skies persist and crop prices are high is hardly the same as a gallon delivered in the fall of an ideal year with bumper crops. Location matters, too. A gallon not used well above Guide Rock is worth more to Kansas than a gallon not used below Guide Rock because it can be regulated through Harlan County Lake and diverted through the Courtland Canal. And given that Nebraska breached the Compact because its average use over two years exceeded its average allocation, should Nebraska retain discretion over whether and to what extent any remedial reduction should occur in one year or be spread over several years? The basic point is that, notwithstanding its several advantages, the use of water as the remedial currency poses challenges of its own. Accordingly, I see no reason for the Court to reject the States' joint election that any award be in the form of money rather than water.

C. The Measure of Damages May Take Into Account Both Kansas' Loss and Nebraska's Gain.

In a run-of-the-mill, breach of contract action between private parties, the customary measure of recovery is the reasonably foreseeable loss caused by the breach. *See* RESTATEMENT (SECOND) OF CONTRACTS § 347. Even for some breach of contract actions, however, disgorgement of the breaching party's gain might be an alternative measure of recovery in the

[27] No State suggests that Section V.B.2.f. of the FSS is applicable to the facts of this breach.

event of a "deliberate" breach where the normal damage remedy "affords inadequate protection to the promisee's contractual entitlement." RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 39. Kansas argues that this is such a case.

As the preceding discussion of Nebraska's compliance efforts spells out, Kansas is correct that Nebraska knowingly exposed Kansas to a substantial risk that Nebraska's compliance measures would not ensure compliance if the weather did not cooperate. Possessing the privilege of being upstream, Nebraska paid more attention to its internal concerns than to its obligations to the downstream state. At the same time, though, there is no evidence that Nebraska deliberately opted for non-compliance in 2006. Its efforts in 2006 to reduce the scope of its ensuing non-compliance – albeit too late and too little – were earnest and substantial enough to preclude a finding that this was a consciously opportunistic breach. Accordingly, were this an ordinary breach of contract case, Kansas' reasonably foreseeable loss would provide the measure of damages.

This is not, however, a run-of-the-mill breach of contract case adjudicated at law in an action between two private parties. In several important respects, the oft-stated notion that a compact is a contract, while certainly true, *see Petty v. Tennessee-Missouri Bridge Comm'n*, 359 U.S. 275, 285 (1959), is an incomplete description that overlooks important characteristics of such an agreement. The Compact represents an attempt to delineate consensually two sovereigns' rights to water. Each State's rights to the water pre-existed the Compact, and might well have been delineated by a court order equitably apportioning the water of the Basin. *See, e.g., Nebraska v. Wyoming*, 325 U.S. 589 (1945). Those rights are in some respects similar to rights in real property. *See* 94 C.J.S. Waters § 1 (water rights are "real property"); 78 Am. Jur. 2d Waters § 5 ("A water right is a property right, and is considered real property."). *See*

generally Federal Power Comm'n v. Niagara Mohawk Power Corp., 347 U.S. 239, 251 (1954) ("Riparian water rights, like other real property rights, are determined by state law."). Actions involving the taking of real property, in turn, routinely apply disgorgement as the measure of damages. *See* RESTATEMENT (THIRD) OF RESTITUTION AND UNJUST ENRICHMENT § 40. Here, one might fairly say that Nebraska took Kansas's water.

The Court has also observed that the Compact is a law of the United States. *See Texas v. New Mexico*, 462 U.S. 554, 564 (1983). Actions arising out of a breach of statutory law often employ measures of damages aimed at divesting the wrongdoer of any gains derived from the statutory violation. *See Porter v. Warner Holding Co.*, 328 U.S. 395, 400 (1946) (observing that courts' "inherent equitable jurisdiction" under the Emergency Price Control Act "clearly authorizes a court in its discretion, to decree restitution of excessive charges in order to give effect to the policy of Congress"). *See, e.g.*, *SEC v. Patel*, 61 F.3d 137 (7th Cir. 1995) ("In the exercise of its equity powers, a district court may order the disgorgement of profits acquired through securities fraud" under the Securities Act of 1933 and Securities Exchange Act of 1934); *Commodity Futures Trading Comm'n v. American Metals Exchange Corp.*, 991 F.2d 71 (3d Cir. 1993) (courts have the authority to order disgorgement "for the purpose of depriving the wrongdoer of his ill-gotten gains" under the Commodity Exchange Act). These considerations suggest that disgorgement may be a proper remedy.

A factor that cuts the other way is the general and national public interest in the efficient use of our country's waters. One might argue that if the water is much more valuable when used in the upstream State, then why not lean towards a measure of damages predicated on a recognition of the notion of efficient breach of contract? *See generally* 3 E. ALLEN FARNSWORTH, FARNSWORTH ON CONTRACTS §§ 12.3 at 157-58, 12.20 at 329-30 (3d ed.)

(discussing the concept of efficient breach and the effect of disgorgement on efficient breach). While this is certainly a valid economic observation that weighs against too easy a movement to the disgorgement end of the spectrum, it fits less well in the context of a contract of this type where interests of sovereignty, property, and compliance with the law are also at stake. Further, too, an assessment that a river might be pumped dry as long as the downstream State is compensated for the short-term impact on its gross state product pays too little heed to the public interest in the flow of a major river. Few people in Kansas, for example, would agree to a return to the dust bowl in exchange for relocation to an economically equivalent residence and livelihood elsewhere. Moreover, to the extent that there is a benefit to allowing a role for economic efficiency, it remains open for the States to negotiate and share the efficiency.

The Court itself has never addressed the question of the proper measure of damages in a case for breach of a compact apportioning water rights. The Court's guidance on the form of remedy, however, provides some insight into the measure of the remedy. As noted above, the remedy may be in the form of money or water. A payment in comparable water (*i.e.*, water delivered under river basin conditions similar to those extant when the water was improperly taken) is both a make-whole remedy and (as to the payor) an effective disgorgement. In *Texas v. New Mexico*, the Court charged the special master with deciding on the form of remedy based on an equitable consideration of what is suitable under all the circumstances of the case. *Id*. at 131-132. While simultaneously suggesting that a decision to award sanctions also might hinge on a finding that the breach was deliberate, *id*. at 132, the Court suggested no such single test for deciding whether to order that the remedy be in the form of water.

This is not to say that I read *Texas v. New Mexico* as implying acceptance of the use of disgorgement. To the contrary, the question of the measure of damages was not presented.

Further, the Court made clear that one reason for not ordering payment in water in a particular case might be that, as can be the case with orders of specific performance, "some attention to the relative benefits and burdens that the parties may enjoy or suffer" need be given. *Id*. at 131. This equitable principle cautions against the automatic use of a remedy that unnecessarily burdens the defendant. I therefore read the opinion only as confirming the notion that, in actions of this type, the Court's equitable discretion is flexible in fashioning remedies to further the interests at stake in these cases.

I have also reviewed the Special Master's Second Report in *Kansas v. Colorado*, No. 105 Orig. (Sep. 9, 1997). Nebraska correctly notes that the report rejects a request (by Kansas, indeed) for disgorgement, and opts instead for a classic expectancy measure of loss. In so doing, however, the Special Master makes clear that his recommendation is the product of the exercise of a very broad equitable discretion that "perhaps" allows "looking to upstream gain under appropriate circumstances." *Id*. at 82. Like me, he viewed his charge as providing for a measure of damages that achieved a "fair and equitable solution." *Id*. at 84. And his description of the circumstances of the parties' respective conduct in that case suggests that discretion favored the measure upon which he settled.

In keeping with this discretion, I conclude that the Court need not make an either-or selection between the measures of loss and gain. The Court sits in this action to provide a forum within which what were heretofore causes of war can be resolved between our sovereign states in our federal system. *See North Dakota v. Minnesota*, 263 U.S. 365, 372-73 (1923); *Kansas v. Colorado*, 185 U.S. 125, 140-45 (1902). The aim is to find a remedy that is "fair and equitable" and "that is consistent with the Compact terms." *Texas*, 482 U.S. at 134. Viewed from this perspective, it makes more sense for the Court to look at loss and gain as end points on a

spectrum of damages, and then to calibrate the selection of a fair point on that spectrum in a manner that recognizes the numerous interests I have discussed above, plus the difficulty in such actions of determining precisely either loss or gain.

D. Kansas' Loss.

The evidence is indisputable that Kansas suffered a loss by virtue of Nebraska's consumption of very large volumes of water in excess of its Compact allocations for 2005 and 2006. The parties dispute, instead, the amount of that loss. In so doing, they take two very different approaches. Kansas seeks to estimate the size of the reduction in its harvest and the resulting diminution in gross state product.[28] Nebraska criticizes the Kansas analysis, and offers instead an attempt to place a value on the lost water itself based on sale and lease transactions of irrigated land, and some transactions for the sale and lease of water.[29]

Although advocating different approaches, and challenging the adequacy of each other's proof, Kansas and Nebraska do not materially dispute the principles of law that guide any assessment of damages. Kansas must prove damage by a preponderance of the evidence. *See Addington v. Texas*, 441 U.S. 418, 423 (1979) (the "typical civil case" requires proof by a preponderance of the evidence); 23 WILLISTON ON CONTRACTS § 63:14, at 481 ("The plaintiff . . . has the burden of proof on all of its breach of contract claims."). Where the fact of damage is reasonably certain, but the amount inescapably uncertain, "[t]he law will make the best appraisal that it can, summoning to its service whatever aids it can command." *Sinclair Refining Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 697 (1933). While "damages may not be determined by mere speculation or guess, it will be enough if the evidence show the extent of the damages as a matter of just and reasonable inference, although the result be only approximate."

[28] A summary of Kansas' damages analysis is attached hereto as Appendix F.
[29] A summary of the transaction evidence is attached hereto as Appendix G.

Story Parchment Co. v. Paterson Parchment Paper Co., 282 U.S. 555, 563 (1931).[30] *See J. Truett Payne Co. v. Chrysler Motors Corp.*, 451 U.S. 557, 566 (1981) (noting that, where "[t]he vagaries of the marketplace . . . deny us sure knowledge of what plaintiff's situation would have been in absence of the defendant's antitrust violation," the court is willing to accept a "just and reasonable inference" of damage); *Palmer v. Conn. Ry & Lighting Co.*, 311 U.S. 544, 559 (1941) ("All that can be done is to place before the court such facts and circumstances as are available to enable an estimate to be made based upon judgment and not guesswork."); *Eastman Kodak Co. v. S. Photo Materials, Inc.*, 273 U.S. 359, 379 (1927) ("Damages are not rendered uncertain because they cannot be calculated with absolute exactness. It is sufficient if a reasonable basis of computation is afforded, although the result be only approximate.")

Informed by these principles, the next two subsections of this Report analyze, in turn, the States' competing damage presentations. In so doing, it concludes that the amount of Kansas' loss is quite uncertain, and likely unknowable, but that $3,300,000 is a fair estimate.

1. Analysis of Kansas' attempt to estimate its loss of gross state revenue suffered by farmers and their vendors.

Kansas' expert, Professor Joel R. Hamilton, testified that payments (in 2012 dollars) in the amounts of $2,595,381 for 2005 and $2,531,611 for 2006 (for a total of $5,126,992) would compensate Kansas for the value added[31] that was lost by Kansas farmers and their vendors as a result of Nebraska's failure to satisfy the two-year running average compliance test for 2006. (Hamilton Direct, at 50; K105, at KS000566). This conclusion rests on a stacked array of expert

[30] *See also* 25 C.J.S. Damages § 372 ("What is required is that evidence of such certainty as the nature of the particular case permits should be produced."); 22 Am. Jur. 2d Damages § 328 ("When damages are difficult to prove, the plaintiff is required to prove them with the precision that the facts permit but no more.")

[31] "Value added," a term Kansas' experts use interchangeably with "income," is the "difference between what a producer receives from the sale of output and the cost of produced inputs." (Ex. K105, at 12). All value added in a state equals that state's gross state product.

opinions. First, Kansas expert Dale Book calculates the amount of additional water that would have been available to and used by Kansas farmers in 2005 and 2006 but for Nebraska's breach. He refers to this water as the "required water." (Ex. K5). Second, Kansas' expert, Dr. Norman Klocke, estimates the differential impact on crop yields that the required water would have had. (Ex. K99). Third, Dr. Joel Hamilton and Dr. M. Henry Robison estimate the resulting increase in the value of the harvest, and the resulting increases in value added to the Kansas economy that would have been realized by Kansas farmers and their direct and indirect vendors. (Ex. K105).

These expert analyses are quite complex and contain many interim, technical steps. Even an outline summary of all the steps is too detailed for the text of this Report. What I have done, instead, is to attach as Appendix F an outline that walks the reader in summary fashion through the analysis as set forth in the three interlocking expert reports, which themselves total 140 pages. The full expert reports are contained in Exhibits K5, K99, and K105.

Central to Kansas' expert analysis are: the assumed starting point (*i.e.*, the amount of water by which Nebraska exceeded its allocation); the extent to which one can assume that the so-called required water would have been available during irrigation season when it would have been useful; the amount of precipitation in KBID that would have affected the amount of irrigation farms required and the impact of marginal increases in water on yields; the actual determination of the impact on yields; and the manner in which cross-border transactions between Kansas and Nebraska farmers and vendors need be accounted for.

Nebraska challenges Kansas' analysis on each of these points as well as sundry other, less overarching points. My evaluation of those challenges is as follows:

a. Kansas' experts incorrectly assume that Nebraska used more water in 2006 than it actually used.

Kansas expert Dale Book, a civil engineer, begins the Kansas damage presentation with an assumption that Nebraska exceeded its Compact allocation by 42,860 acre-feet in 2005 and by 36,100 acre-feet in 2006. (Book Direct, at 15; Ex. K5, at KS000360, 385). Nebraska agrees that 42,860 acre-feet is the correct amount of its 2005 exceedance. Nebraska correctly points out, however, that Book's assumed amount of Nebraska's over-consumption for 2006 includes an allocation to Nebraska of one-half of the Harlan County Lake evaporation for 2006. As I discuss elsewhere in this Report, that evaporation is properly charged to Kansas, not Nebraska. Therefore, the amount of Nebraska's over-consumption for 2006 is 28,009 acre-feet.

If the relationship between Nebraska's over-consumption and Kansas' loss were uniformly proportionate, then this error in Kansas's loss analysis would simply require a reduction of approximately 22%[32] in the 2006 loss calculation. The evidence, however, is that the relationship between marginal amounts of additional water and crop yields in the relevant range at issue here is of diminishing slope, such that each incremental addition of water produces less additional yield than the prior incremental amounts (once one has reached a minimum amount). (Tr. at 1649-53 (Sunding); Tr. at 1703-04 (Klocke)). Book himself acknowledged that any change to his 2006 assumptions would result in a non-linear effect. (Tr. at 241-42 (Book)). To the extent this is so, an adjustment in Kansas' loss calculation for 2006 by 22% errs, if at all, in favor of Nebraska. Were I not otherwise giving Kansas the benefit of the doubt on sundry minor points raised by Nebraska concerning the 2006 damage calculation, I would likely have

[32] 8,091 (the amount of evaporation to be subtracted from Kansas' estimate of Nebraska's overuse) divided by 36,100 (Kansas' estimate of Nebraska's overuse).

given Kansas' expert an opportunity to calculate this amount more precisely and thus recalculate the loss figure for 2006.

b. Kansas' experts reasonably conclude that the additional water Kansas would have received but for Nebraska's breach would have been available during the irrigation seasons.

Using the assumed amount of water that Nebraska overused, Book sought to calculate the amount of water that would have been delivered to the Kansas farms had Nebraska not violated the Compact (*i.e.*, what he calls the "required water"). Water that is delivered when it can be used or stored for irrigation is valuable. Water flowing down the canal outside of irrigation season is generally of little value, except to the extent it might be stored in a less than filled reservoir for later irrigation needs. In conducting this analysis, Book assumed that all of the required water would have been delivered to Kansas during the irrigation seasons and therefore would have been available for irrigation. (Book Direct, at 15; K5, at KS360; Tr. at 178 (Book)).

According to Book, his assumption that the required water would be delivered during the irrigation seasons was based on "the location of the point of compliance," namely, "Guide Rock, which is the control point on the river where the Bostwick Irrigation District takes their water; [Kansas gets its] water at that point either by releases from Harlan County Reservoir or by picking up water in the river at other times and then transporting that to Lovewell Reservoir, which is a reservoir within the Project area that provides storage." (Tr. at 178 (Book)). According to Book, "it's the combination of the location of the compliance point with the storage that supports that assumption." (Tr. at 178 (Book)). Book acknowledged that "[i]f you assume that some of the overuse in Nebraska flowed past the dam at Guide Rock, then it would not be available for KBID." (Tr. at 179 (Book)).

Book assumed that the irrigation season lasted from May to September. (Tr. at 179 (Book)). The record better supports the conclusion that, historically, the irrigation season lasts

from mid-June through August, terminating around September 1. (Tr. at 70 (Ross); Tr. at 1065 (Nelson)).

Nevertheless, Book testified that, even if the irrigation season were shorter than he had posited, it would still be proper to assume that the required water would be available during the irrigation season. (Tr. at 181 (Book) ("[A]ssuming that [the shorter irrigation season] is reflected in the historic season, at least for some years, then this quantity of water would have been delivered within that period.")). According to Book, he only used his irrigation season assumption "to generate a timing of the return flows." (Tr. at 179 (Book)). Book took the position that "the irrigation season doesn't really matter," other than for calculation of return flows, "because of the existence of the storage. So the basic assumption is that the water would have been delivered during the irrigation season." (Tr. at 179 (Book)).

Nebraska challenges this assumption. Its expert, Thomas Riley, opined that "Nebraska's overuse of its allocation in 2005 and 2006 would not equate to water available in [Harlan County Reservoir] to be routed to KBID because much of that water would arrive outside the irrigation season." (N6003, at NE0500777). Riley reached this conclusion because of an apparent conflict between Book's required water analysis and Book's separate analysis of what measures would have been required for Nebraska to achieve Water-Short Year Administration compliance in 2006 (*see* K12), as well as testimony by other Kansas experts (Perkins and Larson) analyzing pumping reduction impacts for 2005 and 2006 (*see* K19). (N6003, at NE0500777). Riley contends that these two reports are inconsistent with Book's analysis of the required water, and therefore disprove the idea that the required water would be available during the irrigation season (N6003, at NE050077), because these reports show that over 19,000 acre-feet of water would not have been available to route through Harlan County Lake during the irrigation season, (N6003, at

NE050078; *see* Tr. 953 (Riley)). According to Riley, "It follows, that since not all of the water would have been available to Kansas in the irrigation season, the Return Flow timing and amounts presented" by Book in his required water analysis "are overstated." (N6003, at NE050078).

Riley made two concessions at trial regarding this criticism. First, he acknowledged that the water that became available too late in 2005 to affect that year's irrigation season could have been stored and potentially used in 2006. (Tr. at 953-54 (Riley)). Second, he acknowledged that, if Nebraska front-loaded its compliance efforts, those efforts would make it more likely that the water would be available during the irrigation season. (Tr. at 954 (Riley)). He did qualify this latter concession by stating that "It may not have all been available. You still could have had some of it outside the irrigation season and primarily from the well pumping and in this change that occurs in return flows." (Tr. at 955 (Riley)). According to Riley, questions remain as to "whether it would have been called for and used and how much would have been available . . . depending on how you examine how compliance could be conducted," that is, depending on how much frontloading there was. (Tr. at 956 (Riley)). If compliance took place more evenly throughout the year, then some of it would have become available after the irrigation season. (Tr. at 956 (Riley)). Further, while Riley found it unlikely that Nebraska's compliance efforts would have entirely taken place in 2006 (as opposed to taking additional compliance steps in both 2005 and 2006) if Nebraska had complied with the Compact, he nevertheless agreed that if Nebraska had tried to make up the entirety of its overuse in 2006 then it is likely that enough of that water would have been delivered during the irrigation season to meet Book's assumed delivery of required water. (Tr. at 963-64 (Riley)).

Riley's critique is undercut not only by his own concessions, but also by the testimony of Dr. James Schneider, Nebraska's Deputy Director of its DNR. When asked whether Nebraska's "approach would be, if anything, to front-end load [compliance measures] at the beginning of the year and then evaluate after you get into the year whether you might lighten up on the curtailment," (Tr. at 639 (Special Master)), Schneider responded: "That's exactly what I intended to say and that's exactly how it's designed to work and will work" (Tr. at 639 (Schneider)). In response to the follow-up question "And is part of the purpose of that to put you in a position so that that water could be shepherded to Kansas during their irrigation season at a time when it would be beneficial?" (Tr. at 639 (Special Master)), Schneider answered "Yes" (Tr. at 639 (Schneider)).

Based on this record, it appears that the best conclusion is that substantially all of the required water would likely have been available to Kansas during the irrigation seasons in 2005 and 2006, even though the irrigation season is shorter than Mr. Book assumed. Indeed, Schneider agreed that he was "confident that the IMP 3 if, for example, it had been employed back in 2006 would have achieved compliance in that [front-loaded] manner" (Tr. at 639 (Special Master)). To the extent "front loaded" water might have arrived before irrigation season, storage would still likely have rendered it available for irrigation. While Schneider's testimony regarding Nebraska's compliance approach related specifically to the third generation IMPs, which were not in place in 2005-2006, there is adequate basis for concluding that that compliance approach constitutes a suitable proxy for the manner in which Nebraska might have behaved in 2005 and 2006, if it had taken steps necessary to comply with the Compact. And given Riley's concession that front-loading the compliance would have made up for any other mistakes in Book's calculations (Tr. at 963-64 (Riley)), it is not likely that the fact the irrigation

season was shorter than assumed by Book, and that return flow during the irrigation season would be correspondingly less, materially affects Book's analysis.

c. Kansas' damage analysis for 2005 is likely inflated by failing to account in some manner for the unusually high amount of precipitation during the 2005 irrigation season in Kansas.

Multiple steps in Kansas' damages analysis, namely, calculation of the required water and calculation of crop yield differential, involve assumptions regarding precipitation amounts, especially during irrigation season. As discussed below, precipitation can affect both the amount of water delivered to farms and the crop yield differential caused by additional irrigation water. Nevertheless, Kansas did not take into consideration available data showing the actual precipitation that fell in 2005 and 2006 in its damages analysis. Instead, Book considered historical records and concluded, based on past precipitation amounts and delivery amounts, that all of the required water would have been delivered to farmers regardless of the actual precipitation in 2005 and 2006. (Tr. at 163-65 (Book); Tr. at 920 (Riley)). Similarly, another Kansas expert, Klocke, did not consider actual precipitation in his analysis of crop yield differential; rather, he used a "composite" precipitation amount from the range of years used in a standard model he employed. (Tr. at 1457-58 (Klocke)).

The evidence shows that precipitation in 2005 during irrigation season in Kansas was well above average. The actual average rainfall for June through August was 8.00" for 1994-2000 (a time period that Book designated as "normal"), and 11.09" for 1956-2011. (N6003, at NE0500779). In 2005, however, a total of 16.00" fell in the months of June, July, and August. (N6003, at NE0500779). As Book conceded, this meant that rainfall in 2005 was on the order of

150% greater than average for June through August. (Tr. at 164 (Book)). For the months May-September 2005, precipitation in KBID exceeded the average by 2.4". (K103, at KS01155).[33]

The effect of actual precipitation during the irrigation season could well have been to reduce the call for irrigation water. (Riley Direct, at ¶ 11; Tr. at 919 (Riley) ("Precipitation can certainly provide for the crop demand."). According to one of the Kansas farmers who testified for Kansas, Kenneth Nelson, "precipitation during the irrigation season . . . lessens the demand [for irrigation] or shuts it off." (Tr. at 1070 (Nelson)). (*See* Tr. at 1087 (Nelson) ("A. In 2011 our base supply was 15. And I think we ended up using around 8 inches in the entire district. Q. And why did you only use 8 out of the 15? A. We had good rainfall."). While Book takes the position that the rainfall amounts for April through September in 2005 and 2006 were not so high that his calculated delivery and use of required water would be outside the historical practice (K17, at KS001138), his rationale rests on an erroneous comparison. In making his historical comparison, Book excluded all "water restricted" years. (K17, at KS001146; Tr. at 921 (Riley)). A "water restricted" year is a year in which less than a "full supply" of 15" of irrigation water is available per acre. (Tr. at 193-94 (Book); Tr. at 1518-21 (Hamilton)). However, the evidence suggests that 2005 and 2006 would have been "water restricted" even if Nebraska had fully complied with the Compact. (Tr. at 194-96 (Book); Tr. at 1518-21 (Hamilton)).[34] As such, Book has not put forward reliable evidence suggesting that his required water calculations were justifiable, given actual precipitation amounts in 2005. Nor did Book offer any evidence that the actual precipitation during the 2005 irrigation season, while great in volume, was ineffective in

[33] In 2006, the precipitation for the months May-September in KBID only exceeded the average by .4". (K103, at KS01155).

[34] One might ask how 2005 could have been "water restricted" if so much rain fell during the irrigation season. The answer is that the "water restricted" designation is made based on the amount of stored water available the prior winter. (Tr. at 193-94 (Book)).

its distribution. In sum, Book's failure to account for the possibility that the large rainfall greatly mitigated any need for irrigation means that he did not consider actual net irrigation requirements. (Tr. at 195-96 (Book)). This failure materially skews his analysis of required water for 2005.

Similarly, properly accounting for material variations in precipitation can affect Klocke's yield analysis. (K103, at KS001154; Tr. at 1457 (Klocke) ("Q. Now, we agree that precipitation affects yield; is that correct? A. Yes."), 1473 (Klocke), 1715-16 (Klocke) "Q. So if you get more precipitation, you would need less applied irrigation? A. If that precipitation was effective to the plant, if that – if it was able to be stored, it was able to infiltrate into the soil and not go somewhere else and not getting in the soil. The only way that the plant can take up water is through its roots. So it has to be available in the soil."). Each inch of effective water applied to the plants (whether in the form of precipitation or irrigation water) has a diminishing effect on yield. (Tr. at 1653 (Sunding)). Therefore, if the actual precipitation exceeds the average, then using average precipitation as a baseline can lead to an overstatement of the crop yield differential of additional inches of irrigation water. As noted above, the actual rainfall in 2005 during irrigation season was significantly different than the average relied upon by Klocke. Accordingly, because Klocke's yield differential calculation used an average precipitation amount, rather than actual, his yield slope was biased upwards, as established by Nebraska's expert, Dr. David Sunding (Tr. at 1649-53 (Sunding)) and as ultimately conceded by Klocke. (Tr. at 1703-04 (Klocke) (conceding that the yield slope changes when precipitation increases)).

As a result, Book's and Klocke's failure to consider actual precipitation tends to make Kansas' 2005 damage analysis insufficiently reliable at two levels.

d. The results of the "crop yield differential" employed by Kansas' experts suggest that the estimate of 2005 damages is indeed likely inflated, but otherwise appear within a range of reasonableness.

An essential step in Kansas' damages analysis, performed by Dr. Joel Hamilton[35] and Dr. M. Henry Robison[36], involved a quantification of the crop yield differential using Dr. Klocke's yield analysis. That is, Hamilton and Robison sought to determine the difference between Kansas' model of the crops grown in 2005 and 2006 and its model of the crops that would have been grown had the required water been delivered (the "but-for" model). (Hamilton Direct, at 11-12). Hamilton and Robison used these crop yield numbers to calculate both on-farm direct losses as well as secondary direct and indirect losses. (Hamilton Direct, at 12).

Hamilton used a model of actual conditions in 2005 and 2006 and compared that model to its "but-for" model rather than using reported crop yields because, according to Hamilton, it is methodologically superior to compare two models rather than a model against the real world. In his words, "I relied on the yield model because I think the yield model is better capable of describing a difference in yield resulting from various levels of water application than the alternative, which would have been relying on KBID survey yields and then using a model to predict – to estimate, to calculate yields if the required water had been available." (Tr. at 1503-04 (Hamilton)). According to Hamilton, comparing one model to another model means that any biases would be compensating, and therefore would be cancelled out. (Tr. at 1572-73

[35] Dr. Hamilton holds a PhD. in Agricultural Economics with a specialty in Econometrics from U.C. Berkeley, is Professor Emeritus of Agricultural Economics and Statistics at the University of Idaho. Dr. Hamilton's major research areas include the economics of water resources and regional economics. Dr. Hamilton has served as an expert witness in two previous interstate water compact cases. (Hamilton Direct, at 3-9; Ex. K104).

[36] Dr. Robison holds a PhD. in Economics from the University of Utah, has taught at the University of Idaho, and has extensive experience in applied regional input-output modeling. (Robison Direct, at 3-7; Ex. K117).

(Hamilton) ("I think – in my view, using these two models, there will be compensating biases and so on which will lead to the greater accuracy of the approach that I followed as compared to an approach which would have compared a model output to the KBID survey numbers.")). Hamilton further suggested that survey data may not be reliable – though he did not attempt to determine the reliability of the survey data at issue. (Tr. at 1506-07 (Hamilton) ("A. Survey data should be questioned. And by questioning, I mean it's always appropriate to look at survey data and to ask the question whether – how reliable it might be. Q. And did you try to make a determination of the reliability of the survey data that is collected within the district? A. No."), 1571 (Hamilton)). For these reasons, and because Kansas was "mainly interested . . . in differences in yield," he concluded that comparing two models "makes good methodological sense, makes good empirical sense compared to – comparing a yield model estimate to survey numbers." (Tr. at 1504 (Hamilton)).

Kansas' experts steadfastly maintained that it was only necessary to establish yield differential, not actual yield. (Tr. at 1465-66 (Klocke)). As such, Hamilton did not take the next step of adding the yield differential to the survey data to get total yields that could be compared to actual yields in other years as reported in survey data. (Tr. at 1571 (Hamilton) ("Q. And if we took the yield differentials that you calculated and added it to that survey data, do we get total yields that bear a greater or lesser relationship to actual yields in other years as reported for the survey data? A. I have not done that investigation.")). Nor did he compare actual yield differentials as a comparator for his calculated yield differentials. (Tr. at 1573 (Hamilton) ("Q. Did you attempt to assess what differentials there appeared to be in the KBID survey numbers themselves from year to year based on different irrigation levels in those years? A. No, I did not.")).

Although Kansas' entire analysis is premised on the notion that only yield differentials are important, and not actual yields, Klocke did admit that a yield calculated using the differentials should be close to actual yield (Tr. at 1469 (Klocke) ("[H]itting right on the head of the actual yields is not expected. You want to be very close to that area . . . .")). It is not readily apparent, however, that Kansas' calculated yield is close to the actual yield.

The report of Nebraska expert Sunding suggests that "yields reported in KBID in 2005 and 2006 are much higher than those that the yield model predicts, sometimes exceeding the yield model's predictions of crop productivity even under an assumption of full irrigation." (N6003, at NE0500706). Further, "[i]n many cases the hypothetical yield estimates produced by the model are not close to real-world levels reported by KBID farmers." (N6003, at NE0500711)). For instance, Kansas' model for "actual" yield in 2005 produced an estimate that understated the reported yield for corn by 16.79%, overstated the reported yield for milo by 8.9%, overstated the reported yield for soybeans by 2.07%, and understated the reported yield for alfalfa by 34.21%. (N6003, at NE0500712). In 2006, Kansas' model for "actual" yield in 2006 overstated the reported yield for corn by 0.31%, milo by 19.95%, soybeans by 10.75%, and understated alfalfa by 18.25%. (N6003, at NE0500712). Kansas' prediction of the "actual" yields for soybeans in 2005 and 2006 exceeded any yields ever reported in KBID up to that point, while the "actual" yields for corn and alfalfa were significantly lower than the average over the prior decade. (N6003, at NE0500712). Sunding found these variations significant because "the predicted changes in yield from failed water delivery that drive Kansas' estimated damages range from only 1 – 13%," and traced the faulty yield calculations to the inputs to the yield model. (N6003, at NE0500712-13). So, for instance, Sunding pointed to Kansas' assumed maximum corn yield, which was exceeded by the actual yield in 2005 (and was exceeded by

nearly 21% in 2009). (N6003, at NE0500713). According to Sunding, "[t]his is a serious shortcoming of Kansas' yield model as setting a maximum yield under actual observed levels in KBID will consistently lead to the underestimation of corn yields in years with favorable growing conditions, such as 2005." (N6003, at NE0500713).

Hamilton seemed to concede that his yield differentials led to calculations of actual yield that are too high, but defended the yield differential, in the following colloquy:

> Q. But in – let me ask it this way. In your work over the years in your field, have you encountered situations in which the same acreage farm would from year to year have variations in yield of this order of magnitude?
>
> A. Well, there will be variations in yield for various external causes. And they may be significant.
>
> Q. But would they be this significant? In other words, have you ever observed with any regularity differentials from year to year in the same acreage of this magnitude?
>
> A. This would be high for a – higher than one would tend to expect with any regularity and variation in annual yield.
>
> Q. And then given that, how do you still reach a comfort level with this figure?
>
> A. Because I'm – I'm comfortable that the approach we used in – is an appropriate way and a way with a high degree of confidence to calculate the yield difference. . . .
>
> Q. Right. And I'm not asking if the 179 figure strikes you as large. I'm asking if the 24 differential figure strikes you as a large differential based on what you have seen happen in fact?
>
> A. I do not think it's a large differential for the effect of irrigation.

(Tr. at 1577-78 (Special Master, Hamilton)). Hamilton also defended his conclusions by pointing out that his calculated yield differential is favorably comparable to the yield

differentials from the National Agricultural Statistics Service ("NASS"). (Tr. at 1597-98 (Hamilton)).[37]

In weighing the competing expert testimony, it is helpful to look at the actual reported yields for recent years to see: how the actual reported yields for 2005 and 2006 compared to those of other years; and, how those yields for 2005 and 2006 would compare to other years if the yield differential calculated by Kansas were added to the actual reported yields for 2005 and 2006. The table below sets forth the total of the reported yields and also, for 2005 and 2006, the sum of the reported yields and Kansas' asserted yield increase, drawn from the KBID reports and Kansas' expert report (*see* N8208, at 6; K105, at KS000580):

Year	Corn	Milo	Soybeans	Alfalfa
2001 (reported)	155.0	92.8	47.7	6.1
2002 (reported)	162.0	102.0	47.0	7.6
2003 (reported)	160.7	124.2	49.9	5.6
2004 (reported)	180.4	134.2	54.8	8.9*
2005 (reported)	187.0	119.7	58.0	7.6
***2005** (reported + calculated differential*	*211.0*	*123.6*	*61.9*	*8.2*
2006 (reported)	162.6	110.5	54.9	6.3
***2006** (reported + calculated differential)*	*183.7*	*112.7*	*57.7*	*6.9*
2007 (reported)	181.6	126.5	55.2	6.8
2008 (reported)	189.9	118.5	55.0	6.6
2009 (reported)	220.5*	134.7*	64.7*	6.6
2010 (reported)	162.7	103.5	53.7	8.3
Average reported				

* highest reported amount

[37] The NASS yield differential data cited by Hamilton were comparisons of the yields in the NASS reports in 2005 and 2006 for irrigated versus non-irrigated crops. (Tr. at 1596-98 (Hamilton)).

Examination of this table supports Nebraska's view that the actual yields reported for 2005 and 2006 (2005 in particular) do not leap out as outliers pointing to an absence of water relative to the other years. While those other years consist in great part of other years in which Nebraska exceeded its Compact allocation (2003 and 2004, and likely 2001 and 2002), they also include 2007 to 2010, when rain was above average and Nebraska used less than its allocation.

What this chart also makes clear, though, is that the "but-for" yield predicted by adding to the reported yields for 2005 and 2006 the yield increases asserted by Kansas also does not generate facially implausible outliers. If we accept Kansas' proof regarding the improvements in yield its farmers would have realized had they received the water Kansas was entitled to receive, 2005 would have been the second best year over this period; 2006 only the sixth best, or so. In short, the parties' competing positions each fall entirely within the range of facially plausible outcomes.

It may also not be coincidental that Kansas' projection of yield differential added to the reported actual yield is, on the relative range of this chart, most remarkable for 2005, the year for which Book and Klocke made overly negative assumptions of irrigation season precipitation.

e. Kansas' experts employ a reasonable approach to estimating the secondary effects of the loss in farm revenues caused by Nebraska's breach.

Out of the $5,126,992 total loss claimed by Kansas, approximately 40.6% ($2,080,553) consists of secondary effects beyond the direct farm loss.[38] Sometimes referred to as "multiplier effects" (K105 at 14), secondary effects are the effects on value added by the suppliers of the farms ("secondary direct loss") and by the suppliers of the suppliers ("secondary indirect loss").

[38] The percentage for 2006 is approximately 39% ($986,179 divided by $2,531,611). The percentage for 2005 is approximately 42% ($1,094,374 divided by $2,595,381). All numbers come from K105, Table 49. (K105, at KS000565-66, 611).

Simply put, if a farmer puts less land into production, the farmer buys less seed, fertilizer, chemicals, etc. Those foregone purchasers result in foregone value added to the gross state product. (Hamilton Direct, at 12). Hamilton and Robison utilized the IMPLAN input-output model to calculate these secondary effects. (Hamilton Direct, at 12; K105, at KS000559).

The original IMPLAN model was developed by the U.S. Forest Service and is now maintained by a private firm, MIG, Inc. Robison directed forest economists at a regional office of the U.S. Forest Service on use of the new model. (Robison Direct at 6). He has constructed hundreds of IMPLAN models to assess secondary economic effects for the federal government and various state and local agencies, and constructed the model used in *Kansas v. Colorado*, No. 105 Orig. (Ex. K112 at KS002987). In that case, his use of the model, akin to his use here, was found to be both admissible and persuasive by the Special Master. *Kansas v. Colorado*, No. 105 Orig., Fifth and Final Report of the Special Master, at 20 (Feb. 4, 2008).

In using the IMPLAN model, Hamilton and Robison relied on "regional purchase coefficients" ("RPCs") to determine how much of the change in spending on produced inputs would have occurred in Kansas. (Robison Direct, at 18; K105, at KS000559-61; Tr. at 1543-44 (Hamilton)). Kansas' secondary losses are calculated solely based on spending that would have occurred in Kansas. (Robison Direct, at 17-18). The RPCs do not take into account any transborder impact between Kansas and Nebraska. (Tr. at 1543 (Hamilton)). According to Hamilton, "coefficients identify what portions of spending occur within the region," in this case Kansas, but "do not say where the rest is spent." (Tr. at 1543-44 (Hamilton)). While Hamilton acknowledged the concept of interregional spillovers, which "are instances where the economic impact, as it spreads out from its source, actually crosses a regional boundary" (Tr. at 1552 (Hamilton)), Hamilton and Robison concluded that any "spillovers, to the extent that they may

exist, were . . . minor" (Tr. at 1555 (Hamilton)). In reaching this conclusion, Hamilton and Robison relied on the "Rand McNally Trading Areas" and the "BEA Economic Areas" from the U.S. Chamber of Commerce, Bureau of Economic Analysis, (KS 116, at KS001170-71), which show that "the economic regions tend to separate at the state line" between Kansas and Nebraska (Tr. at 1553 (Hamilton)).

Nebraska, through Sunding, suggests that this analysis overstates Kansas' losses. Sunding makes two principal critiques of Kansas' analysis.

First, he suggests that the IMPLAN model is flawed in that it only distinguishes between spending in Kansas and spending outside Kansas, and does not further distinguish between spending near Kansas (in Nebraska, for instance) and spending further away (such as in California). As Sunding testified,

> [t]he way that Kansas' economists constructed the model, there is Kansas; and then everything outside is a black box. So so-called leakages from Kansas, say purchases by Kansas farmers of inputs that are manufactured somewhere other than Kansas, the way they did it, it doesn't matter whether those inputs are purchased in Nebraska or California; they're just leakages to Kansas. And I think that's a clear error given that this is a border economy.

(Tr. at 1680 (Sunding)). This criticism is neither understandable nor persuasive. The IMPLAN model used by Hamilton and Robison already accounts for (and does not include as value added) spending that would not occur in Kansas. (Robison Direct, at 17-18). Determining where outside of Kansas the spending occurs would not seem likely to lower Kansas' damage estimate.

Second, Sunding argues that Kansas erred in its damages analysis because "the additional economic activity in Nebraska associated with overuse of water will stimulate the economy in Kansas." (N6003, at NE0500737). He took the position that "[t]his cross-border effect should be subtracted from any assessment of Kansas damages," and criticized Kansas for "ma[king] no attempt to do so." (N6003, at NE0500737). Sunding testified that he

> prepared a – I wouldn't characterize it as anything more than an example using IMPLAN itself where I adjusted economic activity in the grain sector in Nebraska and traced through how much of the indirect effects from an increase in grain production in Nebraska flow into Kansas opposed to any other state. And, interestingly, an increase in economic activity in grain farming in Nebraska produces secondary benefits in Kansas that, to a rough degree, cancel out the negative secondary impacts that Kansas is claiming. And that was a matter that clearly should have been taken into account.

(Tr. at 1681 (Sunding)). Based on his "example," Sunding quantified the spillover effect as totaling over $2 million. (N6003, at NE0500738). In sum, he is claiming that the overuse of water in Nebraska generated increased activity in Nebraska that led to cross border purchases in Kansas generating $2 million in value added that would not have existed had Nebraska not breached the Compact.

The problem with this critique is that while the record contains considerable anecdotal evidence that some Kansas farmers go north to Nebraska to purchase goods (Tr. at 108-09 (Ross); Tr. at 1081-82, 1126-27 (Nelson)), Nebraska offers zero evidence that its farmers go south to shop. Indeed, the fact that some Kansas farmers feel a need to travel north to acquire fertilizer and seed would suggest that those in the north might already be where they need to be. Sunding does assert that Nebraska farmers do cross the border into Kansas to purchase supplies, (Tr. at 1681 (Sunding)), relying apparently on exemplar "multi-regional input-output" IMPLAN modeling of economic activity in the grain sector ((N6003, at NE0500738; Tr. at 1681 (Sunding)). However, Sunding's modeling is expressly not meant to be a thorough analysis (Tr. at 1681 (Sunding)), and his "multi-regional input-output" methodology, unlike the RPC methodology, has not been peer reviewed and is hampered by lack of necessary data (K116, at KS0001172)). Accordingly, in the absence of record evidence regarding relevant trade flows from Nebraska into Kansas, there is no compelling reason to reject Kansas' unremarkable and hardly unprecedented reliance on the "Rand McNally Trading Areas" and the "BEA Economic

Areas" for the proposition that increased direct farm income in Nebraska did not likely lead to materially increased secondary effects in Kansas. The IMPLAN modeling approach taken by Dr. Hamilton and Dr. Robison, with their reliance on RPCs, is the "settled method of choice." (K116, at KS0001172)).

f. On the whole, Kansas' loss presentation reasonably estimates, with adjustment, the 2006 loss but does not provide a basis for estimating the 2005 loss.

The foregoing discussion should make clear that trying to calculate the financial harm caused by Nebraska's Compact breach is extremely complex. Sunding offers other suggestions, summarized in Appendix F, for making the analysis more precise, albeit without offering any quantification of that increased precision. And one can imagine more. Even determining, for example, gross rainfall during the irrigation season arguably falls short of the mark. If it came in large bursts, most could be ineffective. (Tr. at 1730-21 (Klocke)). And rain in one area of KBID does not mean rain in another. Moreover, if farmers were not expecting sufficient irrigation water, they might not have planted, leaving the rain to fall on fallow fields. So perhaps one need interview each farmer. At some point (and the parties may be long past it in this case) the transaction costs of insisting on precision and accuracy will outweigh the marginal refinement obtained.

All that being said, the net effect of Nebraska's criticisms demonstrate that Kansas' loss analysis is over-stated, although not for as many reasons as Nebraska claims. The 2006 damage claim of $2,531,611 need be reduced by 22% to $1,974,657 to account approximately for the reallocation of the Harlan County Lake evaporation.[39] However, Nebraska's remaining critiques

[39] If one also reduces by 22% Book's estimate of 20,183 acre-feet of additional water that should have been delivered to Kansas farms in 2006, one concludes that the missing water that should have been delivered on-farm in 2006 was worth to Kansas $125.43 per acre-foot (in 2012 dollars).

of Kansas' damages estimate for 2006 are not sufficiently persuasive to justify further reducing Kansas' damages.

Adjusting Kansas' damage claim for 2005 is not so straightforward because the approximate magnitude of the effect of the overestimation of required water and yields (by failing to account for large amounts of irrigation season rainfall in the 2005 KBID irrigation season) is unclear. To determine an appropriate amount of damages for 2005, I therefore turn to the evidence Nebraska presented from which one might infer the value of water more directly.

2. Analysis of sale and lease transactions in Kansas.

The decision to reject Kansas' loss analysis for 2005 as overstated is made easier by the fact that Nebraska has proffered an alternative approach to placing a value on Kansas' loss. Nebraska points out that in 2005 and 2006, a fairly comprehensive survey conducted by Kansas State University indicated that irrigated crop land in north central Kansas leased in 2005-2006 for approximately $33.50 on average more than crop land that was not irrigated. (N6003, at 22 0500722). Given that the average irrigation delivered in KBID was twelve inches per acre (*id.*), one can infer from the lease price differential an implicit price of $33.50 for access to one acre foot of irrigated water in north central Kansas (*id*. at NE0500723).

The average price one would pay for access to water, prospectively, is not necessarily the value that a particular marginal amount of water would turn out to have in a given year. Each year the actual value of irrigation water can vary greatly depending on the amount of affected precipitation during irrigation season. For the Water-Short Year Administration of 2006, one would expect water to be worth a significant premium above average prices. In Nebraska, for example, average prices inferred from land transactions were on the order of $30 to $40 per acre-foot (N6003, at NE0500728), while (as described below) Nebraska paid in excess of $154 per

acre-foot to buy water rights for that year (K116, at KS001163; K82). This suggests that one need be very cautious about using the average price inferred from land transactions as a true proxy for the average price in any given year.

That being said, Nebraska's suggestion that I use the average inferred price for 2005 of $33.50 per acre-foot as a proxy for the on farm direct value to the farmer has merit. With the above-average amount of irrigation season rain, it is harder to suggest that there was in 2005 a shortage premium that need be factored in. Given the yield figures shown on the chart in Section VI.D.1.d, above, use of an average price for incremental water supply in 2005 may be generous to Kansas. (Tr. at 1669 (Sunding) ("I would note that if natural precipitation, again, was more favorable than average, then these rental prices actually overstate the marginal value of water.")).

Kansas' experts point out that the publication from which Sunding has obtained the data for generating from land transactions an implied value of irrigation water in KBID contains a warning that the price data constitute "average prices" and that they are "based on survey respondents' estimates of prices as opposed to actual market sales." (Hamilton Direct, at 52). "Thus, these data are more appropriate for analyzing trends than for establishing market value or rental rates for specific tracts of farmland." (*Id.*) Sunding, however, is not using the data to value specific lots of land. (Tr. at 1625 (Sunding)). It is fair, nevertheless, to observe that the use of survey data rather than actual transactional data is cautionary. (Hamilton Direct, at 52). And, it may well be, as Kansas' experts suggest, that the data may be thin to the extent that most land rentals in KBID are crop-share leases rather than cash rental leases. (Hamilton Direct, at 52-53; Ex. K116, at KS001162). Kansas, however, points to no other transactional data of any type in Kansas that would suggest that the data used by Sunding is materially unreliable. Simply

put, if Kansas farmers were indeed willing to pay a lot more than $33.50 on average for irrigated land as compared to non-irrigated land, then I would strongly suspect that Kansas itself would be able to marshal such evidence.

It is true that the price implied by land transactions, even if accurate, reflects only value to the farmer, and thus does not serve as a proxy that includes any off farm, secondary losses to vendors and the like. (Hamilton Direct, at 53). Sunding agrees, and offers the $33.50 figure as only a proxy for direct farm loss. (Tr. at 1629-30 (Sunding)). Adding a secondary value equal to 73%[40] of the direct farm value results in a total value to Kansas of $57.96 per acre-foot for the 22,661 acre-feet of water that should have been available to Kansas farmers in 2005.

3. Conclusion: Kansas lost approximately $3,300,000.

The following chart summarizes the foregoing conclusions on damages to Kansas calculated using Year 2012 dollars, per acre-foot of water that should have been delivered to Kansas farms but for Nebraska's breach.

ESTIMATE OF KANSAS LOSS

	Direct On Farm Value Per Acre-Foot That Would Have Been Delivered On Farm	Secondary Value Per Acre-Foot	Total Value Per Acre-Foot	Number Of Acre-Feet That Would Have Been Delivered On Farm	Damages
2005	$33.50	$24.46	$57.96	22,661	$1,313,432
2006	$76.51	$48.92	$125.43	15,743[41]	$1,974,657[42]
TOTAL	-	-	-	38,404	$3,288,089

[40] $1,094,374 (Kansas' estimate of its secondary losses) divided by $1,501,007 (Kansas' estimate of its direct losses). (K105, at KS000611).
[41] Book's 20,183 acre-feet (Ex. K5, at KS000366) reduced by 22% to account for the 22% reduction in gross overuse on account of allocation of Harlan County Lake evaporation.
[42] This figure is also Kansas' 2006 net damage claim ($2,531,611) reduced by 22% to account for the reallocation of Harlan County Lake evaporation.

In order not to provide this estimate a pretense of precision, I round it off to $3,300,000.

E. Nebraska's Gain

Paralleling the competing presentations on Kansas' loss, the record also contains two types of evidence aimed at gauging the extent of Nebraska's gain from using water in excess of its Compact allotment.

1. Analysis of Kansas' attempt to estimate Nebraska's gain of gross state revenue realized by Nebraska as a result of its breach.

Kansas' experts conclude that Nebraska realized a net gain of $61,870,319 (2012 dollars) as a result of its breach of the Compact. (K106, at KS000629, KS000665). To support this conclusion, Kansas relies primarily on an elaborate array of expert testimony akin but not identical to the testimony Kansas employed to calculate Kansas' loss. The foundation for this testimony is a calculation by Kansas expert Book of what uses of water Nebraska would have curtailed had it successfully sought to comply with the Compact. (Ex. K12). Book concluded that in order to have met the 2006 compliance test by reducing CBCU by 70,000 acre-feet combined in 2005 and 2006, Nebraska could not have relied solely on reducing direct diversions of surface water. Rather, Nebraska would have also needed to reduce the impact of groundwater pumping on stream flow by a total of just under 34,000 acre-feet during 2005 and 2006, combined. (K12, at KS000417; Book Direct, at 36.) Relying on Larson's analysis of groundwater pumping, Book determined that such a reduction in stream flow depletion could have been accomplished by eliminating all pumping during 2005 and 2006 on approximately 110,000 otherwise irrigated acres located in what Nebraska calls the Rapid Response Region. (K12, at KS000417, 426; K19, at KS000674). That is the region in which the nexus between

wells and streams is close enough so that one acre-foot of groundwater pumping reduces stream flow by at least 10% of an acre-foot in two years. (Book Direct, at 34).

According to Larson, the elimination of groundwater pumping posed by Book would have deprived Nebraska farmers of roughly 199,000 acre-feet of irrigation water in 2005 and 2006, combined, in order to have reduced consumption as measured by the Compact (reduction of stream flow) by approximately 34,000 acre-feet. (K19, at KS000675; K12, at KS000417, 427). Kansas' experts Hamilton and Robison then attempt to calculate the reduction in farm and vendor incomes that would have resulted from loss of so much irrigation water in 2005 and 2006. (Ex. K106).

At the outset, this analysis of Nebraska's gain suffers from the same defect present in Kansas' analysis of its loss: it assumes that the size of Nebraska's over-use in 2006 included (more or less) 8,091 feet of evaporation from Harlan County Lake. Reducing the 2006 gain[43] by 22% to account for this error (*see* footnote 30 above) results in an adjusted total gain of $53,598.192. Also, there appears to be no attempt to account for the potentially offsetting value created by the pumping reductions in the form of delayed consumption reductions in the ensuing years.

Nebraska's expert, Sunding, offered only one page of additional analysis directly critiquing Kansas' proof of Nebraska's gain. (Ex. N6003 at 27 of 88). In conclusory terms, he criticized, first, the use of average precipitation assumptions. He offered no evidence, though, that actual precipitation in Nebraska in 2005 and 2006 was materially above normal. He criticized, second, reliance on regional yields and acreage averages, but again offered no evidence that such averages were materially unreliable. He challenged, third, Kansas'

[43] $37,600,580 (K106, at KS000665).

assumption that water shortages created by the reduced pumping would have been evenly distributed across all produced crops. In theory, that assumption is indeed vulnerable to questioning, as farmers would presumably have directed limited resources to the more valuable crops. Sunding, though, offered no suggestion that the use of such an assumption materially increased the bottom line of Kansas' analysis.

Sunding's critique concerning the crop budget calculations used by Kansas offered a bit more detail. The crop budget represents the farmers' costs on a per acre basis. Kansas used a single budget for all acreage for each crop. Sunding notes that the lack of variation resulting from that assumption results in the use of a crop budget for 2006 dry land milo along the border with Kansas in the amount of $124.27 per acre, even though the crop budget for dry land milo just across the border in Kansas was $216.44 per acre. Sunding did not qualify the overall impact of this anomaly, or offer any evidence that it was anything other than a singular anomaly. Nor did Kansas' expert supply any rejoinder on this point. None of the experts addressed the fact that the reduction in groundwater pumping posed by Book for 2005 and 2006 would have substantially reduced Nebraska's Compact consumption not just in those two years, but also in subsequent years as the delayed impact of the reduction played out over time. (*See* Tr. at 220-21 (Book) (discussing lag effect of groundwater pumping); Tr. at 630-31 (Schneider) (same)). In the "but-for" world posed by Book, as compared to the actual world, Nebraska would have had less water available for irrigation in 2005 and 2006, but more water available for irrigation in subsequent years. No testimony was offered to quantify this effect.

Sunding's primary position was that Kansas' overall approach in general was not a reasonable way within which to determine the value to Nebraska of the extra water that it used as a result of its breach. Rather, Sunding argues that it is more reasonable to ascertain the dollar

value of the water by looking at evidence, both direct and indirect, for prices effectively paid for access to water in Nebraska. It is to that evidence that this Report now turns.

2. Analysis of sale and lease transactions in Nebraska.

In 2006, Nebraska purchased roughly 23,000 acre-feet of water at an average cost of $154.25. (Ex. K116, at KS 001163; K82). Overall, between 2006 and 2008 (*i.e.*, including two years that were not years of Water-Short Administration), Nebraska spent $18,722,500.00 to purchase approximately 98,368 acre feet of water from surface water irrigation districts at an average cost of approximately $190 per acre-foot. (Dunnigan Direct, ¶ 26; N2001, at NE0500433). By ensuring that that water was not used to irrigate crops, Nebraska was able to reduce its annual consumptive balance during those years by 51,614 acre feet. (Ex. N2001, at NE0500433).[44] In short, it apparently spent approximately $362 per acre-foot of reduced Compact consumption.

No evidence of water purchases in Nebraska during 2005 was offered. Sunding's approach of inferring water values to the farmer from differential land values suggested a range of $31 to $41 per acre-foot in on-farm value on average. (Ex. N6003, at NE 0500728). A study done in August of 2006 by an economist at the University of Nebraska concluded that the "on-farm cost of reducing consumptive use . . . [was] estimated to average . . . $98 [per acre-foot] . . . ." (K1115, at KS001070). No witness explained this analysis or shed light on its provenance.

The evidence of these purchases appears ripe with potential for inferring the value of the water taken by Nebraska in violation of the Compact. A price of $362 per acre-foot of reduced

[44] Using an acre-foot of water to irrigate crops does not on average result in an acre-foot of consumption under Compact accounting because some of the water that is not taken up by the plants and does not evaporate returns to the river. Therefore, to reduce Compact consumption by a given amount, on average one would need to curtail use of surface water for irrigation by a greater amount.

Compact consumption times the total exceedance of 70,869 acre-feet would imply a total gain to Nebraska of over $25 million. The parties, however, presented little evidence concerning how the prices were negotiated, what collateral considerations might have been involved, or the like. The few contracts offered into evidence do not even align with the numbers cited in the testimony or the few pieces of correspondence offered. *See* Appendix G, § II. Furthermore, use of a single figure derived from transactions in 2006-2008 to cover 2005 as well may be unwarranted. Even Kansas' analysis suggests that water was worth much less in Nebraska in 2005 than in 2006. (Ex. K106, Table 30 (assigning a value of less than $25 million to the 42,860 acre-feet of water in 2005 as compared to over $37 million for the assumed 36,800 acre-feet in 2006)). None of the experts attempted to explain how and to what extent one might make such adjustments in order to use these transactions to calculate gain to Nebraska. However the evidence of these transactions might be used, though, it certainly suggests that Kansas' estimate is on the high side.

3. Conclusion: Nebraska likely gained very much more than Kansas lost.

The Court can confidently conclude that: an acre-foot of water allocated to Kansas under the Compact was likely worth substantially more per acre-foot on-farm in Nebraska than in Kansas; the amount of water used by Nebraska in excess of its allocation also substantially exceeded the volume of water, net of transit loss, that Kansas lost as a result of Nebraska's breach; and there is no reason to suspect that there were not substantial secondary economic benefits in Nebraska of increased harvests. Nebraska's gain was therefore very much larger than Kansas' gain, likely by more than several multiples. The evidence does not allow a more precise estimate than this. In light of the limited use I make of this evidence regarding Nebraska's gain, as described below, this additional precision is not necessary.

F. Calculation of an award

I conclude that the monetary award here should be in the amount of $5 million. This amount represents a full recovery of Kansas' loss, plus an additional amount of $1,700,000. That additional amount represents a disgorgement of what is likely a small portion of Nebraska's remaining gain. It also likely turns the actual recovery by Kansas, net of transaction costs, into an amount that approximates a full recovery for the harm suffered.

Beyond that, for two reasons the Court need not do more in this action.

First, Nebraska's substantial expenditures in 2006-2008 on water to mitigate its noncompliance were not the actions of a party callous to the downstream ramifications of its conduct. Rather, they were the actions of a state that recognized, albeit belatedly, a need to pay greater heed to its Compact obligations. But for these actions, it would be difficult not to order a more substantial disgorgement of any gain (perhaps after receiving further evidence to more precisely gauge that gain).

Second, Nebraska has presented a credible case that it began turning over a new leaf in 2007 and thereafter, planning for compliance with more care and urgency. This is the first judgment of breach against Nebraska under this Compact. Should Nebraska not manage to employ its new IMPs with the efficacy claimed, this Report (if accepted by the Court) should make clear that determination of the extent of disgorgement in an action for a breach occurring after 2007 will be made in the absence of one of the two reasons relied upon for not ordering a higher degree of disgorgement now. In this sense, recognition of the Court's equitable discretion and its flexibility in setting awards in a case such as this should itself serve many of the salutary purposes that Kansas has sought to further in seeking an award in excess of its loss.

G. No Injunctive Relief Is Justified.

The injunction Kansas seeks runs the gamut from an order enjoining further violations, to an order shutting down 302,000 acres of groundwater pumping, to the appointment of a so-called "River Master," and to the setting of "pre-set sanctions." For any form of injunction, the gist of the required showing is that the injunction is needed in order "to prevent future violations." *United States v. W.T. Grant Co.*, 345 U.S. 629, 633 (1953). "It goes without saying that an injunction is an equitable remedy. It 'is not a remedy which issues as of course.'" *Weinberger v. Romero-Barcelo*, 456 U.S 305, 311 (1982) (quoting *Harrisonville v. W.S. Dickey Clay Mfg. Co.*, 289 U.S. 334, 337-38 (1933)). "The historic injunctive process was designed to deter, not to punish." *Hecht v. Bowles*, 321 U.S. 321, at 329 (1944). Thus, "[a]n injunction should issue only where the intervention of a court of equity 'is essential in order effectually to protect property rights against injuries otherwise irremediable.'" *Romero-Barcelo*, 456 U.S. at 311 (quoting *Cavanaugh v. Looney*, 248 U.S. 453, 456 (1919)).

> According to well-established principles of equity, a plaintiff seeking a permanent injunction must satisfy a four-factor test before a court may grant such relief. A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.

eBay, Inc. v. MercExchange, LLC, 547 U.S. 388, at 391 (2006); *see Romero-Barcelo*, 456 U.S. at 633 ("The Court has repeatedly held that the basis for injunctive relief in the federal courts has always been irreparable injury and the inadequacy of legal remedies."); *Rondeau v. Mosinee Paper Corp.*, 422 U.S. 49, 59 (1975) (same). Further, while "the court's power to grant injunctive relief survives discontinuance of the illegal conduct," it is well established that "the moving party must satisfy the court that relief is needed. The necessary determination is that

there exists some cognizable danger of recurrent violation, something more than the mere possibility which serves to keep the case alive." *W.T. Grant Co.*, 345 U.S. at 633. *See Rondeau*, 422 U.S. at 59 (quoting *W.T. Grant Co.*, 345 U.S. at 633)).

In sum, "[u]nder general equity principles, an injunction issues only if there is a showing that the defendant has violated, or imminently will violate, some provision of statutory or common law, and that there is a 'cognizable danger of recurrent violation.'" *Madsen v. Women's Health Ctr., Inc.*, 512 U.S. 753, 756 n.3 (1994) (quoting *W.T. Grant Co.*, 345 U.S. at 633).[45]

As discussed in greater detail in Section VI.A.3, above, Kansas has not carried its burden of establishing a "cognizable danger of recurrent violation." On the whole, the record falls short of establishing that the current IMPs, if followed consciously, are not capable of ensuring Nebraska's compliance going forward. Kansas presents no effective response to Nebraska's modeling showing that the current IMPs would have resulted in annual consumption by Nebraska below its allocations even during 2002-2006. In turn, Kansas' own forward projections of how the IMPs will perform over time are built on incorrect assumptions, and identify no likely breach in its foreseeable future.

Kansas' best argument is its skepticism (born of experience) that Nebraska has the will to use the IMPs to ensure compliance. Not discounting that skepticism entirely, I nevertheless found Nebraska's officials who testified at the hearing credible and earnest in their expression of commitment to complying with the Compact.[46] On the other hand, Kansas is correct that the complexity of Nebraska's relevant governing structure and the absence of a statewide consensus

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[45] Kansas seeks to place the burden of disproving the need for injunctive relief on Nebraska, citing *W.T. Grant*, 345 U.S. at 633. That reliance is misplaced. *W.T. Grant* only places the burden of proving mootness on the defendant. *Id*. It simultaneously makes clear that the party seeking an injunction "must satisfy the court that relief is needed" by showing a "cognizable danger of recurrent violation." *Id*.

[46] Brian Dunnigan took over as Acting Director of the Nebraska Department of Natural Resources in March of 2008. (N3000 at 2 of 7).

among surface water users and groundwater pumpers pose substantial challenges to the continuous and effective enforcement of the IMPs.

Under the reasoning of this Report, Nebraska's incentive to extend its recent record of strong compliance should be increased by its knowledge that, in the event of a relapse after this date, Nebraska will have a difficult time parrying a request for disgorgement even in the absence of a deliberate breach. In this important respect, recognition of the Court's broad equitable discretion in fashioning a remedy reduces the need for a proscriptive injunction. It is not apparent that an order to comply with the Compact would add anything meaningful to the mix.

As for the more detailed aspects of the injunction Kansas seeks, the Court should require a much stronger showing of necessity before it begins deciding which wells need to be turned off, and when. Kansas' request for an injunction, at base, rests largely on an assumption that the Compact requires that use of surface water take precedence over use of groundwater. In this manner, the requested injunction would require Nebraska to achieve Compact compliance by reducing only groundwater pumping. Nothing in the Compact itself supports this assumed priority.

Even were injunctive relief otherwise warranted, Kansas' request for the appointment of a River Master would prove unsuccessful. The Court has "taken a distinctly jaundiced view of appointing an agent or functionary to implement [its] decrees." *Texas*, 482 U.S. at 134. *See Vermont v. New York*, 417 U.S. 270, 275 (1974) ("[I]t is a rare case where we have appointed a Water Master."). The Court has only appointed River Masters "twice before . . . and only because it was convinced that such an appointment would significantly aid resolution of further disputes." *Kansas v. Colorado*, 543 U.S. 86, 92 (2004). The Court has done so only when there is little prospect that the States will be able to cooperate, *Texas*, 482 U.S. at 134, and only if the

River Master's duties are largely ministerial, *see Vermont*, 417 U.S. at 275 (discussing *New Jersey v. New York*, 347 U.S. 995 (1954)).

There is little doubt that Kansas' proposal for a River Master runs afoul of this precedent. Kansas has requested that the River Master be empowered "to review decisions of the Nebraska Department of Natural Resources with respect to the need for and sufficiency of actions proposed ruing [sic] 'Compact Call Years' and to oversee and ensure the implementation of such actions." Kansas Post-Trial Brief (Corrected), at 75, *Kansas v. Nebraska*, No. 126 Orig. (Sep. 25, 2012). Kansas' witness David Barfield testified that the River Master should "be independent of the RRCA," and should be charged with the authority to "review, evaluate, . . . and approve Nebraska's compliance plans during times of inadequate supply." (Tr. at 475-76 (Barfield); *see* Barfield Direct, at 64 (stating that the River Master should "determin[e] when conditions warrant additional actions . . . by Nebraska" and "evaluate[e] the sufficiency of Nebraska's actions")).

It is true that, in the Pecos River litigation, the Court appointed a River Master where the "apportionment formula [wa]s not entirely mechanical and involve[d] a degree of judgment," *Texas*, 482 U.S. at 134; however, in that case, the River Master's discretion was sharply circumscribed, *see Kansas*, 543 U.S. at 93 (noting that, in *Texas*, the disputes that would be resolved by the River Master would "often prove capable of mechanical resolution and would usually involve marginal calculation adjustments"). Most recently, in *Kansas v. Colorado*, the Court declined to grant Kansas' request for a River Master because "further disputes in . . . the case, while technical, may well require discretionary, policy-oriented decision making directly and importantly related to the underlying legal issues." 543 U.S. at 93. The same reasoning applies here.

CONCLUSION

While the extent of Nebraska's breach is subject to the debates addressed in this Report, this action most importantly concerns the subject of remedy. This Report recommends a measured use of the Court's equitable tools in a manner that accounts for the variety of interests implicated in a compact allocating interstate waters, that conforms accounting formulae to the States' shared intentions, that makes Kansas fully whole, that provides adequate incentive for avoiding further breaches, and that at the same time avoids either overshooting the mark or entangling the Court in ongoing supervision of the parties' efforts. In so doing, the issuance of this Report also hopefully provides an occasion on which the States can resolve to proceed forward with greater consensus based on the knowledge that their interests in administering the waters of the Basin will be more aligned.

RECOMMENDATIONS

For the foregoing reasons, I recommend that the Court rule that:

1. The RRCA Accounting Procedures contain a technical mistake that should be corrected for Compact accounting years after 2006 so that Nebraska is not charged with the consumption of Imported Water Supply as if it were Virgin Water Supply. The specific terms of the technical correction should be established by subsequent order.

2. One hundred percent of the evaporation from Harlan County Lake during 2006 as calculated under the RRCA Accounting Procedures should be charged to Kansas.

3. One hundred percent of the evaporation from Non-Federal Reservoirs in Nebraska as calculated under the RRCA Accounting Procedures should be charged to Nebraska.

4. Nebraska's liability for its failure to satisfy the two-year running average compliance test in 2006 should be measured by the entire amount by which it exceeded its annual Compact allocations in 2005 and 2006, combined.

5. Kansas' request that Nebraska be found in contempt should be denied.

6. On account of Nebraska's breach of the 1943 Republican River Compact in failing to meet the 2006 compliance test, judgment should be entered against Nebraska and in favor of Kansas in the amount of $5 million.

7. All remaining requests for relief, including Kansas' requests for injunctive relief, sanctions, and appointment of a River Master, should be denied.

Dated: DRAFT DISTRIBUTED ON 01/09/13

- DRAFT -
William J. Kayatta, Jr.
Special Master

Pierce Atwood LLP
Merrill's Wharf
254 Commercial Street
Portland, ME 04101
Tel: (207) 791-1100
Fax: (207) 791-1350
Email: wkayatta@pierceatwood.com