No. 105, ORIGINAL

In The
Supreme Court of the United States

STATE OF KANSAS,

Plaintiff,

v.

STATE OF COLORADO,

Defendant,

and

UNITED STATES OF AMERICA,

Defendant-Intervenor.

ARTHUR L. LITTLEWORTH, Special Master

FIFTH AND FINAL REPORT

VOLUME I

January 2008

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SECTION I

A. Introduction.

This is the Fifth and Final Report in this case, which includes a proposed Judgment and Decree that is crafted with the firm intent to end the 100 year history of litigation over rights to the Arkansas River. See *Kansas v. Colorado*, 185 U.S. 125 (1902), 206 U.S. 46 (1907); *Colorado v. Kansas*, 320 U.S. 383 (1943); and Kan. Exh. 129, Vol. 1 at 31-38, describing numerous actions between Kansas and Colorado water users.

The last segment of the trial was concluded in January 2003 when both States rested their respective cases. After briefing, my Fourth Report on that trial segment was filed with the Court in November 2003. One of the principal issues was whether the results of the H-I model should be used annually or over a longer period of time in order to determine compact compliance. I recommended the use of a ten-year accounting period after concluding that the H-I model was not sufficiently accurate to be used on a short term basis. The Court overruled Kansas' exception to the ten-year accounting methodology. *Kansas v. Colorado,* 543 U.S. 86, 103 (2004). Colorado's Use Rules became fully effective in 1997, and so the first ten years of model results were not to be available until 2007 – long after the Court's Opinion. Accordingly, the Court agreed to keep jurisdiction until the accounting, together with certain other issues, could be determined.

There were additional reasons why a Decree could not be entered immediately after the conclusion of the trial in 2003. The States were waiting for the results of Phase 2 of the U.S. Geological Survey study on measuring groundwater pumping in Colorado, which was not scheduled for release until 2005. Colorado had agreed to amend its Measurement Rules, if necessary, to comply with the recommendations of that study, and indeed changes were later made. Colorado's irrigated acreage study also had not been completed by the end of the trial. The H-I model is sensitive not only to the amount of well pumping but also to the number and location of wells, to the number of wells which are active, and to the use and distribution of groundwater and surface water. To get more accurate data on wells and irrigated acreage, Colorado in 1998 began a comprehensive study using satellite imagery, verified by field investigations. By the end of the trial, Colorado had completed its verification on only 426 of a total of 725 farm units. The process was not scheduled for completion until later in 2003.

Lastly, the Colorado Water Replacement Plans include credits for the "dry-up" of lands historically irrigated with surface flows. Some of these water rights transfers were before the Colorado Water Court, in accordance with Colorado law, at the conclusion of the trial. Specifically, the methodologies for determining the amounts of certain consumptive use credits were at issue in those Water Court proceedings. I recommended in my Fourth Report that the

final judgment of the Water Court should be used to determine the amounts of credits allowed in the Replacement Plans and applied toward compact compliance, subject to Kansas' right to challenge these determinations under the Court's original jurisdiction. Kansas objected but its exception to this recommendation was overruled. 543 U.S. at 104 (2004). The Water Court decree was issued in March 2007, and the results were consistent with the amounts of replacement water provided by Colorado in the ten-year accounting.

B. Award of Damages.

Following my recommendations on damages, and the Court's rulings on exceptions, the States agreed to an award of damages in the sum of $34,615,146 arising from total depletions of usable Stateline flow of 428,005 acre-feet for the period of 1950-96. See Third Report (2000). This amount was paid in full on April 29, 2005. Any future depletions, beginning in 1997, as determined by the ten-year accounting process, will be satisfied by deliveries of replacement water rather than by payment of money damages.

C. Results of the First Ten-Year Accounting.

In its December 7, 2004 Opinion on my Fourth Report, the Court approved the use of 10 years of measurement by the H-I model in order to determine the amounts of any future depletions. 543 U.S. at 103. The original ten-year period began with 1997

when Colorado's Use Rules became fully effective, and ended with calendar year 2006. Under the approved accounting procedure, a determination of whether Colorado would owe Kansas water in year 11 (i.e., 2007) is made by taking the model's total results for years 1-10. For year 12, the determination will be made by using the model results for years 2-11, and so forth. After the initial ten-year period, any shortfalls are required to be made up in the following calendar year in accord with Appendix A of the proposed Judgment and Decree. Remedies for any violation of the Court's Decree would, of course, be determined by the Court.

The accounting for the initial ten-year period has now been completed, and shows that no shortfall exists in the year 2007. Indeed, the compact compliance accounting shows accretions at the end of 2006 in the amount of 3,882 acre-feet. These accretions are not based on a net accretion for the first year of the initial ten-year accounting period (1997), and will be taken into account in the accounting for 2008. Thus, the replacement water required for any shortfall is now provided on an annual basis, based on the prior ten-year compliance accounting.

D. Award of Costs.

I found that Kansas was the prevailing party on the principal issue in the case, namely postcompact well pumping, and was therefore entitled to costs under Rule 54(d)(1) of the Federal Rules of Civil

Procedure. The amount of costs, however, is a more complicated issue which is discussed in my Order of December 19, 2005, included as Exhibit 6 in the Appendix. An additional Order addresses another cost issue, concluding that expert witness fees are limited by the provisions of 28 U.S.C. § 1821(b). Exhibit 7 in the Appendix. Based on these two Orders, the States agreed that Kansas was entitled to an award of costs from Colorado in the sum of $1,109,946.73. These costs were paid in full on June 29, 2006. The agreement is subject, however, to the right of either State to take exception to the legal conclusions included in my cost Orders, included as Appendix Exhibits 6 and 7.

The United States and Kansas have also entered into a Stipulation on costs, which has been approved by me. The Stipulation, which was made by way of compromise and final settlement of disputed claims and issues, calls for Kansas to pay the sum of $100,000 to the United States, contingent upon obtaining an appropriation of funds from the Kansas legislature.

SECTION II

HISTORY OF THE LITIGATION

A. Arkansas River Compact.

The Arkansas River Compact was the outgrowth of 1945 Federal legislation authorizing the States to negotiate a compact "providing for an equitable division and apportionment . . . of the waters of the

Arkansas River and all of its tributaries." Pub. L. No. 79-34, 59 Stat 53; Exh. 3 at 1-4. After three years of negotiations, the compact commissioners came to agreement on December 14, 1948. The compact became effective after being ratified by the Legislature of each State, signed by the respective governors, approved by the Congress, and signed by the President, thereby becoming a law of the United States. 63 Stat. 145. Faithful to its authorizing legislation, the compact states that a major purpose is to "[e]quitably divide and apportion" the waters of the Arkansas River, as well as the benefits arising from construction of the new John Martin Reservoir Project. Art. I-B. The other stated purpose of the compact was to settle existing disputes and "remove causes of future controversy" between the States and their users.

While prior negotiations had sometimes proposed to allocate Kansas' share of the river in specific acre-foot amounts, or as a percentage of river flows, the compact did neither. From the trial research performed by Kansas' expert historian witness, however, it is clear that the compact was intended essentially to maintain the status quo as it related to diversions by the ditch companies in both States, and to the acreage irrigated by them. See First Report 107 (1994). The compact was not expected to deprive users of existing supplies, but neither was it intended to allow new lands to be brought under irrigation. The need for additional water was to be met by sharing the flood waters conserved in John Martin Reservoir that otherwise would have been lost.

Art. IV-D provides the basic protection to the users in Kansas, and preserves the usable flows that were available to Kansas at the time of the compact. It states:

> This Compact is not intended to impede or prevent future beneficial development of the Arkansas River basin in Colorado and Kansas by Federal or State agencies, by private enterprise, or by combinations thereof, which may involve construction of dams, reservoir, and other works, for the purposes of water utilization and control, as well as the improved or prolonged functioning of existing works: *Provided, that the waters of the Arkansas River, as defined in Article III, shall not be materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas under this Compact by such development or construction.* (Italics added.)

The primary issue in the trial of this case was whether new wells and groundwater pumping after the effective date of the Compact violated the provisions of Art. IV-D of the compact, and if so, to what extent. That is, what was the shortage in usable Stateline flows caused by such postcompact well pumping? There was no effort by Kansas to limit surface diversions by the 20 or so canal companies in Colorado.

B. Pleadings in the Action.

Kansas filed a motion for leave to file its complaint on December 16, 1985. The State of Colorado was named as the sole defendant. Kansas alleged that postcompact wells along the Arkansas River pumped approximately 150,000 acre-feet annually, and were causing material depletions to the usable Stateline flows in violation of Art. IV-D of the compact. Kansas also alleged compact violations arising from the winter storage of native flows in Pueblo Reservoir (Winter Water Storage Program), and from the operation of Trinidad Reservoir located on the Purgatoire River, a main tributary of the Arkansas River. Kansas' motion for leave to file a bill of complaint was granted by this Court on March 24, 1986. 475 U.S. 1079. Colorado's answer denied the allegations of compact violations, and asserted two counterclaims: (1) that Kansas had stored water released from John Martin Reservoir in violation of the compact; and (2) that wells in Kansas had depleted the supply of surface water available to Kansas users, and had thus caused Kansas to make additional demands for releases of water stored in John Martin Reservoir, to the detriment of Colorado users. In 1989, the Kansas complaint was amended by adding a claim for money damages, following the Supreme Court decision in *Texas v. New Mexico*, 482 U.S. 124 (1987).

Since the United States owned and operated both Pueblo and Trinidad Reservoirs, the United States, by stipulation, intervened in 1989.

C. The Liability Segment of the Trial.

The trial was bifurcated into liability and remedy phases. The case was tried in the Federal Court of Appeals Courthouse in Pasadena, California. The liability phase of the trial commenced on September 17, 1990 and was completed on December 16, 1992, after a long recess occasioned by the illness of Kansas' chief expert witness. The major issues during the liability phase were: (1) whether the increase in groundwater pumping in Colorado since adoption of the compact had violated Article IV-D; (2) whether Colorado had violated the compact through implementation of the Winter Water Storage Program; and (3) whether the operation of Trinidad Reservoir had also violated the compact. At the conclusion of Kansas' direct case, I dismissed its Trinidad Reservoir claim.

Prior to 1965, the evidence showed that Colorado had no administrative system for the regulation of groundwater pumping. Wells could be constructed and operated without regard to their impact on surface water users. This was not an issue during the negotiation of the compact since few wells then existed. Irrigation occurred primarily by surface diversions from the river. Ultimately the amount of precompact pumping was found to be 15,000 acre-feet per year. However, with certain improvements in technology, the number of wells and the amount of pumping began to increase rapidly beginning in the early 1950s. Colorado's evidence showed that pumping in 1964 had increased to 203,925 acre-feet, and

the Kansas evidence showed an even greater increase. Colorado Exh. 165*, Table A-1.

There was no dispute over the fact that Stateline flows had decreased substantially over the years. A report compiled during the compact negotiations showed that Stateline flows averaged 280,800 acre-feet annually over the period 1908-42. Jt. Exh. 5, Table D at 16. A settlement plan proposed by the Chief Engineer of the Colorado Water Conservation Board showed average Stateline flows of 260,700 acre-feet per year for the period 1908-38. For the later period of 1950-85, however, Stateline flows averaged only 144,051 acre-feet per year. Colorado Exh. 4*, Table 5.8; Colorado Exh. 730. The basic issue was the extent to which postcompact well pumping in Colorado had caused the decline. Both States sought to show this through computer modeling. Each State developed its own model, but using different approaches that made direct comparisons of model results impossible. However, each model was designed to show what the Stateline flows would have been in the absence of postcompact well pumping.

Accurate modeling by both States was difficult because Colorado had no reliable records in the early years of the amount of groundwater actually pumped. Both States had to recreate those data on the basis of electrical power records, and even those were not complete since some pumping was done from gas-fired wells without any records at all.

While the specific amount of the shortage was not determined during the liability phase, I found that the increase in groundwater pumping in Colorado had caused serious depletions to usable Stateline flows in violation of Article IV-D of the compact. See First Report (1994). Exceptions to this finding and recommendation were overruled by the Court. 514 U.S. 673 (1995).

As part of the liability phase, the two counterclaims by Colorado were dismissed. I also found that Kansas had not proved that the Winter Water Storage Program had caused material Stateline depletions. Kansas' exception to this finding was also overruled. *Id.* The United States' evidence had centered on the Winter Water Storage Program, and having prevailed on the issue, the United States ceased to take an active role in the case, except during later arguments before the Court.

D. Quantifying the Shortage.

The initial modeling by both States covered the period from 1950, the first year after the compact became effective, to 1985 when Kansas sought leave to file its Complaint. While the results of the States' separate modeling efforts were substantially different, the States came to a compromise agreement on depletions to usable Stateline flow for the period 1950-85. The stipulated shortage for the total period was 328,505 acre-feet. At the same time, Colorado agreed that it would no longer use its own model, and

in the future would proceed on the basis of the Kansas H-I model.

The next trial segment concerned quantifying depletions for the additional period of 1986-94, and evidence on the status of Colorado's program to regulate well pumping in order to comply with the compact. Trial of that segment commenced on March 25, 1996. I found that depletions to usable Stateline flow for the period 1986-94 amounted to 91,565 acre-feet. See Second Report (1997). This amount was also confirmed by the Court. 522 U.S. 1073 (1998). The States later agreed upon the depletions for the period 1995-96 in the amount of 7,935 acre-feet. Thus, total depletions of usable Stateline flows from 1950 through 1996 amounted to 428,005 acre-feet.

E. Colorado's Compact Compliance Programs.

Following the Court's May 15, 1995 Opinion on liability, Kansas moved to enjoin the State of Colorado from pumping more than 15,000 acre-feet annually [i.e., the amount of allowable precompact pumping] from wells along the Arkansas River, unless depletions to usable Stateline flow were replaced. That motion was denied, but I ordered Colorado on August 11, 1995 to prepare a detailed report on the actions being taken to comply with the compact. The initial report was presented in September 1995, with two later addendums in February and July of 1996. As I indicated in my Second Report, Colorado's efforts were impressive, although Kansas expressed some

concerns over whether the program, in fact, would prevent further Stateline depletions. Some improvements have since been made in this initial program.

Colorado's compliance program is built around two sets of rules promulgated by the State Engineer in accordance with the State's administrative procedures, and finally approved by the courts. These are the "Measurement Rules," adopted in 1994, and the "Use Rules" which were published in September 1995, and ordered by Judge Anderson, the Water Judge for Water Division 2, to become effective on June 1, 1996. The essence of the Use Rules is to completely prohibit postcompact pumping (with the exception of the 15,000 acre-feet precompact allowance) unless replacement water is provided to offset depletions of usable Stateline flows.

The rules provide that depletions to usable Stateline flow are to be determined through the use of the H-I model, and the usable flow methodology and the coefficients recommended by the Kansas experts. The rules establish certain "presumptive stream depletions" which are used on a current basis to determine the need for replacement water, although the ultimate accounting for compliance is determined by the H-I model results. For wells that provide a supplemental supply for flood and furrow surface water irrigation, 30% of the amount pumped is presumed to be the depletion to the stream. For wells that are the sole source of supply for irrigation, the percentage is 50. And for sole source sprinkler irrigation systems, the presumptive stream depletion is

75% of the amount pumped. Kansas has always expressed concerns about whether these presumptive depletion amounts are adequate, but concluded finally that overall changes to these percentages are not the most effective way to provide the amount of replacement water required.

Adequate amounts of replacement water are currently available. Such water is provided either by the purchase of canal company surface diversion rights, and the drying up of certain amounts of land, or from transmountain water that is imported from the west side of the Rockies. Replacement water for most farmers is provided through one of three large associations. These associations undertake the responsibility for the preparation of augmentation (replacement) plans, and the acquisition of replacement water and water rights. These organizations are the Colorado Water Protective & Development Association (CWPDA); the Arkansas Groundwater Users Association (AGUA), which largely represents water users upstream of John Martin Reservoir; and the Lower Arkansas Water Management Association (LAWMA), which includes wells located between John Martin Reservoir and the Stateline.

Implementation of the rules begins with each association soliciting its members in the fall of the year for an estimate of the following year's irrigation demands. The amount of replacement water is determined on the basis of the presumptive depletions associated with such projected pumping. If sufficient replacement water does not appear to be available,

the association will reduce pumping estimates on an equal percentage basis. The augmentation plan for replacement water is then prepared and submitted to the State Engineer for approval. Depletions are estimated on a monthly basis, together with the required amounts of replacement water.

Colorado's Measurement Rules are designed to determine the amount of well pumping along the Arkansas River. Under the rules, all wells must be equipped with either a totalizing flow meter, or be rated to determine a power coefficient. The power coefficient, or PCC, is the number of kilowatt hours required to pump one acre foot of water. State law now requires the power companies to transmit the records of energy used to pump groundwater directly to the State Engineer. A pump test must be made on each well to determine the appropriate power coefficient. At the time of my Fourth Report, about 25% of the pumping was measured through meters, with the balance being determined through the PCC method. Kansas has always maintained that the PCC method is not sufficiently accurate, and that the Measurement Rules should be amended to require the installation of totalizing flow meters on all wells. In order to deal with Kansas' concerns, the Colorado State Engineer asked the United States Geological Survey to study the issue. After such study, the USGS concluded that there was "no significant difference on average" between pumping measured by meters and pumping computed by the PCC approach. Fourth Report at 36. However, Kansas raised significant

objections to the study, and the Colorado State Engineer agreed to a Phase 2 of the USGS study, and to abide by the results. That study has now been completed, and the Measurement Rules have been adjusted accordingly. I concluded in my Fourth Report that it was not necessary to require the installation of totalizing flow meters on all of the wells within the H-I model domain.

F. Damages.

The third trial segment on the form and amount of Colorado repayment for compact violations began on November 8, 1999, and was concluded on January 28, 2000. In *Texas v. New Mexico*, 428 U.S. 124 (1987), the Court had ruled that a suitable remedy for violation of the Pecos River Compact could be either in terms of water or money. During this segment of the trial, evidence was thus taken on both a program to repay the shortage in water, and to compensate for the shortage in money damages. It was easily apparent, however, that repaying a water shortage of 428,005 acre-feet, while simultaneously meeting current replacement water obligations, had many problems. I concluded, in my Third Report, that "the successful implementation of the water repayment program is too uncertain to be relied upon in a judgment," and that Kansas should be compensated for its past losses by monetary damages. Third Report at 118.

The award of money damages involved several major legal questions. First, Kansas argued that the measure of damages should be based upon the gains to Colorado farmers resulting from the use of Kansas' entitlement, rather than upon the injuries suffered by Kansas from depletions of usable Stateline flow. I ruled that damages should be based on Kansas' loss rather than upon any gain by Colorado, and the damage segment of the case was tried on the basis of this ruling. The analysis of this issue appears in Exhibit 1 to the Appendix of my Third Report.

Secondly, Colorado argued that the Eleventh Amendment to the United States Constitution precluded any recovery based upon losses sustained by individual water users in Kansas. That Amendment provides:

> "The Judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by Citizens of another State, or by Citizens or Subjects of any Foreign State."

In an extensive opinion, included as Exhibit 3 to the Appendix of my Third Report, I ruled that this Amendment did not preclude an award of damages to Kansas from including or being based upon injuries to its water users by virtue of the compact violations.

Finally, Colorado raised the issue of whether prejudgment interest could be awarded as a matter of law on the unliquidated Kansas claims in this case, or should be awarded based upon the law and facts of

the case. I ruled that prejudgment interest was allowable, and should accrue from 1969 when Colorado knew, or should have known, that postcompact wells were causing material depletions of usable Stateline flows. That opinion is included as Exhibit 4 to the Appendix of my Third Report.

All of these three major rulings on matters of law were affirmed by the Court, except that the Court changed the date for the accrual of prejudgment interest from 1969 to 1985 when the complaint was filed. 533 U.S. 1 (2001).

To my knowledge, this is the first time that money damages have been tried and awarded between states in a case of this kind. The methodology used to determine damages is of great interest. Kansas calculated its damages in four separate categories, and then totaled the amounts. The first category related to farmers in Kansas who had their own wells, and were supplied with both surface flow from the Arkansas River and well water. The Kansas experts assumed that the wells would have been used to replace surface water depletions. Damages for that group of farmers were therefore calculated on the basis of increased pumping costs. Such costs included not only operation and maintenance costs, but also depreciation on capital investments. An adjustment was also made for federal income taxes. The economists reasoned that if such well owners had not been required to incur increased costs to pump groundwater, they would have realized additional net farm income. However, this additional income would have

been subject to federal income taxes, and the damage claim was reduced by the amount of taxes that would have been paid.

The second category of injury to Kansas resulted from a regional decline in groundwater levels. About 790,000 acres were affected, outside of the area irrigated by diversions from the Arkansas River. Water levels in the region dropped because of increased pumping along the Arkansas River, and by the loss of recharge from river flows. The increased costs of pumping from this area were estimated not only for the past, but also for the next 50 years, discounted for the future at a 3% rate.

The largest component of the Kansas damage claim was based upon the loss of farm income due to surface water depletions. This category included those farmers who had no access to groundwater, had no wells, and relied only on surface diversions from the Arkansas River. This methodology was highly technical, and was strongly controverted by Colorado experts. However, I found that the Kansas analysis was a reasonable method of estimating the reduction in crop yields, and the loss of farm income due to such depletions.

The last element of the Kansas damage claim included secondary or indirect losses to the economy of the State as a whole. These damages resulted from the direct impact of crop losses and increased pumping costs within the ditch service areas, and additional regional pumping costs caused by lower groundwater

levels. While this element was also controversial, I found that the weight of the evidence supported the Kansas claim for secondary economic damages.

The Kansas approach to calculating damages was confirmed by the Court in its opinion on my Third Report. 533 U.S. 1 (2001). Thereafter, the States agreed upon an award of damages and prejudgment interest, including the required adjustment for inflation, in the amount of $34,615,146, which amount has been paid.

G. Assuring Compact Compliance in the Future.

The last segment of the trial began on June 24, 2002, and was completed on January 17, 2003. A number of subjects were addressed: the current implementation of the Use Rules, and the various Replacement Plans; model results for 1997-99; application of Colorado's Measurement Rules to determine the amount of groundwater pumping and the USGS study; results of Colorado's irrigated acreage study; and changes in the H-I model to better determine crop consumptive use of water. See Fourth Report (2003). All of these subjects for the most part related to future use of the H-I model and determination of compact compliance. However, the most important issues were: (1) whether the results of the H-I model should be used on an annual basis, or over a longer period of time, to determine Stateline depletions or accretions; and (2) whether a River Master should be appointed to oversee compact compliance.

Modeling the 150-mile reach of the Arkansas River in Colorado is extraordinarily difficult. Yet all of the experts testified that the use of a computer model is the only way to reasonably estimate what the river flows would have been in the absence of postcompact pumping. The accuracy of the H-I model has been consistently improved over the years, that is, in its ability to replicate historic and measured criteria. However, the model still had a tendency to over-predict depletions in wet years, and to under-predict in dry years. Fourth Report at 112. Kansas always maintained that the model was sufficiently reliable to determine depletions on an annual basis, but ultimately I found against the Kansas position. Instead, I recommended that H-I model results over a ten-year period be used in order to smooth out the annual variations. The evidence showed that the longer the period of time, the greater was the ability of the model to match historic diversions and other criteria of reliability. The Court overruled Kansas' exception to the ten-year approach. 543 U.S. at 103 (2004). The initial ten-year period, namely 1997-2006, has now been completed, and the H-I model results and compact compliance accounting show no shortfall in usable Stateline flow. Colorado is now in compliance with its compact obligations.

Kansas sought to have the Court appoint a River Master in order to enforce the Court's judgment in the future, following the precedent of the Pecos River case. *Texas v. New Mexico*, 482 U.S. 124 (1987). However, the River Master for the Pecos was appointed

only to make the calculations required by the decree, and in accord with a manual admitted into evidence. The disputes that may arise in the future on the Arkansas River are not likely to be simply ministerial. Past disputes between Kansas and Colorado have not been over collection of basic data, but rather on model issues like updating the model, model coding, representing the dry-up of new lands in the model, and calibration. I concluded that to give a River Master sufficiently broad authority to decide these modeling issues would simply make it easier to continue this litigation. I recommended against the appointment, and suggested other dispute resolution approaches. The Court agreed, noting that the installation of a River Master was a "rare case," and not appropriate here. 543 U.S. at 92 (2004). It should be noted that the proposed Judgment and Decree now does include a dispute resolution and an arbitration procedure for any future disputes. Appendix H to the Decree.

SECTION III

RESOLUTION OF ISSUES REMAINING AFTER THE COURT'S DECEMBER 7, 2004 OPINION. (543 U.S. 86)

A. Identification of Issues.

After the Court's Opinion on my Fourth Report, the States identified approximately 29 issues that still needed to be resolved in order to draft a complete and effective Judgment and Decree. Those issues are

set out in Exhibit 2 of the Appendix. Some of those issues (5-9 and 13(b)) were later withdrawn and the States agreed that these matters would not be addressed before entry of the Decree. However, most of the issues were either settled by agreement between the States, or by specific Orders, and one issue was sent to arbitration. The resolution of all of these issues, whether by agreement, by order, or by arbitration, have now been included in the proposed Judgment and Decree.

B. Arbitration.

The arbitration issue concerned the question of whether any adjustment to the H-I model was necessary in order to reasonably and fairly represent the Graham water right in the model. The arbitrator was Roger K. Patterson, a former Regional Director of the federal Bureau of Reclamation, and now the Assistant General Manager of The Metropolitan Water District of Southern California. The arbitration hearing lasted three days and, after briefing, the arbitrator ruled that 1286 acre-feet per year should be added to the observed diversion of the X-Y Canal for the years 1977-1994. Both States accepted the decision of the arbitrator.

C. Agreements.

Many of the issues settled by agreement involved extremely technical and complex matters. It is to the credit of the respective engineers and experts of the

States that so much agreement was reached. The personal involvement of David Pope, Chief Engineer of Kansas, and Hal Simpson, State Engineer of Colorado, deserve special acknowledgement. Prior to a status conference on September 30, 2005, these two leaders met for two days and reached breakthrough agreements on a number of vexatious issues. This series of agreements were signed at the Mission Inn in Riverside where the parties stayed the night before the status conference, and became known as the "Mission Inn Agreements." Later, the two officials held another summit meeting and concluded another final series of agreements. Both of these men testified several times throughout these long proceedings, representing the views of their respective States with distinction, and providing reliable help to the Court. Both of these public officials have now retired, hopefully with a sense of a job well done. All of the agreements reached between the States on the outstanding issues have been included, in the appropriate places, in the various appendices to the proposed Judgment and Decree.

As this lengthy case nears its conclusion, there also needs to be recognition of the excellent lawyers and their contributions. They were skillful, thorough, fair, and strong advocates but always with civility. Both teams of lawyers honored the legal profession, and I am sure that they had a strong hand in reaching the many agreements that have helped to make this lengthy process manageable.

D. Issues Ruled Upon.

The issues on which the States could not agree were determined by me in a series of separate orders. All of these orders have been included as Exhibits 1 through 19 in the Appendix to this Fifth and Final Report. The proposed Judgment and Decree has been drafted upon the basis of these Orders, and the States have reserved the right to take exceptions to these Orders and to the resulting provisions of the proposed Judgment and Decree. Most of these Orders deal with factual and technical issues that were decided on the basis of the trial record in this case, and on briefs by the States. However, the two orders relating to an award of costs involve certain legal issues.

E. Proposed Judgment and Decree.

This Report includes a proposed Judgment and Decree which is printed in separate Volumes II and III. The proposed Judgment and Decree includes a number of Appendices, A to M, that chart the way in which compact compliance will be measured and assured in the future. The proposed Judgment and Decree, and all of the Appendices except Appendix C.1, appear in Volume II. Appendix C.1 includes a lengthy documentation of the H-I model. It is printed separately in Volume III because of its length, and because it also may have use separate from this case.

The States have jointly proposed that the Court retain jurisdiction for a limited period of time. That provision is included in Section IV.A and IV.B of the

proposed Judgment and Decree, and carries my recommendation for adoption. The first ten-year accounting period was completed in 2007. The proposed Decree provision would allow an additional year, to December 31, 2008, in which to assure that the implementation of Colorado's Use Rules will continue to achieve compact compliance. In addition, the various agreements and orders included in the Decree will only be fully tested in 2008.

SECTION IV

RECOMMENDATIONS

The trial of this case having been concluded, and the issues remaining after the trial having been determined by agreement, arbitration, or the Orders included as Exhibits in the Appendix to this Fifth and Final Report, I respectfully recommend:

1. That the Orders included as Exhibits 1 through 19 in the Appendix be approved.

2. The entry of the proposed Judgment and Decree, printed separately as Volumes II and III of this Fifth and Final Report.

Respectfully submitted,

ARTHUR L. LITTLEWORTH
Special Master

Date: January 31, 2008

APPENDIX EXHIBITS TO FIFTH REPORT

APPENDIX – Exhibit 1

ORDER FOLLOWING STATUS
CONFERENCE OF FEBRUARY 4, 2005

Order dated 4/19/2005

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER FOLLOWING STATUS CONFERENCE OF FEBRUARY 4, 2005

On December 7, 2004, the Supreme Court issued its Opinion on the exceptions filed by Kansas to my Fourth Report. Neither Colorado nor the United States filed exceptions. The Supreme Court overruled all of Kansas' exceptions, and adopted all of the recommendations in that Fourth Report. The case was remanded for preparation of a decree consistent with the Court's Opinion.

On February 4, 2005, a status conference was held, with the agreement of counsel, in the United States District Court in Santa Fe, New Mexico. The conference was reported in Volume 271 of the Reporter's Transcript. Prior to the status conference, counsel submitted a joint letter setting forth the issues that still remained in the case. The status

conference identified more specifically the issues that needed to be resolved in order to enter a decree, and the way in which such issues would be addressed. It was agreed generally that the respective experts for the States would engage in a series of meetings in efforts to determine the technical issues, and that any disagreements would be subject to arbitration. On the issue of damages, counsel stated that they expected to reach agreement on the calculation of damages, and that by March 31, 2005, Kansas would submit a proposal to Colorado on costs. They stated that no claim would be made for attorney fees. At the conclusion of the status conference, it was agreed that the States would present a joint time schedule for resolving the remaining issues, and this was done by letter dated March 11, 2005.

The joint scheduling letter outlines approximately 25 issues that remain to be decided, including the final calculation of damages and costs. The majority of the matters relate to technical modeling issues. An initial meeting date for the experts, and a time for completion, was given for each separate issue. The completion times range generally between one and six months, and presuppose that agreements will be reached. The completion times do not include any additional time required for arbitration. Counsel reported that there were also three legal issues on which they had some disagreement: the scope of the decree, model documentation, and the model results for 1997-2004. These matters were then briefed by the States in letters dated March 21 and March 30.

Later, Kansas recommended that the discussions between and among experts and counsel should be considered as compromise discussions under Federal Rule 408, and therefore not admissible in any later arbitration or other proceeding. Kansas expressed the belief that treating the efforts among experts as settlement discussions would facilitate the resolution of the outstanding issues. Colorado disagreed, arguing that the contemplated discussions among experts were not "compromise negotiations" under Rule 408, but rather Court-ordered efforts to try to reach agreement on certain remaining issues. It was the Colorado view that we need to establish a "new process" that places greater responsibility upon the experts to discuss and resolve issues.

All of these issues were further discussed with counsel in a lengthy telephone conference on April 12, 2005.

ACCORDINGLY, IT IS HEREBY ORDERED:

1. The program for discussions among experts in an effort to resolve the outstanding technical issues, and the scheduling therefor, are hereby approved, subject to the overriding condition that all such issues will be resolved by agreement by September 12, 2005, or submitted for arbitration. This Order includes all changes in the H-I model that were approved in my Fourth Report; all issues identified in the March 11, 2005 letter that are necessary to update the H-I model; data input for the years 1997 through 2004; and calibration of the model.

2. Discussions among experts in an effort to reach agreement on the outstanding issues should not be considered as compromise negotiations, pursuant to Federal Rule 408. The goal of these discussions is to arrive at the best professional and technical answers, not simply at compromises. Both States have an interest in developing the H-I model so as to achieve the most reliable results possible. The experts need to approach these discussions as advocates of the highest professional standards, and not simply as spokesmen for the interests of either State. If good faith discussions do not produce agreements, then the remaining issues will be decided by arbitration. This is not to say that true offers of compromise cannot be made in this process. If such offers are made, they need to be clearly identified as offers of compromise, and they will then be treated with the protection allowed by the law.

3. Counsel are hereby directed to develop appropriate procedures for such arbitration, and if possible, to develop a panel of experts that may be called upon as arbitrators. This task is also to be completed by September 12, 2005. If there are disagreements about the arbitration procedures, such issues should be submitted to me for decision prior to September 12, 2005.

4. Phase 2 of the USGS Study is scheduled for release at the end of April, 2005. The March 11 schedule calls for the report to be submitted to the Colorado State Engineer to determine whether any modification to Colorado's Amended Measurement

Rules may be necessary. Kansas will then be advised of the State Engineer's determination, and if Kansas disagrees, Kansas will have an opportunity to provide its recommendations and comments. If agreement between the States is not reached on measuring groundwater pumping, the Phase 2 USGS Study, and the comments of both States should be submitted to me for decision.

5. In my Fourth Report, I deferred to the decision of the Colorado Water Court on certain of the consumptive use credits included in the Replacement Plans approved by Colorado. Two applications are currently pending before the Water Court concerning consumptive use credits to be allowed in Replacement Plans. These are the amended application filed by LAWMA and the application of AGUA. No decisions by the Water Court have yet been made, and final decisions may not be made prior to the entry of the decree herein. Proceedings in this case should not be held up pending final decisions by the Water Court. Rather, assumptions on such credits should be made for purposes of running the H-I model, subject to later modification if the decisions of the Water Court should differ from the assumptions made.

6. The goal is to enter a decree before the end of this calendar year. Counsel are directed to begin to work on a proposed decree, with Kansas having the responsibility of producing the first draft. It may well be that portions of the decree relating to the H-I model, and to the results thereof, cannot be drafted until September, or after any arbitration proceedings have been completed. Nonetheless, counsel should complete a draft of those portions of the decree that can be done now, and submit those to me as early as practicable. The decree should include provisions for continuing jurisdiction, the termination of such jurisdiction, and a dispute resolution process. One of the issues discussed has been the amount of documentation of the H-I model to be included in the decree. Both States agree that documentation can be useful, but there has been disagreement over whether a meaningful amount of documentation can be produced within the period of time now available. The H-I model is unique, and is not based upon a model such as MODFLOW for which the USGS has published documentation of the assumptions and mathematical equations used, and the way in which the model operates. Nonetheless, Kansas states that it can produce useful documentation within two months, and Kansas is hereby directed to include that effort in the proposed decree. Or course, Colorado's views on this matter, as well as on all other aspects of the proposed decree, are expected.

7. Counsel shall report progress pursuant to this Order on a monthly basis, beginning May 15, 2005.

Dated: April 19, 2005.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 2

STATES' JOINT PROPOSED SCHEDULE
TO RESOLVE ISSUES THAT REMAIN AFTER
THE SUPREME COURT'S OPINION

Letter dated 3/11/05

MONTGOMERY & ANDREWS
PROFESSIONAL ASSOCIATION
ATTORNEYS AND COUNSELORS AT LAW

March 11, 2005

BY TELECOPY
AND U.S. MAIL

[Names And Addresses Omitted In Printing]

The Honorable Arthur L. Littleworth
Special Master
Best Best & Krieger
400 Mission Square
3750 University Avenue, 3rd Floor
Riverside, California 92501

Re: *Kansas v. Colorado*, No. 105, Original
U.S. Supreme Court

Dear Mr. Littleworth:

Please find enclosed the States' Jointly Proposed Schedule to Resolve Issues that Remain After the Supreme Court's Opinion. The States have agreed on all but three points, model documentation (see (b), p. 6), whether one result of the scheduled process will be to determine final, or just interim, H-I Model results for the period 1997-2004 (see (e), p. 6) and the scope of the decree (see (g), p. 7). The States propose to submit letters to you within ten days addressing their respective positions.

In summary, the enclosed schedule proposes a period of six months within which to complete recalibration of the H-I Model and quantification of H-I Model results for 1997-2004. Several other matters

are scheduled to follow shortly thereafter, depending on your determinations and approval.

Sincerely yours,

/s/ John B. Draper
John B. Draper

JBD:dlo

cc: (by telecopy and U.S. Mail)
David W. Robbins, Esq.
Lee Rolfs, Esq.

***Kansas v. Colorado*, No. 105, Orig.**

Jointly Proposed
Schedule to Resolve Issues That Remain
After the Supreme Court's Opinion
As of March 11, 2005

All time periods run from March 11, 2005, except as noted.

(a) Calculation of Damages

1. Colorado will report by the end of April on whether there is agreement on the damages calculation in 2005 dollars and the proposed method for updating the amounts and how Colorado intends to pay damages.

(b) Potential Issues Outlined in the Fourth Report (pp. 122-23) and any New Issues

1. Phase 2 of the USGS study.

a. The USGS is expected to issue a final report in April. At that time the Colorado

State Engineer will determine whether any modification is necessary to the Amended Measurement Rules based on the final report. Colorado will notify Kansas within 2 months after the final report is issued of the Colorado State Engineer's determination. If Kansas disagrees with the Colorado State Engineer's determination, Kansas will provide its recommendation and comments within 2 months after the notification by Colorado. The Colorado State Engineer and the Kansas Chief Engineer shall then meet to discuss the differences within 1 month after receipt of the recommendation and comments by Kansas.

b. Time to complete: 1 month after meeting of the Engineers.

2. **Results of Colorado's completed verification program on wells and irrigated acreage.**

   a. Initial contact has occurred. Colorado is providing backup information.

   b. Initial meeting: 2 months.

   c. Time to complete: 4 months.

3. **Commencement of the five-year cycle for updating Colorado's irrigated acreage study.**

   a. Colorado will provide a memo, data and model input sets to Kansas by March 31.

   b. Initial meeting: 2 months.

c. Time to complete: 4 months.

4. **Proposed changes in the satellite imagery system used by Colorado.**

   a. Colorado will provide a memo, data and model input sets to Kansas by March 31.

   b. Initial meeting: 2 months.

   c. Time to complete: 4 months.

5. **Kansas' claim that more data need to be collected on the distribution of surface water.**

   a. The States agree that this issue will not be addressed before entry of the Decree.

6. **Further investigation of the amount of return flow intercepted by the Amity Canal from the Fort Lyon service area.**

   a. The States agree that this issue will not be addressed before entry of the Decree.

7. **Further investigation of the amount of return flow intercepted by the Buffalo Canal from the Amity service area.**

   a. The States agree that this issue will not be addressed before entry of the Decree.

8. **Any improvements in the calculation of ungaged tributary inflow.**

   a. Colorado will provide comparative H-I Model calibration runs and other backup: 1 month.

   b. Initial meeting: 2 months.

   c. Time to complete: 5 months.

9. **Whether any new studies support adjustments to PET values for salinity management or otherwise.**

    a. The States agree that this issue will not be addressed before entry of the Decree

10. **Proper representation in the model of the various Replacement Plan water sources.**

    a. Initial meeting: Already held.

    b. Time to complete: 6 months.

11. **Mr. Schroeder's proposed model change on the calculation of model demand.**

    a. Initial meeting: Already held.

    b. Time to complete: 3 months.

12. **Various model calibration issues:**

    a. **Use of new Lamar and Holly electronic weather station data to develop PET values below John Martin Reservoir for use in the model and whether recalibration is required.**

        1. Colorado to provide proposal within 2 weeks.

        2. Initial meeting: 1 month.

        3. Time to complete: 3 months, subject to review of Colorado's proposal.

    b. **Correcting the irrigated acreages of the Lamar/Manvel and X-Y ditches and whether recalibration of the model is required.**

1. Initial meeting: Already held.

2. Time to complete: 1 month.

c. Whether the unit response functions for the Fort Lyon Canal, the Fort Lyon Storage Canal, and the Holbrook Canal should be revised.

1. Initial meeting: Already held.

2. Time to complete: 2 months.

d. Whether any changes should be made to the observed diversion records used for calibration of the model.

1. Initial meeting: 1 month.

2. Time to complete: 3 months.

e. Other issues that might affect calibration of the model.

1. Initial meeting on calibration methodology: 1 month.

2. Time to complete: 2 months.

3. Time to complete recalibration: 6 months.

13. Other Issues.

a. Treatment of the conversion of shares in the Rocky Ford Canal to municipal use and exchanges of the Rocky Ford Canal water.

1. Initial meeting: Already held.

2 Time to complete: 2 months.

b. The States' experts are reviewing whether a change should be made to the way the Lamar power plant deliveries are represented in the model.

1. Initial meeting: Already completed.
2. Time to complete: 2 months.

c. Replacement credit issues for 1997-1999, 2000-2004 and in the future:

1. The States' experts are discussing replacement credit issues that may not be resolved by pending Water Court proceedings, such as certain Highland Canal and Fountain Creek issues.

a. Initial meeting: 1 month.

b. Time to complete: 6 months.

2. Quantification of special waters, including monitoring, verification and reporting.

a. Colorado to provide backup data: 2 weeks.

b. Initial meeting: 1 month.

c. Time to complete: 6 months.

3. The States' experts are meeting to discuss improvements in monitoring and documentation of dry-up and feedback from Kansas, as well as terms and

conditions for monitoring subirrigation.

a. Initial meeting: 3 months.

b. Time to complete: 6 months.

d. The States' experts are reviewing the acreage and want factors for the Sisson-Stubbs credit dry-up.

1. Experts to summarize facts: 1 month.

2. Initial meeting of attorneys re legal issues: 2 months.

3. Time to complete: 3 months.

e. Representation of winter water bookovers in the model is under discussion by the States' experts.

1. Initial meeting: 1 month.

2. Time to complete: 2 months.

f. Colorado will provide Kansas a proposal on the representation of Graham alternate points of diversion.

1. Colorado to provide proposal to Kansas: 1 month.

2. Initial meeting: 2 months.

3. Time to complete: 5 months, subject to review of Colorado's proposal.

14. **Credits for Offset Account deliveries to the Stateline, evaporation loss from the Offset Account after the evaporation is charged to Kansas, and return flow obligations.**

    a. Initial meeting: 2 months.

    b. Time to complete: 4 months.

15. **The States' experts are considering how releases of Stateline return flows associated with LAWMA's Section II transfers to the Offset Account and transit losses on such return flows should be represented in the model or, in the alternative, how they should be accounted for outside the model.**

    a. Initial meeting: 2 months.

    b. Time to complete: 4 months.

16. **Model Documentation [Colorado proposes to delete this from the schedule.]**

    a. Initial meeting: 7 months.

    b. Time to complete: 9 months.

    c. The States will submit letters to the Special Master on their respective views on this point within ten days.

17. **Limitation on Accumulation of Credits**

    a. Kansas to provide Colorado with proposal: 3 months

b. Initial meeting: 4 months.

c. Time to complete: 6 months, subject to review of Kansas' proposal.

(c) Status of Colorado Water Court Proceedings

1. Kansas to provide comments to Colorado: 3 months, subject to review of the applicants' engineering reports and proposed decrees.

(d) Status of the H-I Model, Taking Into Account Recommendations In the Fourth Report, to Which Exceptions Were Not Taken

1. Colorado to provide 2004 data input files: 2 weeks.
2. Initial meeting: 2 months.
3. Time to complete: 6 months.

(e) The Current Results of the Ten-Year Accounting Procedure Approved By the Court

Kansas believes that one purpose of the foregoing schedule is to determine final modeling results for the period 1997-2004. Colorado believes that the goal of this schedule is to determine the current results of the H-I model for the period 1997-2004, subject to the issues that will not be resolved by this schedule. The States will submit letters to the Special Master on their respective views on this point within ten days.

(f) How Issues Should Be Addressed

1. The States' experts will do their best to resolve the foregoing issues within the schedule provided.

2. Any issues which cannot be so resolved shall be submitted to the State/Chief Engineers who will meet in a final attempt to resolve the issues by negotiation.

3. Unresolved issues will go to arbitration. Counsel for the States should discuss the nature of the arbitration (binding or non-binding), the selection of an arbitrator or arbitrators, and the rules to govern arbitration. Issues not appropriate for binding arbitration should be identified.

4. The States will provide the Special Master with monthly progress reports.

(g) Judgment: Timing and preparation

1. Final damages amounts are being reviewed as discussed in (a) above. Kansas is reviewing cost issues and will make a proposal to Colorado by March 31, 2005.

2. Whether a judgment for damages separate from a decree for future compliance should be proposed is being discussed by the States.

3. If the Special Master would find it helpful, while the experts are working to resolve the remaining issues specified in the above schedule, the attorneys will

work on drafting the judgment/decree according to the following schedule or as otherwise directed by the Special Master. Kansas will provide an initial draft to Colorado in 3 months. Colorado will review and counsel for the States will meet within 30 days thereafter. Colorado will determine the amount of time required to respond to the Kansas initial draft after receipt of the Kansas draft.

The States may have differing views on what the decree should include. They will address this issue in the letters to be submitted in ten days.

Time to complete: 8 months, or as otherwise determined by the Special Master.

APPENDIX – Exhibit 3

ORDER FOLLOWING STATUS
CONFERENCE OF SEPTEMBER 30, 2005

Order dated 10/3/05

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER FOLLOWING STATUS CONFERENCE OF SEPTEMBER 30, 2005

This Status Conference, held September 30, 2005 by agreement in the office of the Special Master in Riverside, California, followed up on the issues that remain to be decided prior to the entry of a Judgment and Decree in this case. These issues were outlined by counsel in a joint letter of March 11, 2005, together with a schedule for meetings among the experts in an effort to resolve these final issues. It was further agreed that any issues not determined by September 2005, would be submitted either for arbitration or to myself for decision. Monthly progress reports were submitted by counsel, the final report being dated September 27, 2005. This final report summarized the results of the 25 or so issues that had been under discussion, including the results of a two-day meeting

held between the Chief Engineer of Kansas and the State Engineer of Colorado on September 22-23.

ISSUES NOT TO BE ADDRESSED BEFORE ENTRY OF THE DECREE

Turning to the issues outlined in the March 11, 2005 joint letter, the States agreed over the past several months that issues 5-9 and 13(b) would not be addressed before entry of the Decree.

ISSUES UPON WHICH AGREEMENT WAS REACHED

Through the dedicated and professional work of the experts, the top officials in both States and the attorneys, agreements were reached on nearly all of the remaining issues. Some of these agreements will be reflected in coding changes to the H-I model; some in data input to the model; and some incorporate compliance issues not associated with the model, such as documentation of fallowed lands, and accounting for reservoir evaporation of replacement water. The model changes will be included in the H-I Model Documentation Appendix to the decree. Agreements upon the other issues are being documented in separate written agreements. Eight such agreements were executed by the Kansas Chief Engineer and the Colorado State Engineer on the morning of this Status Conference and copies are attached. These agreements were finalized at breakfast in the Mission Inn where all parties were staying, and have been

dubbed the Mission Inn Agreements. The complexity and difficulty of some of these issues can be illustrated in the attached agreement concerning the "Offset Account in John Martin Reservoir." Counsel are directed to file with the Court any remaining agreements that may be still required.

Referring to the March 11, 2005 joint letter, the issues upon which the States have agreed are as follows: 1-4, 10, 12(a), 12(b), 12(c), 12(e) except for X-Y Graham, 13(c)(1), 13(c)(2), 13(c)(3), 13(d), 13(e), 14, and 15.

ISSUES NOT AGREED UPON

Issues No. 11 and 13(f) are scheduled for arbitration. Kansas will advise the Court as to whether it agrees that the arbitration results on 13(f) will be binding. If not, I will decide the issue after reviewing the results of the arbitration.

Issue 12(d) involves the legal question of whether monthly diversion records published by ARCA and admitted into evidence in the case can be changed. This issue will be submitted to me, and the Kansas letter brief on the issue is due October 7, with Colorado's response by October 14. Any factual issues that cannot be agreed upon after my decision will be submitted for arbitration on a schedule to be designed for that issue.

Issue 17 is the last unresolved issue. It involves limitations on the accumulation of credits by Colorado

for replacement water. This issue will also be submitted to me for resolution. The States will file simultaneous letter briefs, containing their respective proposals, on October 14. Reply briefs are due October 28.

ARBITRATION

The Rules of Arbitration submitted jointly by the States by letter of September 23, 2005 are hereby approved. The Arbitration Schedule submitted September 28, 2005 is also approved. The original of each final arbitration decision, and the original transcript, exhibits and other submittals shall be filed with the Court once the final arbitration decision has been made.

DAMAGES AND COSTS

The States agreed upon damages of $34,615,146 arising from the depletions of usable flow at the Colorado-Kansas Stateline of 428,005 acre-feet of water for the period 1950-96. Damages were paid in full on April 29, 2005. The issue of costs remains unresolved, and simultaneous briefs and respective proposals are due from the States on this issue by November 30, 2005.

DECREE

Kansas submitted an initial draft of the Decree on July 29, 2005, together with an outline of the

contents of some of the Appendix documents proposed to be included. Colorado submitted its comments on this draft on September 12, 2005. The States are in agreement on the general format of the Decree, but considerable discussion occurred at the Status Conference on various provisions in the initial Kansas draft. As a result of that discussion, including my comments, Kansas will submit a revised draft of the Decree by November 1, 2005. While much agreement emerged on the various Decree issues, certain important issues remain. In particular, these issues concern whether the Decree should include an injunction, and if so, the form of that injunction; and the nature and extent of the Court's continuing jurisdiction, including the termination thereof. The States agreed that they would submit simultaneous briefs on all Decree issues on December 9, 2005, with reply briefs due December 16, 2005. The next draft of the Decree to be submitted by Kansas should include, to the extent possible, the results of the various issues that have now been agreed upon by the States, and the several Appendices.

Dated: October 3, 2005.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

AGREEMENT CONCERNING THE OFFSET ACCOUNT IN JOHN MARTIN RESERVOIR FOR COLORADO PUMPING, DETERMINATION OF CREDITS FOR DELIVERY OF WATER RELEASED FOR COLORADO PUMPING, AND RELATED MATTERS

September 29, 2005

This Agreement is entered into by the State of Colorado and the State of Kansas (hereinafter referred to as "Colorado" and "Kansas") in the interests of interstate comity to resolve accounting issues relating to the Offset Account in John Martin Reservoir for Colorado Pumping (hereinafter "Offset Account"). The crediting and implementation principles described herein will be applied to Offset Account deliveries and H-I Model input sets for the years 1997 through 2004 as well as future years.

Acceptance of this Agreement by Colorado and Kansas does not prejudice or constitute a waiver of their respective rights under the Arkansas River Compact, the April 24, 1980 Resolution Concerning an Operating Plan for John Martin Reservoir (as revised on May 10, 1984, and December 11, 1984), the March 17, 1997 Stipulation Re Offset Account in John Martin Reservoir in *Kansas v. Colorado,* No. 105 Original, or the Amended March 30, 1998 Resolution Concerning an Offset Account in John Martin Reservoir for Colorado Pumping.

Colorado and Kansas agree as follows:

1. Definitions: The following terms will be defined in this agreement as follows:

A. **Colorado Consumable Subaccount** – a subaccount of the Offset Account into which fully consumable water, as determined by the Colorado State Engineer pursuant to Paragraphs 3 and 4 of the Offset Account Resolution, is delivered or transferred. This subaccount is further segmented into:

i. Colorado Upstream Consumable Subaccount

ii. Colorado Downstream Consumable Subaccount.

B. **Colorado Upstream Subaccount** – a subaccount of the Offset Account for the storage of water with the purpose of replacing depletions to conservation storage inflows pursuant to Paragraph 6 of the Offset Account Resolution.

C. **Consumable Portion of the Release** – the water released from the Kansas Consumable and Colorado Consumable subaccounts of the Offset Account. This would not include waters released from any other subaccounts of the Offset Account.

D. **H-I Model** – the Hydrologic-Institutional Model developed jointly by the States to assist in the determination of Stateline depletions to usable streamflows.

F. **Kansas Consumable Subaccount (KCS)** – a subaccount of the Offset Account for the storage of that part of the total account for which evaporation is charged to Kansas, pursuant to Paragraph 5B of the Offset Account resolution.

G. **Kansas Storage Charge Subaccount** – a subaccount of the Offset Account for the storage of fully consumable water which is a prerequisite for Colorado or its water users to store water in the Offset Account as provided for in Paragraph 9 of the Offset Account Resolution.

H. **Kansas Stateline Return Flow Subaccount** – a subaccount of the Offset Account for those Stateline return flows which, based on historic patterns, would have been delivered to the Stateline, but which are held in the Offset Account pursuant to Paragraph 4 of the Offset Account Resolution.

I. **Muskingum method** – a routing method as described in the following reference: McCarthy, G.T., 1938: 'The Unit Hydrograph and Flood Routing', presented at conference of North Atlantic Division, U.S. Corps of Engineering, June 1938 (see also 'Engineering Construction – Flood Control', pp. 147-156, the Engineer School, Ft. Belvoir, VA, 1940).

J. **Offset Account Resolution (OAR)** – the "Resolution concerning an Offset Account in John Martin Reservoir for Colorado Pumping as amended March 30, 1998," or as it is subsequently amended.

K. **Provisional data** – streamflow and ditch diversion data collected on the day the administrative action is taken.

L. **Reasonable Opportunity** – is the first day during the period of April 1st to June 30th when the mean Stateline daily flow is 100 cfs or greater for at least 15 days in the previous 30-day period, even if the 30 days precede April 1.

M. **Stateline flow** – the flow of the waters of the Arkansas River as determined by gaging stations located at or near the Stateline, more specifically the combined flow as measured by USGS gaging stations: Frontier Ditch near Coolidge and the Arkansas River near Coolidge.

N. **Stateline Return Flow Subaccount** – a subaccount of the Offset Account for water that will be required to maintain historical Stateline return flows pursuant to Paragraph 4 of the Offset Account resolution.

O. **Stateline Return Flow Transit Loss Subaccount** – a subaccount of the Offset Account for the associated transit loss water needed to deliver historical Stateline return flows to the Stateline Pursuant to Paragraph 8 of the Offset Account Resolution.

2. Subaccounts currently approved for the Offset Account.

The Offset Account, as provided for by the **Offset Account Resolution (OAR)**, shall consist of the following subaccounts:

A. Colorado Consumable Subaccounts (OAR Paragraphs 3 & 4)

   i. Colorado Upstream Consumable Subaccount

   ii. Colorado Downstream Consumable Subaccount

B. Colorado Upstream (OAR Paragraph 6)

C. Instate Return Flow to Colorado Ditches (OAR Paragraph 4)

   i. Keesee Winter Return Flows

D. Kansas Consumable (OAR Paragraph 5.B.)

E. Kansas Storage Charge (OAR Paragraph 9)

F. Kansas Stateline Return Flow (OAR Paragraph 4 & 5, 5 deals with the evaporation on Stateline Return Flows after Kansas has been noticed)

G. Stateline Return Flow (OAR Paragraph 4)

H. Stateline Return Flow Transit Loss (OAR Paragraph 8)

Additional subaccounts may be approved only by mutual agreement by both States. Notice of a proposed subaccount (including a detailed written description of

the need and justification for the subaccount) must be given from one state to the other; and the response is due from the notified State within two weeks upon receipt.

3. Determination of Credits for the Delivery of Water Released from the Offset Account.

The States agree to determine credits for the delivery of water released from the Offset Account on Kansas' demand based on measured **Stateline flow** in accordance with the criteria described below.

A. Release accounting and stream flow data used in the evaluation of all deliveries will be as follows:

i. Accounting records of the Operations Secretary for Offset Account releases, including hourly records of gate changes identifying the beginning and end of releases.

ii. Provisional, hourly, and daily satellite data from pertinent gaging stations between John Martin Reservoir and the Stateline. Stateline deliveries for which Colorado will receive credit will be based on the mean daily **Stateline flow**.

iii. The United States Geological Survey (USGS) provides the State of Colorado with a data feed of shift-corrected discharge values on an hourly basis. The data provided is in a non-aggregated time step, typically

15-minute measurement intervals. Once data is loaded into the Colorado Division of Water Resources database, it is not updated with subsequent data from the USGS. Therefore, data used for water administration remains the same as during the time the water was administered. Colorado will daily extract 15 minute discharge data for the Arkansas River at Granada, the Frontier Ditch, and the Arkansas at Coolidge gages for the previous 24-hour period to update previously transmitted data and export this and previous data for the most recent 7-day period as a delimited text file to an ftp directory accessible by persons designated by the Colorado State Engineer or Kansas Chief Engineer. **Provisional data** shall be used for all the calculations described in this agreement. Colorado will provide and maintain the auto-executable program to periodically update databases maintained in their respective offices with this data to ensure identical stream flow data sets to be used to evaluate deliveries of water from John Martin Reservoir to Kansas.

B. The antecedent flow during the Offset Account delivery will be determined as follows:

i. Use the mean daily **Stateline flow** for the 10 full days preceding the date of delivery arrival, provided that the variability within the period does not depart from the 10-day average by more than 10%. The date of delivery arrival for the purpose of this Paragraph shall be two days after the initiation of the release with the first day of release being day zero. Days of **Stateline flow** which exceed 110% of the initial average will be removed until an average base flow with less than +/- 10% variability is achieved to remove interference caused by precipitation or the effect of Colorado ditch operations during the 10-day period. No more than two iterations of antecedent flow calculation will be performed and no fewer than 6 days out of the preceding 10-day period will be used in determining the antecedent flow except as provided in the following two paragraphs.

ii. If an Offset Account release follows within 10 days of any other release from a Kansas account (including the Offset Account), the antecedent flow for the current Offset Account release shall be the same as the antecedent flow determined for the previous release using the same

procedures as described above in Paragraph 3.B.i.

iii. If the average flow for the 10-day period preceding the 10 days (i.e. days 11 through 20 prior to arrival of the release) used to determine antecedent flow is more than twice the computed antecedent flow computed above in Paragraph 3.B.i., the antecedent flow will be adjusted to be the average of: a) the antecedent flow as described above in Paragraph 3.B.i. and b) the hydrograph flow value using the **Muskingum method** described below in Paragraph 3.C. on the sixth day following the end of the release from John Martin Reservoir with the last day of the release being day zero.

C. For Offset Account releases occurring without consecutive Kansas Section II Account releases, the credit component of the Offset Account release at the Stateline for which Colorado will receive 100% credit as a replacement of depletions to usable Stateline flow will be determined as follows:

i. The mean daily release from the Offset Account will be multiplied by 1.05.

ii. These adjusted mean daily values will be routed to the Stateline using the **Muskingum method** with

the following parameters: K = 60 hours, x = 0.15 and t=24 hours.

iii. The resulting Muskingum hydrograph will be lagged one day, in addition to the lag included within the Muskingum routing.

iv. The Stateline delivery for the purpose of determining Offset credit will be determined as the lesser of: a) the **Stateline flow** less antecedent flow or b) the lagged Muskingum hydrograph.

v. The Stateline delivery determination will end the sixth day following the end of the release from John Martin Reservoir with the last day of the release being day zero and with the delivery for the sixth day being prorated by the ratio of the number of hours of release in day zero divided by 24.

vi. The Offset Account delivery efficiency will be the Stateline delivery determined in the manner described above divided by the total Offset Account release.

vii. Under no circumstances shall more than 100% of the total volume released from the Offset Account over the entire period of the release be determined to be delivered under these procedures.

viii. The credit for the **Consumable Portion of the Release** will be determined as the Offset Account delivery efficiency multiplied by the **Consumable Portion of the Release**.

D. For combined releases of Offset Account and Kansas Section II Account water, the credit component for the Offset Account release at the Stateline for which Colorado will receive 100% credit as a replacement of depletions to usable **Stateline flow** and the Equivalent Stateline Flow (ESF) volume for determining transit losses associated with Kansas Section II Account release will be determined as follows:

i. The mean daily release from the sum of the Offset Account and the Kansas Section II Account releases will be multiplied by 1.05.

ii. These adjusted mean daily values will be routed to the Stateline using the **Muskingum method** with the following parameters: K = 60 hours, x = 0.15 and t=24 hours.

iii. The resulting Muskingum hydrograph will be lagged one day, in addition to the lag included within the Muskingum routing.

iv. The Stateline delivery, for the purpose of determining Offset credit, will be determined as the lesser of:

a) the **Stateline flow** less antecedent flow or b) the lagged Muskingum hydrograph.

v. The Stateline delivery determination will end the sixth day following the end of the release from John Martin Reservoir with the last day of the release being day zero and with the delivery for the sixth day being prorated by the ratio of the number of hours of release in day zero divided by 24.

vi. The Offset Account delivery efficiency will be the Stateline delivery determined in the manner described above divided by the total of Offset Account and Kansas Section II Account releases.

vii. The credit for the **Consumable Portion of the Release** will be determined as the Offset Account delivery efficiency multiplied by the **Consumable Portion of the Release**.

viii. The ESF delivery will be determined as the lesser of: a) the **Stateline flow** or b) the lagged Muskingum hydro graph.

ix. The ESF delivery determination will end the sixth day following the end of the release from John Martin Reservoir with the last day of

the release being day zero and with the delivery for the sixth day being prorated by the ratio of the number of hours of release in day zero divided by 24.

x. The ESF percentage will be calculated as the ESF delivery (determined using Sub-paragraphs 3.D.i through 3.D.iii and 3.D.viii through 3.D.ix) divided by the total of the releases from the Offset Account and Kansas Section II Account.

xi. The volume of the Kansas Section II ESF is the total of the Kansas Section II releases multiplied by the ESF percentage.

xii. If the ESF volume for the Kansas Section II Account delivery is less than the Kansas Section II Account volume released, the resulting transit loss will be replenished to the Kansas Section II Account.

xiii. Under no circumstances shall more than 100% of the total of either the release from the Offset Account or the Kansas Section II Account over the entire period of the release be determined to be delivered for that account under these procedures.

xiv. For the purposes of these determinations, the volume of multiple releases from the same account

during the combined releases will be summed and treated as a single value.

4. **Credit for evaporation from water stored in the "Kansas Consumable Subaccount" (KCS).**

As provided in the **Offset Account Resolution (OAR)**, once Kansas has received a 30-day notice and evaporation is now being assigned to the KCS, Colorado may accumulate the evaporation for later credit as determined below in this Paragraph. Commencing April 1 of each year, the content of the KCS will be subject to the following accounting procedures and shall be used to establish evaporation eligible for credit from the KCS:

A. During the period of April 1 through June 30, if Kansas does not call for water from the KCS, evaporation eligible for credit as a replacement of depletions to usable Stateline flows for water stored in the KCS will begin the day following a **Reasonable Opportunity** for Kansas to call for water. If a **Reasonable Opportunity** has occurred and Kansas has chosen not to call for water from the KCS, evaporation eligible for credit as a replacement of depletions to usable Stateline flows for all water stored in the KCS will continue until either Kansas calls for a release of water and exhausts the KCS, or until the succeeding April 1, whichever comes first. However, if Kansas chooses to call for water from the KCS, evaporation eligible for credit will commence on the date of release and will

continue until either the KCS is exhausted, or until the succeeding April 1, whichever comes first.

B. During the period of April 1 through June 30, if Kansas does not call for water from the KCS and there is no **Reasonable Opportunity** for Kansas to call for water, the evaporation eligible for credit as a replacement of depletions to usable Stateline flows for all water stored in the KCS will begin on July 1 and will continue until either Kansas calls for a release of water and exhausts the KCS, or until the succeeding April 1, whichever comes first.

C. During the period of April 1 through June 30, if Kansas does call for water from the KCS, evaporation eligible for credit from additional water delivered to and stored in the KCS that is less than 3,500 acre-feet will be deferred until July 1 but will then continue until either Kansas calls for a release of water and exhausts the KCS, or until the succeeding April 1, whichever comes first.

D. During the period of April 1 through June 30, if Kansas does call for water from the KCS, evaporation eligible for credit from additional water delivered to and stored in the KCS that is equal to or greater than 3,500 acre-feet will begin on the date the 3,500 acre-feet for the total volume was achieved and will continue until either Kansas calls for a release of water and exhausts the KCS,

or until the succeeding April 1, whichever comes first.

E. During the period of July 1 through September 30 evaporation eligible for credit for additional water delivered to and stored in the KCS from July 1 through September 30 will begin on the day water is delivered and stored in the KCS and will continue until either Kansas calls for a release of water and exhausts the KCS, or until the succeeding April 1, whichever comes first.

F. Colorado shall receive no credit as a replacement of depletions to usable Stateline flows for evaporation from additional water delivered to and stored in the KCS during the period October 1 through March 31.

G. Commencing April 1 of each succeeding year, the accounting and procedures as described in this Paragraph 4 shall be used to establish initial conditions for assigning evaporation eligible for credits from the KCS for that year.

H. The evaporation credit component for offsetting usable depletions to Stateline flows will be computed by applying the Offset Account delivery efficiency for the next Offset Account release, as set forth in Paragraph 3 above, to the quantity of KCS evaporation eligible for credit. Colorado will not seek credit for the computed transit loss component of this water. Kansas Storage Charge water and the Kansas Stateline Return Flow water shall not be placed into the KCS, nor shall

evaporation from these subaccounts be eligible for credit.

5. Assignment of Transit Losses.

The **Consumable Portion of the Release** from the Offset Account that is not credited as a delivery at the Stateline, as determined in Paragraph 3 above, will be considered to be transit loss and a portion of that amount, as determined below, will be input into the **H-I Model** as a special water and assigned to reaches between John Martin Reservoir and the Stateline. The transit loss to the three reaches between stream gages below John Martin Reservoir (JMR to Lamar, Lamar to Granada, Granada to Stateline) will be determined in proportion to the percentages of transit loss determined using the Livingston Reach 6 factors with the antecedent flows at the stream gages at JMR, Lamar and Granada. However, if through the cooperative efforts of the States, an improved method of determining transit losses between John Martin Reservoir and the Stateline is devised, that method maybe utilized through amendment of this agreement pursuant to Paragraph 11. In determining the portion of the transit loss that will be included in the **H-I Model**, the flows through the Granada gage will be used to assess Colorado's efforts to administer the released water past Colorado ditch headgates. The procedure to determine the amount of transit loss to be input into the **H-I Model** as a special water will be as follows:

A. Upon a call for an Offset Account release from John Martin Reservoir, the flows will be

evaluated for the prior ten-day period in a manner consistent with Sub-paragraph 3.B above for the Arkansas River below John Martin Reservoir, the Arkansas River at Lamar and the Arkansas River near Granada river gages to compute a target flow rate at the Granada gage computed as the Granada antecedent flow plus the Offset Account release rate less the transit loss based on Livingston Reach 6 factors. During the Offset Account release, Colorado will administer the release to attempt to maintain the target flow rate at the Granada gage. Changes in the Offset Account release rate will cause a change in the Granada gage target rate (based on the original calculation using the Livingston Reach 6 factors), computed by the new release rate multiplied by the original transit loss percentage plus the antecedent flow.

B. At the conclusion of the release, the actual volume delivered through the Granada gage will be determined using mean daily flows from the **Provisional Data** for the Granada gage for the target evaluation period, which is from the date of the first day of release arrival at the Stateline through the day following the last full day of release at John Martin Reservoir. This value will be compared to the volume calculated using the delivery target flow rate at Granada multiplied by the number of days between release arrival at the Stateline and one day following the last full day of release at John Martin Reservoir. If the volume of actual delivery

through the Granada gage for this period is greater than or equal to the target volume delivery, 75% of the transit losses determined for the delivery will be input into the **H-I Model** as special water. See Table A below for a sample computation.

C. If the volume of actual delivery through the Granada gage for the target evaluation period is less than the target volume delivery, the amount of the transit loss in the JMR to Lamar reach that is eligible for use as a transit loss input for the **H-I Model** is reduced by the ratio of the target transit loss in that reach derived using the Livingston Reach 6 factors to the actual transit loss in that reach calculated from the difference between the target flow rate at Granada and the actual delivery flow rate at Granada. The portion of the total delivery transit loss attributed to that reach is multiplied by this ratio to obtain the amount of the transit loss in the JMR to Lamar reach that is eligible for use as a transit loss input. The same computation is performed to determine the amount of the transit loss in the Lamar to Granada reach that is eligible for use as a transit loss input for the **H-I Model**. The transit loss eligible for input into the **H-I Model** in the Granada to Stateline reach is unchanged. Seventy-five percent of the transit loss determined for each of the three reaches will be input into the **H-I Model** as a special water. See Table A below for a sample computation for this case.

Table A: Sample computation for assignment of Transit Loss

Delivery Target Met							
	JMR	JMR to Lamar Reach	Lamar	Lamar to Granada Reach	Granada (Delivery Target)	Granada to Stateline Reach	Stateline
Flow Rates	250 cfs		237.5 cfs		225 cfs		200 cfs
Transit Losses		12.5 cfs		12.5 cfs		25 cfs	
% of total TL		25%		25%		50%	
CU Delivery Transit Loss							1000 ac-ft
Transit Loss by Reach		250 ac-ft		250 ac-ft		500 ac-ft	
75% of TL input as Special Water		187.5 ac-ft		187.5 ac-ft		375 ac-ft	750 ac-ft
Delivery Target Not Met							
	JMR	JMR to Lamar Reach	Lamar	Lamar to Granada Reach	Granada (Delivery Target)	Granada to Stateline Reach	Stateline
Flow Rates	250 cfs		237.5 cfs		225 cfs		200 cfs
Transit Losses		12.5 cfs		12.5 cfs		25 cfs	
% of total TL		25%		25%		50%	
CU Delivery Transit Loss							1000 ac-ft
Transit Loss by Reach		250 ac-ft		250 ac-ft		500 ac-ft	
Actual Delivery Rate					200 cfs		
Actual Transit Loss		25 cfs		25 cfs			
Adjusted Transit Loss		125 ac-ft		125 ac-ft		500 ac-ft	750 ac-ft
75% of Adjusted TL input as Special Water		93.75 ac-ft		93.75 ac-ft		375 ac-ft	562.5 ac-ft

6. Disposition of return flow water from Keesee Ditch, XY-Graham Canal, and Stubbs Ditch Section II accounts that is transferred into the Offset Account.

The procedure used to determine the timing and quantity of return flows is described herein. When Colorado transfers water from one of the subject Section II accounts to the Offset Account under the provisions of paragraph 4 of the **Offset Account Resolution**, the water transferred from the Section II account will be split into its consumptive use, in-state return flow and Stateline return flow components as described in Attachment A.

In-state return flows and the associated transit loss will be simulated in the **H-I Model** as a special water input, either as an input to the river in Reach 11 if return flows are actually released to the river, or as an input to individual Section II accounts of Colorado ditches, as actually occurs.

The consumptive use water, Stateline return flows and the associated transit loss and evaporation that is transferred to the Offset Account will be disposed of in accordance with the provisions of paragraphs 4, 5, and 8 of the **Offset Account Resolution**. The Stateline return flow will be simulated in the **H-I Model** as follows: (1) For return flows that remain in the Offset Account at the direction of the Kansas Chief Engineer, Stateline return flows will be simulated in the **H-I Model** by adding a special water equal to the return flow according to the schedules in Attachment

A. Seventy-five percent of the transit loss water will be added to Reach 11. (2) For water transferred into the Kansas Section II account at the direction of the Kansas Chief Engineer, a special water input equal to the amount of the transfer will be made. (3) For Stateline return flows delivered to the river, a special water input equal to the amount of the release will be made to Reach 11, unless this water is delivered past the headgates of canals in Colorado, in which case it will be added to the reach to which it was delivered. In either case, seventy-five percent of the transit loss release will be input to Reach 11. Nothing in this subsection relating to the distribution of Stateline return flow or simulation of Stateline return flow in the **H-I Model** will affect the assignment of evaporation charges as set out in the **Offset Account Resolution**, paragraph 5.B.

7. Using H-I Model ten-year compliance results to determine additional amounts of water for delivery to the Offset Account by Colorado and to reset the status of Colorado's monthly accounting for the purpose of evaporation accounting under the provisions of the Offset Account Resolution.

To use the **H-I Model** to determine Compact compliance in accordance with the Special Master's recommendations in the Fourth Report, two steps are required. The first step is to run the **H-I Model** in both the historic and Compact modes to determine the accretions or depletions to usable Stateline flows for the previous ten-year period resulting from postcompact

well pumping and replacement sources represented in the **H-I Model**. The second step is to sum Colorado's Stateline delivery credits for fully consumable water delivered from the Offset Account to the Stateline for the previous ten-year period including any credits for evaporation from water stored in the KCS that Colorado is entitled to. The resulting quantities from these two steps are then used to calculate the final determination of accretions or depletions to usuable Stateline flows for the previous ten-year period. This final quantity is shown as Accretion A or Depletion A in Table B below.

In the monthly accounting performed by Colorado to replace well pumping depletions using the methods used to implement the Amended Use Rules, the credits that Colorado is entitled to as a result of deliveries from the **Colorado Consumable Subaccounts** to the Stateline are used to balance stream depletions that are calculated each month until these delivery credits are exhausted. These credits are shown as Accretion B in Table B below.

Analysis of the **H-I Model** runs used to determine Accretion A or Depletion A should be completed by mid-March of the year following the 10 calendar year period for which Compact compliance is being determined. Prior to the first full ten-year period, this accounting will be performed using years 1997 through 2005. When this analysis is completed, the actions summarized in the table below should be taken to reset the credit/depletion status of Colorado's monthly accounting.

Table B: Actions to reset the credit/depletion status of Colorado's monthly accounting

Results of the **H-I Model** analysis for the most current 10 year compliance period	Monthly Accounting Status at the end of December of the last year of the 10 year compliance period	Reset Action for Accretion B (Monthly Accounting Status for the beginning of the current calendar year)
IF	**AND IF**	**THEN**
Accretion A	Accretion B > 0 (Credits are used in monthly accounting before any further water is transferred to the KCS)	Reset to Accretion A (Credits are used in monthly accounting before any further water is transferred to the KCS)
Accretion A	Accretion B = 0 (Water is transferred to the KCS after monthly accounting)	Reset to Accretion A (Move KCS back to Colorado CU sub account for Jan-Mar of current year. Credits are used in monthly accounting before any further water is transferred to the KCS)
Depletion A	Accretion B = 0 (Water is transferred to the KCS after monthly accounting)	Place CU water = Depletion A into the Offset Account (Water is transferred to the KCS after monthly accounting)
Depletion A	Accretion B > 0 (Credits are used in monthly accounting before any further water is transferred to the KCS)	Reset Accretion B = 0 Place CU water = Depletion A into the Offset Account (Water is transferred to the KCS after monthly accounting)

8. New accounting procedures or calculations developed through collaborative efforts, including improved methodology to determine transit losses between John Martin Reservoir and the Colorado-Kansas Stateline, may be implemented or substituted with existing procedures or calculations upon modification of this agreement pursuant to Paragraph 11.

9. Colorado will employ best water administrative practices and enforcement activities to assure the timely delivery of Offset Account releases from John Martin Reservoir to the Colorado-Kansas Stateline in order to maximize delivery of such water to the Stateline.

10. If Kansas calls for more than 10,000 AF from the **Colorado Consumable** and/or **Kansas Consumable Subaccounts** during the period of November 1 to March 31 in any consecutive three years period, the transit losses on that part of the releases exceeding 10,000 AF, will be input into the **H-I Model** as special waters in the following April using the procedures provided for in Paragraph 5.

11. The States may agree to modify this Agreement, or any portion thereof, provided any amendment is not inconsistent with the Compact and the decisions of the Court in this case. Either State may seek modification of this Agreement by giving notice to the other State's Chief or State Engineer in writing. The States will cooperate in a good-faith effort to resolve issues raised by the proposed modification. The States may modify this Agreement only by mutual

agreement or, if the States are unable to agree on a proposed modification to this Agreement, a State may submit the matter to the dispute resolution process included in the final decree in this case, including binding arbitration.

The States also agree to review this Agreement and the **Offset Account Resolution** every five years to determine whether the provisions can be improved in the interest of continuing interstate comity and effective water management. The first review shall occur five years from the effective date of this Agreement.

OPERATIONAL GUIDELINES

Although not mandatory, to enhance the efficient and timely delivery of water released from the Offset Account, the States also agree to the following guidelines:

1. Kansas should avoid calling for releases from the Offset Account during the period November 1 through March 31. Exceptions may be made whenever stream conditions are favorable for a release and the water is needed in Kansas, or when a spill is expected.

2. When antecedent flow is 100 cfs, or less, Kansas will call for releases from the Offset Account at a flow rate of at least 250 cfs and for a minimum of 7 days, although Kansas may reduce or terminate a release from the Offset Account if a precipitation event diminishes the

demand for water in Kansas. Further, Kansas may request a release from the Offset Account of shorter duration than 7 days if it is made in conjunction with a consecutive release from the Kansas Section II Account.

3. Unless Kansas specifies otherwise, releases from Offset subaccounts will be made in the following order:

   A. Kansas Consumable Subaccount

   B. Kansas Storage Charge Subaccount

   C. Kansas Stateline Return Flows Subaccount

   D. Colorado Consumable Subaccount

   E. Stateline Return Flow Subaccount and Stateline Return Flow Transit Loss Subaccount

4. Kansas will use its best efforts to maximize the efficiency of Offset Account deliveries, including but not limited to, the release of Kansas Storage Charge water in conjunction with water released from other subaccounts.

JOINTLY APPROVED: 9-30-05

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

/s/ David W. Robbins
David W. Robbins
Special Assistant to the
Colorado Attorney General

/s/ John B. Draper
John B. Draper
Special Assistant to the
Kansas Attorney General

Attachment A

Timing of Stateline Return Flows

In determining the monthly timing of the releases needed to generate equivalent Stateline Return Flows resulting from the transfer of Section II water from the Keesee, XY-Graham and Sisson Stubbs Accounts into the Offset Account, a percentage of the return flow that would occur for each calendar month is used which is independent of when the delivery of Section II water is made to the Offset Account. The monthly return flow percentages are determined using a delivery schedule to all ditches based on the record of actual deliveries and the determination of the demand for Section II water for each month during the irrigation season. The following three tables provide the Stateline Return Flow schedules for each of the three Section II accounts.

Keesee Average Monthly Response (%)

Month	Reach 11	Reach 12	Reach 13
Jan	0.7277	14.4701	2.4729
Feb	0.6397	10.5869	1.7301
Mar	0.5441	7.7693	1.2423
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov	0.7747	28.5648	6.0282
Dec	0.7944	19.9629	3.6920
Total	3.4805	81.3541	15.1654

XY-Graham Average Monthly Response (%)

Month	Reach 15	Reach 16	Reach 17	Reach 18
Jan	0.1621	1.3203	2.9592	0.1707
Feb	0.1533	1.1543	2.5478	0.1505
Mar	0.1453	1.0292	2.2195	0.1328
Apr	0.1301	2.6078	5.3561	0.1086
May	0.1335	3.6277	7.0891	0.1134
Jun	0.1569	4.1302	8.1189	0.1518
Jul	0.1723	4.4509	8.8509	0.1843

Aug	0.1881	3.8384	7.7097	0.2163
Sep	0.1953	3.0393	6.3288	0.2333
Oct	0.1877	2.6140	5.5987	0.2246
Nov	0.1809	1.9738	4.3039	0.2114
Dec	0.1733	1.5592	3.5015	0.1941
Total	1.9788	31.3452	64.5842	2.0918

Stubbs Average Monthly Response(%)

Month	Reach 17	Reach 18	Reach 21
Jan	0.2386	2.2571	0.0162
Feb	0.1911	1.7464	0.0179
Mar	0.1536	1.3881	0.0192
Apr	0.0795	8.3885	0.0191
May	0.062	13.248	0.0185
Jun	0.1473	15.2972	0.0172
Jul	0.2303	16.3472	0.0153
Aug	0.3187	13.3833	0.0137
Sep	0.3786	9.5142	0.0125
Oct	0.3657	7.507	0.0122
Nov	0.3339	4.832	0.013
Dec	0.2943	3.1081	0.0143
Total	2.7936	97.0171	0.1891

Quantities of Return Flows, Stateline and In-state

To obtain the quantities of water that would be used as special water inputs to the H-I Model for Stateline Return Flows or In-state Return Flows, the following procedure would be used. The table below shows the allocation into various types of water of the water transferred from the subject Section II accounts. The Stateline return flow would be placed in the Stateline Return Flow Subaccount and transferred to the Kansas Stateline Return Flow Subaccount or released to the river using the schedules determined above with the Stateline return flow quantity in the table below. The transit loss associated with the Stateline return flow would be placed in the Stateline Return Flow Transit Loss Subaccount. Finally, the consumptive use water would be placed in the Colorado Consumable Subaccount.

Breakdown of Transferred Section II Water (%)

Water Type	Keesee	XY-Graham	Stubbs
To Ft. Bent	3.0		
To Amity	14.7		
To Lamar	8.3		
To Buffalo		1.4	
To Stateline	9.7	37.7	35.9
Trans Loss	0.5	3.2	5.0
Rtn Flow	9.2	34.5	30.9
CU Water	64.3	60.9	64.1
Total	100	100	100

Agreement on Potential Evapotranspiration as used in the H-I Model

This agreement on potential evapotranspiration (PET) as used in the H-I Model addresses various computation procedures agreed to by the States for PET values as described below and a method for calibrating SCS Blaney-Criddle values at Lamar and Holly in the future.

1. The Penman-Monteith method as used in this agreement refers to the final published version of the ASCE Standardized Penman-Monteith Equation for computation of alfalfa reference crop evapotranspiration coupled with crop coefficients (alfalfa reference ET basis) to compute crop ET. Normalized crop coefficient (K_c) values submitted by Kansas at trial in 2002 will be used to update PET values for update to the H-I model for 1997-2006. The SCS Blaney-Criddle method as used in this agreement refers to the modified SCS Blaney-Criddle method to directly estimate monthly crop consumptive use. NOAA weather station data will be used for calculations with the SCS Modified Blaney-Criddle, only. All calculations with Penman-Monteith will be based on CoAgMet weather data.

2. The two states will cooperate in the siting of weather stations and the determination of QA/QC adjustments of weather data necessary in calculating PET for input to the H-I Model. QA/QC adjustments will include corrections for impacts of tall vegetation in the vicinity of the weather station, if necessary.

3. PET values upstream of John Martin Reservoir, for the period 1950-2006, will be computed as follows:

    a. For the period 1950-1993: use the ratios presented by Kansas at trial in 2002 for calibrating the SCS Blaney-Criddle method to the Penman-Monteith method (based upon 1994-99 average monthly calibration ratios computed with the combination of the Avondale/Vineland CoAgMet with the Pueblo NOAA station; and the 1993-99 average monthly calibration ratios computed with the combination of Rocky Ford CoAgMet with the Rocky Ford NOAA station).

    b. For the period 1994-2004: directly compute Penman-Monteith crop PET values using the Avondale/Vineland and Rocky Ford CoAgMet weather stations.

    c. For the period 2005-2006: directly compute Penman-Monteith crop PET values using the data for additional CoAgMet weather stations that may be installed and data available. Data is anticipated to be available from the following CoAgMet sites: Avondale/Vineland, Fowler 01, Rocky Ford 01, La Junta 01, Las Animas 01. The States will jointly develop and agree to a new assignment

schedule for distributing ditch (user) service areas to each weather station.

4. PET values downstream of John Martin Reservoir for the period 1950-2006 will be computed as follows:

    a. For the period 1950-2002: use the extrapolated ratios presented by Kansas at trial in 2002 for calibrating the SCS Blaney-Criddle method at the Lamar and Holly NOAA sites to Penman-Monteith method.

    b. For the period 2003-2004: directly compute Penman-Monteith crop PET values, using the Lamar02 CoAgMet weather station and use as representative for the entire area downstream of John Martin Reservoir.

    c. For the period 2005-2006: directly compute Penman-Monteith crop PET values, using the Lamar04/Lamar02 and Holly02 CoAgMet weather stations.

5. At the end of 2007, 5 years of overlapping climate data record from the Lamar CoAgMet weather station, a combination of Lamar 02 (2003-2004) and Lamar 04 (2005-2007), and from the Lamar NOAA station (2003-2007) will be used to compute new monthly average calibration factors for calibrating the SCS Modified Blaney-Criddle PET computed

at the Lamar NOAA station to the Penman-Monteith method. The new calibration ratios will be for the purpose of recalculating the PET for the areas assigned to the Lamar NOAA station for the period 1950-2002.

6. At the end of 2007, 5 years of overlapping climate data record from the Lamar02 and Holly02 CoAgMet weather stations, a combination of Lamar 02 (2003-2004) and Holly02 (2005-2007), and from the Holly NOAA station (2003-2007) will be used to compute new monthly average calibration factors for calibrating the SCS Modified Blaney-Criddle PET computed at the Holly NOAA station to the Penman-Monteith method. The new calibration ratios will be for the purpose of recalculating the PET for the areas assigned to the Holly NOAA station for the period 1950-2002.

7. At the end of 2009, 5 years of overlapping climate data record from the Holly02 CoAgMet weather station (2005-2009), and from the Holly NOAA station (2005-2009) will be used to compute new monthly average calibration factors for calibrating the SCS Modified Blaney-Criddle PET computed at the Holly NOAA station to the Penman-Monteith method. These new calibration ratios will be compared to those developed in (6) and adjustments made as needed, and are for the purpose of recalculating the PET for the areas assigned to the Holly NOAA station for the period 1950-2002.

Signatures

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer
Date: 9-30-05	Date: 9-30-2005

Agreement

Memorandum

To: David Pope, Chief Engineer, Kansas Division of Water Resources

From: Hal Simpson, State Engineer, Colorado Division of Water Resources

Date: September 23, 2005

Subject: Condition of approval for replacement plans using water withdrawn from the Dakota and/or Cheyenne aquifers

In our meeting on September 1, 2005, you expressed a concern regarding the use of water produced from the Dakota and/or Cheyenne aquifers as a replacement source in plans approved pursuant to the Amended Rules and Regulations Governing Diversion and Use of Tributary Ground Water in the Arkansas River Basin, Colorado. We agreed that this concern will be resolved if appropriate conditions of approval are included in plans approved by my office. Therefore, I have developed the following condition to be included in letters approving such replacement plans, where appropriate:

Replacement credit shall not be allowed for any source of water available from the Dakota and/or Cheyenne aquifers unless pursuant to a decree authorizing the use of said water for augmentation purposes. Furthermore, special water inputs to the Hydrologic-Institutional (HI) model will be limited to replacement sources for those wells represented in the HI model.

Approved:

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

Sisson-Stubbs Agreement

This Agreement is entered into by the State of Colorado and the State of Kansas to resolve issues relating to the Sisson-Stubbs Ditch.

Colorado and Kansas agree as follows:

1. Want factors in The H-I model will be calibrated such that mean diversions predicted for the period 1950-1964 will equal the mean diversions for 1949, 1951-1964, using Colorado's historical diversion records for 1950-64, except that 1949 diversions will be substituted for 1950 diversions (i.e., an average of 763 acre-feet per year.). (Table attached)

2. The acreage in the Compact run of the H-I model will be set to 480 acres.

3. The acreages used in the historical run of the H-I model for 1950-1996 for the Sisson-Stubbs Ditch will be left at the values that have been used by Kansas, but the acreages after 1996 will be based on 480 acres. 240 acres will be shown as dried up under the Stubbs portion of the ditch, so long as these acres remain not irrigated from any source or will be treated as sole source acreage in the H-I Model if irrigated with well water, and the balance, (currently 240 acres) will be shown as irrigated under the Sisson portion of the ditch, subject to any dry-up of that acreage. The pumping and associated acreage for the Helfrich well (Well ID 6705805), totaling 119 acres, and any other additional acreage, will be assigned to User 24.

4. Sisson-Stubbs Section II account water can be transferred to the Offset Account in accordance with the amended Offset Account Resolution, and the model code transferring the Sisson-Stubbs Section II account water to the Kansas Transit Loss Account will be disabled after 1996. In the H-I model, the transfer of Sisson-Stubbs Section II account water will be handled by transferring the Sisson-Stubbs Section II account water to the LAWMA Section II account as is currently done for LAWMA Section II account water transferred to the Offset Account.

5. The consumptive use credit for Sisson-Stubbs Section II account water transferred to the Offset Account will be 67.5% of the amount transferred.

6. Return flows from the Sisson-Stubbs Section II account water will be included in the H-I model as a special water in accordance with an agreement between the Chief and State Engineers or as determined through negotiation or arbitration if the Chief and State Engineers fail to reach such an agreement.

JOINTLY APPROVED ON SEPTEMBER 23, 2005:

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

Agreement

Re: Amending the Measurement Rules regarding the use of Power Conversion Coefficients (PCCs) to determine Groundwater Pumping

The Colorado State Engineer has determined that a modification to the Amended Measurement Rules is necessary to require a re-rating of the power conversion coefficients at least every two years instead of every four years. The modification of Rule 3.2 would implement the re-rating every two years. In addition other regulations are proposed for modification to be consistent with that determination.

In a draft memorandum dated, August 23, 2005, from Steven J. Witte, Division Engineer, Colorado Water Division 2, the policy allowing variances from Rules 3.3 and 3.6 was proposed to be revoked.

Accordingly, we have agreed that: 1) the Amended Measurement Rules will be modified to include the changes shown in the attached copy of the rules and 2) the administration of those rules will be modified as set out in the attached draft memorandum dated, August 23, 2005, from Steven J. Witte to Approved Well Testers and Groundwater Associations.

Any change in the rules or policies that would diminish the effect of this tightening of the Amended Measurement Rules will need to be considered on its own merits by mutual agreement of both States.

Done this day 23 of September, 2005 in Denver, Colorado.

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

Attachments: Proposed modification of the Amended Measurement Rules. Steven J. Witte Draft Memorandum of August 23, 2005

Administration of Parcels Claimed for Augmentation Credit Agreement

This Agreement is entered into by the State of Colorado and the State of Kansas to resolve issues relating to the administration of parcels claimed for augmentation credit.

Colorado and Kansas agree as follows:

1. In reviewing and approving replacement plans, submitted pursuant to the Colorado Use Rules, the Colorado State Engineer and the Division Engineer for Water Division 2 shall use the procedures attached hereto as Exhibit A for dry-up of irrigated acreage by water rights that are proposed for use as augmentation water.

2. The Colorado State Engineer and the Division Engineer for Water Division 2 shall use the procedures attached as Exhibit A for monitoring and documentation of dry-up acreage by water rights in approved replacement plans.

3. The State of Kansas will be provided with mapping of the dry-up acreage in an agreeable GIS format by April 15th of each year, or at a later time with appropriate notice. In addition, Kansas will be provided with copies of documentation resulting from dry-up monitoring and documentation upon request. A summary table listing all dry-up tracts with any problems found, adjustments to acreage or credits, or other changes from the plan approvals, will be generated at the end of each year. The States will jointly cooperate to ensure information is exchanged on a timely basis to resolve concerns associated with the dry-up acreage as they are discovered.

4. This agreement does not preclude changes to the monitoring and documentation procedures attached as Exhibit A that either State believes are necessary or appropriate in the future. The Colorado

State Engineer and the Kansas Chief Engineer and their staffs agree to work cooperatively in the event such changes are proposed.

5. Any disagreements **of parcels claimed for augmentation credit** will be subject to the Dispute Resolution Process included in the final decree in *Kansas v. Colorado.*

6. The agreement to use the procedures attached as Exhibit A resolves Issue (b)13.c.3 of the Jointly Proposed Schedule to Resolve Issues That Remain After the Supreme Court's Opinion As of March 11, 2005 in *Kansas v. Colorado,* No. 105, Original.

JOINTLY APPROVED: 9-30-2005

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

Irrigated Acreage Updating Agreement

This Agreement is entered into by the State of Colorado and the State of Kansas to resolve issues relating to periodic updates of irrigated acreage.

Colorado and Kansas agree as follows:

1. Colorado will continue to acquire satellite imagery on a five-year cycle with the next acquisition year scheduled for 2008 in order to maintain updated

mapping of irrigable and irrigated acreage. In recognition of the fact that this technology is improving and changing over time, the States agree to conduct a review of the appropriate level of detail of the imagery to obtain, and the classification alternatives and the details associated with ground truthing and reference data during the year preceding the classification year; in order to establish acceptable study parameters for each classification year. Should events occur during intervening years that the States agree could best be investigated using satellite imagery for either, the entire study area or specific portions of the study area, additional satellite imagery may be obtained and analyzed consistent with current best practices. Should the Landsat images that Colorado has relied on in the 1998 and 2003 updates be no longer available due to loss of satellite transmission or other unforeseen circumstances, the States agree to review cost effective ways to accomplish the acquisition of satellite imagery through the Arkansas River Compact Administration.

2. Colorado will continue to acquire digital aerial photographs through annual and periodic programs now being conducted by the Farm Service Agency for the U.S. Department of Agriculture. Kansas and Colorado experts will utilize updated digital aerial photography along with any data collected on parcels to document changes in irrigated lands from year to year. Changes to parcel boundaries will be periodically proposed by Colorado and reviewed by Kansas. Feedback from Kansas will be

considered by Colorado and changes in the parcel boundaries as a result will be represented in the GIS database.

3. Colorado will continue their farm verification program on wells and acreage irrigated by wells. This program is set up to annually update data on a rotating basis at least once every five years for each of the wells active in replacement plans. Verification interviews will continue to be conducted at the conclusion of each irrigation season on the twenty percent of wells reviewed that year. Data from interviews will be compiled for use in preparing acreage input data sets for H-I Model runs made in each March. This data will be transmitted to Kansas for its review each year prior to March.

4. This agreement does not preclude changes to the above procedures that either State believes are necessary or appropriate in the future; but the Colorado State Engineer and the Kansas Chief Engineer and their staffs agree to work cooperatively in the event such changes are proposed and any disagreement will be subject to the Dispute Resolution Process included in the Final Decree in *Kansas v. Colorado, Original No. 105.*

JOINTLY APPROVED 9-30-2005 .
Date

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

Outliers Agreement

This Agreement is entered into by the State of Colorado and the State of Kansas to resolve the issue regarding the handling of outlier months for calibration purposes.

Colorado and Kansas understand that when outlier months (as that term has been used in *Kansas v. Colorado,* No. 105, Original, excluding extraordinary high flood flows in certain "outlier" months) have been removed in the monthly stream flow and diversion data in the calibration statistics developed by Kansas' experts to evaluate the calibration of the H-I model, averages have been calculated using a weighted average to reflect that outlier months have been removed. For example, when the months of April and May 1951 are removed from the observed and predicted stream flows at the Stateline, the annual averages for Stateline flows for 1950-94 or other years have been adjusted to reflect that only 10 months of data were used for 1951.

Based on the foregoing understanding, Colorado and Kansas agree as follows:

1. For the purpose of recalibrating the H-I model and running the model for the years 1997-2004, outlier months in the calibration statistics will be handled as Kansas' experts have handled them in the past, i.e., the same months will be excluded in the calibration statistics and the averages will be calculated as Kansas' experts have calculated them in the past.

2. The criteria that were used to identify outlier months will be included in the H-I model documentation developed in *Kansas v. Colorado.* The States may in the future review the predicted and observed diversions and stream flows to determine whether the months removed as outliers are consistent with the criteria or other months should be removed as outliers.

3. This agreement resolves Issue (b)12.d of the Jointly Proposed Schedule to Resolve Issues That Remain After the Supreme Court's Opinion As of March 11, 2005, in *Kansas v. Colorado,* No. 105, Original, with regard to handling of outliers for calibration purposes but does not resolve whether any other changes should be made to the observed diversion records used for calibration of the model.

JOINTLY APPROVED ON SEPTEMBER 30th, 2005:

/s/ Hal D Simpson	/s/ David L. Pope
Hal D. Simpson	David L. Pope
Colorado State Engineer	Kansas Chief Engineer

APPENDIX – Exhibit 4

ORDER RE POSSIBLE CHANGES IN DIVERSION RECORDS USED FOR CALIBRATION OF THE H-I MODEL

Order dated 10/19/05

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE POSSIBLE CHANGES IN DIVERSION RECORDS USED FOR CALIBRATION OF THE H-I MODEL

On October 3, 2005 I issued an Order Following Status Conference of September 30, 2005. The Order among other matters provided that Issue 12(d) of the March 11, 2005 list of issues still remained unresolved. The States were ordered to present letter briefs on the issue, and such briefs were timely filed and have now been considered. The legal issue raised by Kansas with respect to Issue 12(d) is whether the observed diversion records previously used can now be changed to calibrate the H-I model for future use. If so, there still may be factual issues over what changes should be made.

There are two sets of diversion records that have been used throughout the trial to calibrate the H-I

model. The first set of data is for the years 1950-1985 and these data were published in the Annual Reports of the Arkansas River Compact Administration ("ARCA"). The second set of data for 1986-94 was compiled from Colorado water commissioner records. It is Kansas' position that these data are "final and binding on the States, except where modified by agreement of the States or their experts." (Letter, p. 2) Colorado, on the other hand, believes that if more accurate diversion data are available, "there is no legitimate reason why the diversion records cannot be corrected for the purpose of calibrating the model." (Letter, p. 4) Indeed, Colorado provided Kansas with a list of recommended changes to the diversion records prior to the May Progress Report on the discussions among the experts.

It should be noted that the proposed changes are to be used in the calibration of the H-I model, along with all of the other changes that have now been agreed to, for the purpose of determining *future* Compact compliance. There is no issue here of reaching back to modify any past decisions in regard to depletions and Compact compliance in prior years. Nor will any exhibits already admitted into evidence be changed.

Ordinarily there would be no question about incorporating more reliable data into the model if such data should become available. Throughout the trial, actual data have been substituted for engineering assumptions that were used earlier; data have been corrected; and new and improved technologies

and methodologies have been incorporated from time to time (PET values and USGS recommendations for measuring pumping). Compact compliance is measured by use of the H-I model, and it is essential that the model results be as reliable as possible. In turn, model reliability depends upon accurate and complete data. It has always been understood by both States that there would be ongoing efforts to improve the model (e.g., better estimates for ungauged tributary inflow).

In this situation, however, Kansas argues that the diversion records have been "adopted" by ARCA and cannot be changed, although that argument applies only to the records for the 1950-85 period, and not to 1986-94. It is true that the Compact charges ARCA with the administration of the Compact, and to cooperate with the States "in the systematic determination and correlation of the facts as to the flow and diversion of the waters of the Arkansas River." (ARC, Art. VIII-G(1))

Kansas relies heavily upon a decision by the Special Master, the Hon. Vincent McKusick, in *Kansas v. Nebraska and Colorado*, No. 126 Orig., which Kansas contends addresses a similar issue. In that case, the Engineering Committee of the Republican River Compact Administration ("RRCA") made determinations for given years of virgin water supply, allocations of that supply, and of consumptive use. The Engineering Committee's computations were based on formulas adopted by RRCA, and were accepted by RRCA for each year from 1959 through

1994. In addition, each State, acting through its chief water official, took the further act of reviewing, and joining in unanimous acceptance of, those computations. (McKusick Memorandum of Decision No. 1 at D1-6)

The issue in that case was whether RRCA's determination foreclosed a complaining state from making a claim for excess water consumption by a defending state in a year in which RRCA had accepted the Engineering Committee's computations. Under those circumstances, Special Master McKusick ruled that the computations "must be held final and binding on the States." (*Id.* at D1-6) Under the facts at hand, the Special Master's decision was consistent with the Supreme Court's opinion in *Texas v. New Mexico* (1983) 462 U.S. 554 which held that water shortfalls determined by the Pecos River Commission for the period 1950-61 were binding.

It is of mild interest that Kansas, in the Nebraska case, took a position opposite to its present view. Kansas argued that the computations approved by the Republican River Compact Administration should *not* be considered "final and binding on the States." (*Id.* at D1-7) But that is of no moment, for the facts in the Republican River case are not the same as those here, and are not controlling on the issue of whether diversion records approved by ARCA can be modified for the purpose of calibrating the H-I model for future use.

The issue before Special Master McKusick went directly to the issue of the Compact compliance. The Compact Administration had not only the authority but the duty "to monitor and assess compliance with the Compact's allocation through computation of the annual virgin water supply, allocations of that supply, and beneficial consumptive use." (*Id.* at D1-6) The Special Master's decision went "no further than giving conclusive effect to past RRCA water computations for the purpose of judging past Compact compliance." (ID at D1-13) Indeed, the Special Master went on to say that "figures independently collected" should be available "even for prior years" to the extent necessary to create a reliable model of the effects of groundwater pumping on stream flow in the Republican River Basin. (*Id.* at D1-13)

The actions of the Arkansa River Compact Administration did not "assess compliance" with the Compact. The diversion records accepted and published by ARCA had nothing to do with Compact compliance. Diversions have never been challenged by Kansas. Rather, it was postcompact well pumping that was claimed by Kansas, and found by the Supreme Court, to be a violation of the Compact. Moreover, even some of the diversion records published by ARCA were marked "Subject to Revision." (See, e.g., 26th Annual Report, Appendix B-13) ARCA's publication of diversion data was simply not on par with RRCA's approval of prior Compact compliance.

The 1986-94 diversion records were compiled from records submitted by the Colorado water commissioners rather than from records published in the ARCA annual reports. Kansas opposes changes to these records because it would "complicate an already difficult arbitration schedule." (Letter, p. 2) I do not find this argument persuasive. The issue of modifying the diversion records has been in discussion since at least May when Colorado provided a list of recommended changes. Additional time was sought to enable Kansas to complete its review, and the August Progress Report stated it was expected that the issue could be resolved by September 12. The final September 15 Progress Report said that Kansas had not been able to complete the review due to the intensive negotiations on some of the other issues, and noted that Kansas had raised the legal question of whether the records published by ARCA and admitted into evidence could be changed. The September Report concludes, "Except to the extent that the Special Master chooses to resolve the legal question, these issues will be scheduled for arbitration."

Accordingly, it is hereby determined and ordered that:

(1) These is no legal reason why corrected or more accurate diversion records for the period 1950-94 may not be used in calibrating the H-I model for future use.

(2) If agreement cannot be reached, any factual issues in regard to Colorado's proposed changes

in diversion data shall be submitted to arbitration.

(3) The States shall fit this issue into the arbitration schedule already approved, if that is feasible. If it is not, the States shall adopt a separate arbitration schedule for this issue. If the States cannot agree on such a schedule, they shall refer the matter back to me.

Dated: October 19, 2005.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 5

ORDER RE ACCUMULATION OF CREDITS

Order dated 11/15/05

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE ACCUMULATION OF CREDITS

Issue No. 17 in the States' joint letter of March 11, 2005 concerned the question of whether any limit should be placed on the accumulation of credits by Colorado for the delivery of replacement water. This issue was not resolved by the States during the period of discussion among the experts, and at the Status Conference on September 30, 2005, the States agreed that the issue would be submitted to me for decision on letter briefs. Simultaneous briefs were submitted on October 14, with replies filed on October 28, 2005.

The issue arose during the final trial segment. During the testimony on possibly using a ten-year accounting period for the H-I model, Mr. Book, the long-time expert for Kansas, expressed the need for a cap on the accumulation of accretions (credits) so that

accretions occurring in wet years would not be used to offset much later dry year depletions. (RT Vol. 265 at 19-30) No further evidence was then presented on the issue, but both States have now briefed the question on the basis of the existing record.

Kansas argues that the ten-year accounting approach requires "limits on the ability of Colorado to utilize excess water available during wet years to offset depletions . . . during dry years." (Kan. Oct. 14 Brief at 1) Kansas proposes an annual credit limit of 3,000 acre-feet for accretions generated in any one year, and a ten-year total limit of 6,000 acre-feet on accretions that may be carried forward to offset calculated depletions. Accretions in excess of these cap limits would be lost. Colorado, however, contends that any limit on the accumulation of accretions is not necessary, and that any fair limit would be difficult to fashion.

Kansas also proposes: (1) that Colorado credits be discounted for evaporation whenever there are more than 5,000 acre-feet remaining in the Kansas Section II account under the 1980 Resolution; and (2) that "accretions caused by replacement quantities in excess of the maximum farm efficiencies times the pumping will not be allowed." Neither of these complex proposals, however, is discussed in the Kansas briefs. There is no explanation of the need for these proposals, nor of their fairness or consequences, and they certainly go well beyond the suggestion made by Mr. Book. They are not considered further in this Order.

At the outset, the record needs to be corrected. Kansas states that the "possibility of a limit on the carryover of accretions in applying the ten-year accounting period was itself the primary basis on which the Special Master accepted the Colorado ten-year accounting proposal." (Kansas Oct. 28 Brief at 2) That statement is not correct. I found that the evidence did not support the accuracy or reliability of the H-I model on an annual or short term basis. (Fourth Report at 110, 115) A longer period of time is required to smooth out the variability of annual model results. It is only when longer term averages are used that the model simulations more closely match historic data by which the accuracy of the model is judged. There was an enormous amount of evidence on this subject, and, in particular, that a period of 10 to 15 years of model results should be used in determining compact compliance. (RT Vol. 231 at 111-112; RT Vol. 257 at 194) This was the kind of evidence that I relied upon in recommending the ten-year accounting program, and not the possibility of a limit on accretions.

The Kansas proposal for limits on accretions appears to be driven by uncertainty in the model results. Kansas states that the limits "should not exceed a reasonable expectation of the uncertainty in the computed depletions." (Kan. Oct. Brief at 6) The 3,000 acre-feet annual cap is said to represent a "reasonable expectation of the uncertainty in computed depletions," and the 6,000 acre-feet ten-year limit is based on a "reduction in uncertainty." (Kan.

Oct. 14 Brief at 6-7) But as Kansas acknowledges, uncertainty with respect to the model results of depletions is "equally true with regard to the calculation of usable accretions." (Kan. Oct. 28 Brief at 2) The Kansas logic, if its uncertainty arguments were adopted, would seem to lead to a limit not only on accretions, but also upon depletions.

However, I do not believe that the model results, either for accretions or depletions, should be modified because of uncertainty. Nor did I understand Mr. Book's comments to be based on model uncertainty. The H-I model was developed by Kansas. Steven Larson, the Kansas modeling expert for more than a decade, has testified often that the model provides the best available estimate of compact compliance, and is reasonably reliable, even on an annual basis. Use of the ten-year accounting period was an effort to increase the accuracy of the model results, and Kansas itself states that model uncertainty over a ten-year period is about one-fifth of that for a single year. (Kan. Oct. 14 Brief at 7) Use of the H-I model to determine compact compliance, and use of the ten-year accounting program has been approved by the Supreme Court, and the States continue to work together to improve the model. Moreover, the Kansas evidence cited in support of its uncertainty arguments relates to the earlier version of the model, without the improvements now being developed, and without the use of ten-year accounting.

It should also be noted that the specific Kansas accretion limits are based upon an estimated level of

future pumping that differs from Kansas' most recent testimony. Kansas states that future pumping will average about 95,000 acre-feet a year, but in the last trial segment Mr. Book estimated such pumping at 130,000 acre-feet. (RT Vol. 224 at 112-13) Nonetheless, whether Kansas was more accurate in 2003, or more accurate now, model results should not be limited based on estimates of future pumping in Colorado.

The justification given by Kansas for a limit on accretions does not address what I understood to be the State's concern, as testified to by Mr. Book. I thought he wanted to prevent Colorado from over-delivering in wet years when replacement water might be readily available, and then drawing upon that credit in dry years instead of providing actual replacement water. Yet the Kansas briefs are not tailored to this point. Nor are the Colorado briefs, since Colorado responds to the Kansas arguments in regard to model uncertainty.

Nonetheless, turning to the issue as I understood it, compact compliance begins with Colorado's Use Rules, and the requirement to provide replacement water to offset stream depletions. The amount of replacement water initially required depends upon "presumptive stream depletions" – 30 percent of the amount of water pumped from supplemental wells, 50 percent of the pumping from sole source wells, and 75 percent from sprinkler irrigation systems. Kansas experts have always testified that these percentages were low and should more closely reflect actual

consumptive use. (Fourth Report at 27, 108) Using 1950-94 hydrology, the Kansas analysis predicted that in the future the Colorado Use Rules would come up short by an average of 11,036 acre-feet per year. (Fourth Report at 96) However, Kansas did not advocate increasing the presumptive stream depletion percentages since it was not believed that such increases would be the most efficient way to get additional water to Kansas. (RT Vol. 237 at 146-47; RT Vol. 262 at 85-86) Instead, Kansas proposed that additional water be delivered to the Offset Account for the direct benefit of Kansas. (*Id.*) Indeed, Kansas proposed that 15 percent of Colorado's pumping be placed in the Offset Account, in addition to the replacement water required under the Rules. (Fourth Report at 106) In short, and relying on Kansas evidence, it would not appear that providing replacement water on the basis of presumptive stream depletions would result in excess accretions. Replacement water is monitored on a monthly basis, trying to match depletions when and where they occur. (Fourth Report at 19) Any excess deliveries are carried over on a monthly basis only, not into any future year. (RT Vol. 222 at 43, 45)

The Use Rules do provide that additional replacement water may be required. Mr. Simpson testified that the Offset Account acts as a buffer if the presumptive depletion factors should fall short. In 2002, one of the driest years in history, Mr. Simpson in fact drew funds from an ongoing state fund to acquire an additional 3,600 acre-feet of water to be

placed in the Offset Account for Kansas. (Fourth Report at 119) So perhaps the issue is whether the Offset Account will be used to establish excess credits to the detriment of Kansas in dry years. It would appear not.

The Offset Account, established by Resolution of the Arkansas River Compact Administration and approved by Stipulation in 1997, provides for a new storage account in John Martin Reservoir. The Account allows Colorado to deliver replacement water into the Reservoir for the purpose of offsetting depletions to usable Stateline flows; to receive credit (less transit losses) for delivery of such water to the Stateline; and for the water to be released at the demand of Kansas. In general, evaporation losses fall on Colorado until a notice of depletion is provided to Kansas. Moreover, any annual deliveries in excess of 10,000 acre-feet are subject to a 5 percent storage charge which goes to Kansas, and does not offset depletions. Certainly there are disincentives to any large build-up of credits, and the entire Account is limited to 20,000 acre-feet.

Operation of the Offset Account is also the subject of a recent and complex agreement, signed by the Colorado State Engineer and the Kansas Chief Engineer on September 30, 2005, and is perhaps fully understood only by those who negotiated it. However, the new Agreement includes in part detailed provisions relating to Colorado credits for use against depletions of usable flow, and the assignment of evaporation losses. It is noteworthy that the Kansas

proposal to limit accretions excludes the accumulation by Colorado of Offset Account credits pursuant to this most recent Agreement.

Based on the record and the briefs submitted by the States, I conclude that Kansas has not established a need to include the proposed limits on accretions in the final Judgment and Decree. If there are reasons, other than those given in the briefs already filed, why there should be a limit on accumulated credits, then Kansas may submit another brief within 10 days, and Colorado may have an equal time to respond. This additional allowance, however, does not include the proposals for evaporation discounts in the Kansas Section II account or limits related to maximum farm efficiencies.

Dated: November 15, 2005.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 6

ORDER REGARDING AN AWARD OF COSTS

Order dated 12/19/05

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER REGARDING AN AWARD OF COSTS

In my order of September 30, 2005, I directed the States, absent an agreement on costs, to submit simultaneous briefs and their respective proposals regarding costs by November 30, 2005. Both States have filed such briefs. The Kansas brief focuses on the threshold issue of whether or not costs should be awarded to the State of Kansas. This is principally a question of whether Kansas should be regarded as the "prevailing party" under Rule 54(d)(1) of the Federal Rules of Civil Procedure. Assuming a favorable ruling on this issue, Kansas proposes that the States be encouraged to agree upon the specific expenses that qualify as costs, and that I resolve any issue not agreed upon.

Colorado's brief also addresses the prevailing party issue. If I should determine that Kansas is the

prevailing party for purposes of Federal Rule 54(d)(1), Colorado proposes that the award of costs be limited to Kansas' costs to prove its damages and additional depletions during the remedy phase, with an appropriate reduction for cumulative evidence on the "time value of money" principle during the damages segment of the trial. Colorado also maintains that expert witness fees are limited by 28 U.S.C. § 1821(a) and (b), and that costs associated with the preparation of expert witnesses may not be included in a cost assessment. The Kansas brief did not reach this issue.

There is no disagreement between the States on the basic legal principles governing costs. Rule 17.2 of the Supreme Court's Rules states that in original actions the Federal Rules of Civil Procedure may be taken as guides. Rule 54(d)(1) provides that "costs other than attorneys' fees shall be allowed as of course to the prevailing party unless the court otherwise directs." A presumption exists that the prevailing party is entitled to costs, and the losing party bears the burden of justifying a denial of costs. *Holton v. City of Thomasville School Dist.*, 425 F.3d 1325, 1355 (11th Cir. 2005); *Aerotech, Inc. v. Estes*, 110 F.3d 1523, 1526 (10th Cir. 1997); *Delta Air Lines, Inc. v. Colbert*, 692 F.2d 489, 490 (7th Cir. 1982). However, the court has discretion over the award of costs. *Crawford Fitting Co. v. J.T. Gibbons, Inc.* 482 U.S. 437, 441-42 (1987); *Rodriguez v. Whiting Fams, Inc.*, 360 F.3d 1180, 1190 (10th Cir. 2004); *Serna v. Manzano*, 616 F.2d 1165, 1167 (10th Cir. 1980). If a party is granted substantial relief, the party may be considered as the prevailing party even

though it does not win on each of its claims. *Buckhannon Home v. West Va. Dept.*, 532 U.S. 598, 603 (2001); *Slane v. Mariah Boats, Inc.*, 164 F.3d 1065, 1068 (7th Cir. 1999); *Neal & Co., Inc. v. U.S.*, 121 F.3d 683, 685 (Fed. Cir. 1997). In original actions, where the States have a "litigious interest," the Supreme Court has awarded costs. *North Dakota v. Minnesota*, 263 U.S. 583, 584 (1924), *Wyoming v. Colorado*, 259 U.S. 496 (1922), *Missouri v. Illinois*, 200 U.S. 496 (1906).

In this case, the Kansas complaint included three principal claims, each involving an alleged violation of the Compact: (1) postcompact pumping in Colorado; (2) the operation of Trinidad Reservoir; (3) and the operation of the Pueblo Winter Water Storage Program (WWSP). Colorado filed two counterclaims: for storage of a release from John Martin Reservoir in Lake McKinney, and postcompact well development in Kansas. Kansas prevailed on its postcompact well claim, but its Trinidad Reservoir and WWSP claims were dismissed. Kansas prevailed on Colorado's two counterclaims.

However, there is no question that the major issue in the case has been Colorado's postcompact well pumping. In my First Report I found that "[t]he major issue in the trial . . . is whether postcompact well pumping in Colorado has violated Article IV-D of the Arkansas River Compact," and I recommended that Kansas "prevail on this issue." (Page 336) Indeed, since the Supreme Court's first Opinion on this case in 1995 (514 U.S. 673), Colorado's postcompact

well pumping has been the only issue in the final three segments of the trial which concluded on January 17, 2003. I find, therefore, that Kansas is the prevailing party within the meaning of Rule 54(d)(1) of the Federal Rules of Civil Procedure, and is entitled to costs. However, the amount of those costs is a more complicated issue.

As discussed at length in my First Report, the liability phase of the trial was interrupted for almost a year while Kansas developed a "replacement case." When the trial resumed, Kansas' new team of experts testified that the evidence of depletions presented by Kansas during the first several months of the trial was not reliable, and those experts dramatically reduced Kansas' claim of shortage. This is an important factor that must be taken into account in the final determination of a cost award. While it will not be possible to isolate and identify costs precisely, Kansas should not receive costs for its failed efforts at establishing the amount of depletions. Moreover, the cost allocation should recognize the additional burdens that were placed on Colorado in having to meet a second Kansas case.

In view of the unusual circumstances that occurred during the liability segment of the trial, Colorado proposes that no costs be awarded for this phase of the trial, and that Kansas be limited to costs to prove damages and additional depletions during the remedy phase, with an appropriate reduction for cumulative evidence on the "time value of money" during the damages phase. While such an arbitrary

basis may be ultimately an appropriate subject to consider in a settlement, there were many elements of Kansas' liability case that were not flawed. These aspects of its case were essential to its claim during the liability segment of the trial, and certainly are entitled to be favorably considered in assessing costs. For example, Kansas introduced essentially the only evidence on the Compact history, the Compact negotiations, and the meaning of the Compact. It was also the Kansas evidence on Colorado's postcompact pumping that was primarily accepted. Kansas also developed the evidence on Colorado's administration, and lack thereof, of groundwater pumping. These examples are not meant to be all-inclusive, but only to illustrate that the Colorado proposal would eliminate many parts of the early Kansas case that do provide a legal basis for costs.

If Kansas is deemed to be the prevailing party, as I have concluded, Colorado points to a number of factors that should reduce any cost award: the "substantiality" of Kansas' victory, noting the dismissal of its WWSP and Trinidad Reservoir claims; the major reduction of its depletion claim; cumulative evidence on the "time value of money principle"; the fact that the prejudgment interest was substantially less than the amount claimed; that Colorado "proceeded promptly and in good faith" to bring the State into compliance, implementing improved data programs; and that Kansas' exceptions to my Fourth Report were overruled. The law does not require, however, that a party prevail on every issue, or to the full

extent of its claims in order to recover costs. *Slane v. Mariah Boats, Inc.*, 164 F.3d 1065, 1068 (7th Cir. 1999); *Roberts v. Madigan*, 921 F.2d 1047, 1058 (10th Cir. 1990); *Schultz v. U.S.*, 918 F.2d 164, 165-67 (Fed. Cir. 1990). In this case, over the lengthy trial, both States have won and lost on specific issues. Nor do I believe there should be a discount for cumulative evidence, since prejudgment interest was a major issue that Colorado opposed both as a matter of law and fact. (Third Report at 92) And Colorado should not receive credit, at Kansas' expense, for the major improvements made to its irrigated acreage and well verification program. These data, sometimes corrected and amplified by Kansas experts, were a part of Colorado's case, and a continuing benefit to the whole State of Colorado.

Colorado raises a legal issue, however, that could have a major impact on the amount of costs awarded. Colorado cites authority to the effect that expert witness fees are limited to an attendance fee of $40 per day, and that costs of preparation may not be included. (28 U.S.C. § 1821(b); *Soberay Mach. & Equip. Co. v. MRF Ltd.*, 181 F.3d 759, 771-72 (6th Cir. 1999).) The Kansas brief was confined to the prevailing party issue, and did not address the issue of experts' actual costs. If the States are unable to agree upon an award of costs, Kansas is directed to respond to the § 1821(b) issue.

Accordingly, it is hereby ordered that the States confer, and taking this Order into account, attempt to agree upon an award of costs. Kansas shall first

present its proposal, and the basis therefor, to Colorado. If the States do not reach agreement, each State by January 24, 2006, shall submit its specific amount of proposed costs, the general basis for the figure, and Kansas shall address the § 1821(b) issue.

Dated: December 19, 2005.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 7

ADDITIONAL ORDER
REGARDING AN AWARD OF COSTS

Order dated 4/17/06

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ADDITIONAL ORDER
REGARDING AN AWARD OF COSTS

This is the second Order concerning an award of costs. In my first Order dated December 19, 2005, I determined that Kansas was the prevailing party under Rule 54(d)(1) of the Federal Rules of Civil Procedure and is entitled to costs, although the amount of those costs is a "more complicated issue." During the liability phase of the trial, it became necessary for Kansas to interrupt its case for almost a year, resulting in a "replacement case." I indicated in my earlier Order that Kansas' costs should not include these failed efforts in originally attempting to establish the amount of depletions, and the final cost allocation should recognize the additional burdens placed on Colorado in having to meet a second Kansas case on the liability issue.

Having decided the "prevailing party" issue, I directed the States to confer to see if an agreement on costs could be reached, and if not, to submit specific cost proposals, and to brief the issue of whether expert witness fees are limited to $40 per day pursuant to 28 U.S.C. § 1821(b). In separate briefs filed February 1, 2006, the States reported that they had come to agreement on certain cost items, but were unable to reach a full agreement. Both States provided specific proposals on items to be included in a cost award, and the amounts of such items.

Kansas submitted alternate proposals, one based on the assumption that expert witness fees were not limited to $40 per day. The other calculation assumed that expert witness costs were, in fact, limited to those allowed for lay witnesses. In both of these calculations, Kansas made a 25% reduction in the witness fees associated with the two experts during the liability phase who were replaced. Without the $40 per day limit, the Kansas proposal for expert fees and expenses totaled $9,214,727.81. Assuming the limit in § 1821(b) to be applicable, such costs were $162,927.94.

After reviewing the Kansas proposal, Colorado responded that it did not have sufficient information to evaluate all of the costs submitted, but Colorado's proposed witness costs were $103,308.94. This total was based on applying the § 1821(b) limit, and reflected a reduction in the number of attendance days allowed for certain witnesses.

The principal legal issue is whether the $40 per day limit found in § 1821(b) governs an interstate proceeding in the original jurisdiction of the United States Supreme Court. I have determined that it does. There is no question about the facts that such limit applies to expert witness costs in cases arising in the federal district courts. That issue was settled in *Crawford Fitting Co. v. J.T. Gibbons, Inc.*, 482 U.S. 437 (1987). In that decision the Supreme Court held that "when a prevailing party seeks reimbursement for fees paid to its own expert witnesses, a federal court is bound by the limit of § 1821(b), absent contract or explicit statutory authority to the contrary." (*Id.* at 439) In this opinion, the majority of the Court rejected the view that the language in Rule 54(d) of the Federal Rules of Civil Procedure was intended as a grant of discretion to district courts in the allowance of expert witness fees.

Kansas, however, does not challenge the application of § 1821(b) to federal district court cases. Rather, it argues that *Crawford Fitting* does not apply here because that ruling was expressly dependent on 28 U.S.C. § 1920, and § 1920 does not govern an award of costs in original proceedings in the Supreme Court. Kansas maintains that the Supreme Court's authority to award expert witness fees as costs is found in 28 U.S.C. § 1911, and Congress in enacting § 1911 carefully avoided "any attempt to interfere with the Court's inherent discretion to award costs." (Feb. 1, 2006 Brief at 6)

Section 1920 provides that a "judge or clerk of any court of the United States" may tax as costs certain enumerated fees, including the fees of "witnesses." It is Kansas' position, however, that this section does not apply to the Supreme Court because the term "judge" does not include a "justice" of the Supreme Court. Had Congress intended § 1920 to apply to original proceedings, Kansas argues that it would have included the word "justice" as it has in other provisions of Title 28. See, e.g., §§ 453-56, 458, 459. However, Kansas ignores the remaining language in the sentence referring to "any court of the United States." And that language is specifically defined to include the Supreme Court for all purposes of Title 28. 28 U.S.C. § 451. Thus the term "judge," I conclude, must be read in its broad sense. Otherwise, the Kansas interpretation would be in direct conflict with a specific statutory definition. Indeed, the term "judge" does sometimes refer to a justice of the Supreme Court, as in Art. III, Sec. 1 of the Constitution itself.

Moreover, § 1821 which amplifies the fees and allowances that may be paid to witnesses, also specifically applies to the Supreme Court. That section also provides that a witness in attendance at "any court of the United States" shall be paid $40 per day for each day's attendance, as well as travel expenses and a subsistence allowance when an overnight stay is required. § 1821(b). This is an absolute requirement, not dependent on the term judge or justice. This section again specifically incorporates § 451

defining the term "any court of the Untied States" to include the Supreme Court. § 1821(a)(2).

In the face of these explicit applications of the expert witness fee limits to the Supreme Court, it is hard to accept Kansas' claim that Congress "made a calculated decision to exclude the Supreme Court" from such limits by using the term "judge," without adding the term "justice."

Nor do I find that Kansas' argument on Congressional intent is aided by 28 U.S.C. § 1911. That section provides:

> The Supreme Court may fix the fees to be charged by its clerk.
>
> The fees of the clerk, cost of serving process, and other necessary disbursements incidental to any case before the court, may be taxed against the litigants as the court directs.

Kansas cites a number of state cases to the effect that the term "disbursements" is consistently interpreted to refer to expenditures which may be recovered as a cost. But these are cases under various state cost statutes. No case is cited interpreting § 1911. Moreover, Kansas puts its emphasis only on the word "disbursements" without the caveat that the statute covers only "incidental" disbursements. This section applies only to "fees to be charged by its [the Supreme Court] clerk." I do not believe that expert witness fees were intended to be covered. Certainly in a case of

this kind, expert fees are not "incidental," and would not be set by the Clerk.

When Congress has intended to allow the recovery of expert witness fees and attorney fees, it has done so clearly under specific statutes. Many of these statutes are discussed in *West Virginia University Hospital v. Casey*, 499 U.S. 83 at 88-90 (1991). Absent such statutory intervention, "costs" as allowed under Federal Rules are not the same as expenses of litigation. Rule 17.2 of the Supreme Court Rules provides that in original actions the Federal Rules of Civil Procedure may be taken as guides, and there appears to be no legal reason why *Crawford Fitting* should not be applicable here. The Court held that "federal courts are bound by the limitations set out in 28 U.S.C. § 1821 and § 1920." *Crawford Fitting* at 445.

While the expert fee limit accounts for the largest difference in the Kansas and Colorado cost proposals, the States still differ over other issues. Kansas, however, suggests that "further discussion" between the States on these issues might allow resolution of the dollar figures. The following observations might assist in those discussions.

Section 1821(a)(i) provides that a "witness in attendance at any court of the United States" shall be paid the fees as prescribed. Section 1821(b) limits the witness fee to $40 per day "for each day's attendance." The States are in agreement as to the number of days that the various expert witnesses actually testified. But they disagree over the allowance that should be

made for the days during which experts were present in court, but did not testify. Kansas multiplied the testimony days by two for certain witnesses and by three for others, while Colorado reduced the total number of attendance days for certain witnesses. I am not sure whether any simple multiplier provides an appropriate result, but I believe that a "day's attendance" should be liberally construed. This was a case of expert testimony. It was necessary for experts not only to testify, but also to hear the testimony of opposing witnesses, and to assist counsel in cross-examination. Both States used experts in the same way, and properly so.

For the disruption in the liability phase of their case, Kansas has proposed a 25% reduction in the costs associated with two experts, and has already incorporated that reduction into its cost submittal. That reduction, however, appears to be on the low side. Moreover, an appropriate reduction should also apply to the reporter's and Master's costs associated with the necessity for the replacement case.

Kansas has proposed that all of the Master's fees and expenses should be reallocated and assessed against Colorado as costs. Such fees and expenses were allocated 40% to each State and 20% to the United States during the liability phase of the trial. Thereafter, they have been allocated and paid by the States equally. Colorado acknowledges that these fees and expenses can be reallocated by the Court, but maintains that it would be unfair to reallocate all of Kansas' share, including time spent on issues

wherein Kansas claims were denied, or arguments on which Kansas was not successful. I agree. Colorado proposes, if the Special Master fees and expenses are to be reallocated, that it be on the basis of two-thirds to Colorado and one-third to Kansas, which may not be unreasonable.

It is understood that any agreements reached on these various costs issues will not preclude either State from taking exception to the legal issues decided in my Orders, and their subsequent inclusion in a Decree.

Based on this Order, if the States cannot agree upon the costs to be included in the Decree within a month from the date hereof, they are to report on the items and amounts on which there is agreement, and on the items still in controversy. I will then issue a final Order on the amount of costs to be included in the Decree.

Dated: April 17, 2006.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 8

ORDER RE DECREE ISSUES – INJUNCTION

Order dated 1/3/06

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE DECREE ISSUES - INJUNCTION

At my direction, Kansas submitted an initial draft of a Judgment and Decree on July 29, 2005. Colorado objected to certain provisions, and these issues were briefly discussed at the Status Conference on September 30, 2005. Simultaneous briefs on several Decree issues were ordered filed on December 9, with reply briefs due December 16, 2005. These briefs have now been filed and read. In its Closing Brief, Kansas indicated that it would revise portions of the earlier draft Decree in response to Colorado's comments, and such a revised draft (number three) indeed has now been filed. However, Colorado has had no opportunity yet to comment on this latest draft and the disputed issues (e.g., "fast tracking" in the arbitration appendix, amendments of the Colorado Rules, replacement water sources, etc.). Colorado's comments are not due until January 16, 2006.

Therefore, this Order is confined to the single issue of whether the Decree should include an injunction, that issue having been thoroughly briefed by both States. Moreover, this Order does not deal with the specific language submitted by Kansas in its latest draft (December 28, 2005) of the Decree. Rather, only the concept of issuing an injunction is determined herein.

It is the Kansas position that injunctive relief was sought in its complaint, commanding Colorado to deliver water in accordance with the "provisions of the Arkansas River Compact," and that it is now entitled to such relief. (Kan. Br. at 2-5) Colorado objects to any injunction, but if granted, states that it should be "limited to post-compact well pumping, the claim on which Kansas prevailed." (Colo. Br. at 12, fn. 1, at 19)

Kansas argues that Compact compliance depends upon the implementation of the Colorado Rules, and the proper administration of these Rules "cannot be guaranteed without an injunction." (Kan. Br. at 6) Non-binding assurances, it is argued, are not sufficient. *Friends of the Earth, Inc. v. Laidlaw Environmental Services,* 528 U.S. 167, 189 (2000); *City News and Novelty, Inc. v. City of Waukesha,* 531 U.S. 278, 284, n. 1 (2001); *United States v. Concentrated Phosphate Export Ass'n,* 393 U.S. 199, 203 (1968). Kansas seeks a Decree that contains "an enforceable order reflecting the rulings of the Court and the Special Master to ensure that its rights under the Compact are protected." (Kan. Closing Br. at 6-7) Kansas states that the Supreme Court has routinely issued

injunctions in interstate water cases, citing *Virginia v. Maryland,* 540 U.S. 56 (2003); *Oklahoma v. New Mexico*, 510 U.S. 126 (1993); *Texas v. New Mexico,* 485 U.S. 388 (1988); *Arizona v. California,* 376 U.S. 340 (1964); *Wyoming v. Colorado,* 298 U.S. 573 (1936); *New Jersey v. New York,* 283 U.S. 336 (1931). A stipulated judgment in *Nebraska v. Wyoming,* 534 U.S. 40 (2001) also includes an injunction.

Colorado's basic position is that injunctive relief is an extraordinary remedy that is not justified by the facts in this case. By virtue of Colorado's actions to bring the State into Compact compliance, Colorado states that the Court "can be satisfied that Colorado has no intention of deliberately violating the Compact in the future." (Colo. Br. at 14) Colorado cites authority that injunctive relief will be denied "if the conduct has been discontinued and the court is satisfied that there is no reasonable expectation of future injurious conduct." (Colo. Br. at 11) Here, of course, we do not yet know whether Colorado is in full compliance with the Compact, and we will not know that until the end of the ten-year accounting period. But assuming that the first accounting shows no depletions, or that Colorado makes up any shortage as promised, that is not the end of Colorado's obligation. Colorado has suggested that under those circumstances, if Colorado is in compliance, "there's nothing to enjoin." RT Vol. 272, at 79-80. Colorado argues it would then be appropriate to dismiss the litigation and return the case to the Compact Administration. RT Vol. 272 at 80.

However, having chosen a compliance system that allows pumping to continue so long as adequate replacement water is provided, Colorado has a continuing obligation to provide make-up water, in the right amounts and at the right times. No one doubts the good faith of the Colorado officials or counsel who have appeared before this Court, but there needs to be a judicial order that assures continued and proper implementation of the replacement water approach. And, indeed, I expect that in the long run both States would benefit from a clear injunction.

It is my conclusion, therefore, that the Decree should include injunctive relief. Judicial precedent more than amply supports this determination. Colorado expresses concern that an injunction may divert the States away from the cooperative path they have been on and turn the States back to more litigious ways of setting future issues. (Colo. Br. at 13-14, 16) I do not agree. An injunction does not preclude negotiation, arbitration or a Compact Administration remedy before a State can seek Supreme Court approval to enforce an injunction. *Nebraska v. Wyoming,* 534 U.S. 40, 54-56 (2001); *Oklahoma v. New Mexico,* 510 U.S. 126, 131 (1993); *Wyoming v. Colorado,* 298 U.S. 573, 586 (1936).

This Order may assist Colorado in tailoring its comments on the December 28 draft of the Decree.

Dated: January 3, 2006.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 9

ORDER RE CERTAIN
NON-APPENDIX DECREE ISSUES

Order dated 1/25/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE CERTAIN NON-APPENDIX DECREE ISSUES

This Order decides some, but not all of the issues regarding certain provisions of the Fourth Draft of the draft Judgment and Decree, dated 6/16/06. The Order does not deal with any of the Appendix disputes. In its next draft of the Judgment and Decree, Kansas is directed to revise the 6/16/06 draft in accordance with this Order. The rights of both States are reserved to take exception to any provision of the Judgment and Decree, once it is final and complete. There have been certain agreements since the 6/16/06 draft was circulated, and these, of course, should also be included in the next draft.

Section A1(b) of the Decree is hereby revised to read as follows:

> "To enforce the Colorado Use Rules with respect to Groundwater Pumping, unless John Martin Reservoir is spilling and Stateline water is passing Garden City, Kansas; and"

Colorado suggests that the provision "unless John Martin Reservoir is spilling" is too restrictive and should be deleted, substituting "unless water available for use to the water users in Kansas is passing Garden City, Kansas." Colorado Brief, June 20, 2006. It is Colorado's position that there should be no need to replace depletions to Stateline flows, whether flows past Garden City are caused by John Martin Reservoir spilling, or because of tributary inflow below John Martin Reservoir, or because of rainfall in Kansas. However, this Colorado proposal is contrary to what Mr. Simpson, the State Engineer, testified to at trial. As noted in my Fourth Report, he said the Use Rules requiring replacement water would be enforced even though Colorado had built up a net credit. The only exception would be if John Martin Reservoir were spilling and water were passing Garden City. RT Vol. 270 at 158-59.

Moreover, the issue of whether Colorado is entitled to receive the benefit of rainfall in Kansas was settled in my First Report. Colorado's expert had included the concept of "gains" in Kansas as part of his usable flow analysis. I found, however, that there was no intent under the Compact that Kansas be required to make use of other Kansas water supplies before being allowed to complain about Stateline

shortages. First Report 297-298. The suggested change by Colorado is therefore rejected.

The next issue is whether Section B1 of the draft Decree should be limited to Groundwater Pumping "for irrigation only." Earlier, I directed that the Phrase "for irrigation use" should be removed from the definition of Groundwater Pumping. RT Vol. 272 at 92-95. So the definition in Section V of the decree now covers all wells (with a specified exception) that pump in excess of 50 gallons per minute from the alluvial and surficial aquifers along the mainstream of the Arkansas River within the domain of the H-I model. It is true that the H-I model does not now determine depletions from municipal and industrial pumping, but that is not to say that the model may not be modified to do so in the future. I note that the Colorado Use Rules require replacement for municipal and industrial pumping. I believe it is better to have Section B1 correspond to the definition of Groundwater Pumping in Section V, and not to insert "for irrigation use" in Section B1. The compact protects Kansas from all Colorado post-compact pumping (in excess of 15,000 acre-feet per year) that would deplete usable Stateline flows.

Section B4 of the draft Decree provides that the H-I model may be modified either by agreement or through the Dispute Resolution Procedure contained in Appendix H. Kansas would add that the ten-year accounting period also may be decreased in the same manner. Colorado, however, argues that a change of that significance should require a modification of the

Decree, and I agree. To be sure there is some logic to Kansas' argument that if the ten-year accounting period is based on the model's inaccuracies, it may be appropriate to decrease the period as the model becomes more accurate. But Kansas, which has always claimed that the model is reasonably reliable on an annual basis, treats the ten years as a burden to be shed. It is not. Using ten years of data can make the model results more accurate, even though improvements may be made. Such improvements should not be viewed as a substitute for using an extended data base, but in addition thereto. There was expert testimony during the trial that even a longer period of data was required, 15 years, in order to assure reasonable accuracy. Kansas is not prejudiced by this use of the model, since after the end of the initial ten-year period (i.e., 2006), any depletions must be made up annually. The Supreme Court has approved this method of accounting, and should be involved if a change is to be made.

Section III relates to modification of Colorado's Use Rules. Kansas would permit such amendments only if Colorado can demonstrate that they "are no less protective of" Kansas' rights under the compact. Colorado, on the other hand, argues that the test should be whether any such changes "will adequately protect" Kansas' rights. I side with Colorado on this issue. Over the years, the Use Rules could require excess deliveries of replacement water, resulting in a build-up of credits. A correction in the Use Rules could then easily be seen as being "less protective,"

although Colorado might still be in compliance as determined by the H-I model. The Kansas language assumes a hierarchy of protection levels that could supercede the H-I model. It is the results of the model over a moving ten-year period that are finally used to determine compliance with the compact. The Use Rules, which are designed to protect senior surface water rights in Colorado as well as users in Kansas, provide for current deliveries of replacement water, but these are only an approximation of the water required to offset depletions. The model results are the final test, and the Colorado language gives appropriate protection through the Use Rules.

The issues in Section IV.A and IV.B of the draft Decree are the same, namely, the scope of the Court's retained jurisdiction. Kansas proposes that the Court may evaluate, among other matters, the "sufficiency" and the "administration" of the Colorado Use Rules. Colorado, however, would include only the "administration" of the Rules under the Court's continuing jurisdiction. I believe the broader scope, including the sufficiency of the Rules, should be included in the Decree. During the wet years of 1997-99 I concluded that the Use Rules were sufficient to assure compact compliance. Fourth Report 32. However, I noted that if the Court were to retain jurisdiction for a limited period of time, "there will be a full opportunity to see how Colorado's Use Rules operate under different hydrologic conditions." *Id.* at 136. This statement was made in light of expert testimony by Kansas expressing doubts about whether the presumptive depletion

factors would prove to be adequate in dry years. It is still my view that the Court should retain the authority to examine the sufficiency of the Use Rules over time, as well as their implementation.

Dated: January 25, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 10

ORDER RE SCHEDULE FOR PROVIDING DATA AND MODEL RUNS IN APPENDIX A AND APPENDIX B TO DECREE

Order dated 2/6/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE SCHEDULE FOR PROVIDING DATA AND MODEL RUNS IN APPENDIX A AND APPENDIX B TO DECREE

This Order relates to provisions in Appendix A and to Appendix B in the Fourth Draft of the draft Judgment and Decree, dated June 16, 2006. In its next draft of the Judgment and Decree Kansas is directed to revise the June 16, 2006 draft in accordance with this Order. The rights of both States are reserved to take exception to any provision of the Judgment and Decree once it is final and complete.

In paragraph 2 of Appendix A relating to the ten-year accounting, Kansas would require that Colorado provide the data called for in Table 1 by March 15 of each year. Colorado argues that the date should be March 31. The data involved are the H-I model results for the preceding year, and Colorado's calculation of Offset Account delivery and evaporation

credits, including the results from the immediately preceding nine years. Kansas relies upon the testimony of Mr. Simpson, Colorado's State Engineer, that the data would be ready by March 15. Moreover, Kansas argues that a later date would be inconsistent with the Offset Account Crediting Agreement, Section 7, which states that the model runs will be completed by mid-March. Kansas states that a two weeks delay would shorten the time allowed to Kansas to evaluate Colorado's data and the H-I model runs.

Colorado states that its goal is, indeed, to complete the H-I model runs by mid-March so that the results will be available for review of the replacement plans which are approved at the end of March. Nevertheless, Colorado recommended the March 31 date because it states that there are often input files for the previous year that need to be checked or revised before the H-I model results are provided to Kansas. Colorado also notes that Mr. Simpson's testimony was not precise as to the date,[1] and that the Offset Account Crediting Agreement states only that analysis of the model runs "should be completed by mid-March." Section 7.

Under the circumstances, Colorado's request seems reasonable, and Colorado proposes that any

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[1] Mr. Simpson's testimony was: "I believe the computations are made on a calendar year basis in the model, and so sometime early in the following year – March, for instance – the model could be run with the data that we have acquired from the various entities and federal agencies." R.T. Vol. 270 at 158.

prejudice to Kansas be offset by extending Kansas' time to review the model results and input files from April 30 to May 15. The date for the States to reach agreement on the accounting would then be changed to June 1.

The dates in Appendix BI and BVII should also be changed to correspond with the above dates.

All of the foregoing changes are hereby ordered.

Dated: February 6, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 11

ORDER RE DATE
FOR MAKING UP SHORTFALL,
APPENDIX A, SECTION 3A

Order dated 2/7/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE DATE FOR MAKING UP SHORTFALL, APPENDIX A, SECTION 3A

This Order relates to provisions in Appendix A, Section 3A in the fourth draft of the Judgment and Decree, dated June 16, 2006. In its next draft of the Judgment and Decree, Kansas is directed to revise the June 16, 2006 draft in accordance with this Order. The rights of both States are reserved to take exception to any provision of the Judgment and Decree once it is final and complete.

The issue raised is when the makeup of net depletions of usable stateline flow ("Shortfall") should be delivered following the initial ten-year accounting period and each year thereafter. Kansas maintains that the Shortfall should be delivered by June 1. Colorado argues that it is not reasonable to require

the full amount of any Shortfall to be delivered by that date, and proposes that a minimum of 4000 acre-feet be required by June 1, an additional 4000 acre-feet by July 15, and the remainder, if any, by August 31. The Colorado proposal assumes, of course, that a Shortfall in those amounts exists.

The evidence in the last trial segment did not determine a precise date for delivery of any Shortfall. Summarizing Colorado's proposal, my Fourth Report states:

> "Depletions or accretions would be determined annually, and for the first ten years beginning in 1997 (i.e., until 2006) those depletions or accretions would be carried forward to the next year . . . In the eleventh year, Colorado would make up any depletions accrued at the end of the ten-year period, or any accretions would be carried forward into year eleven." Fourth Report 117.

The initial ten-year startup period is now complete, and while Colorado has provided replacement water on an annual basis, and has attempted to keep track of compliance with its Compact obligations, it is only this year that the ten-year accounting will determine whether a Shortfall or accretions exist.

Kansas states that its irrigation season begins about April 1 and any make-up water that is owed should be delivered for use within that irrigation season (i.e., within 2007 for this year). Kansas states that June 1 is the latest date that a Shortfall can be

delivered with still "a good chance of being able to use that water during the current irrigation season." Kansas, June 16, 2006 Brief at 8. Water not made available until a later date, states Kansas, "is substantially less usable to Kansas and is at risk of not being used at all during the current year." *Id.* Water not used would be subject to evaporation losses pursuant to existing Offset Account rules.

Colorado argues that a June 1 date to make up a Shortfall, regardless of the amount, is not reasonable. It states that the H-I model results can be highly unpredictable, and that Colorado well associations would need a reasonable period of time to make up any Shortfall once they had been advised of the amount in the Spring of the year. Colorado June 23 Brief at 11. The H-I model results, however, ought not to be "highly unpredictable" using ten years of data. Indeed, the use of the H-I model over a ten-year period was designed to achieve "reasonably accurate model results." Fourth Report 128. Moreover, Mr. Simpson testified that he did not want to see Colorado fall way behind, and that if there were a "trend" or a "series of years of depletions, Colorado would have to make some adjustment." RT Vol. 231 at 113-14, 138; RT Vol. 270 at 143, 161-62, 164. He stated that Colorado could require that additional water be placed in the Offset Account for the benefit of Kansas. Indeed, the evidence showed that the Colorado Legislature established an ongoing fund of $1 million, replenished to that amount each July 1, under the management of the State Engineer and the Colorado

Water Conservation Board. This fund was used in the summer of 2002 to acquire an additional 3,600 acre-feet of water that was placed in the Offset Account for Kansas. RT Vol. 270 at 145-46. Mr. Simpson testified that the Offset Account acts as a buffer against falling short. RT Vol. 231 at 124. It would seem that Colorado intends to keep any Shortfall within manageable limits so that it can be delivered.

Colorado states that the well associations will not know if Kansas agrees with the amount of any Shortfall until May 15 under my February 6, 2007 Order. However, Colorado will know the model results by March 31 when that data must be delivered to Kansas. Colorado can act on its own results, and if there is disagreement between the States, the issue should be arbitrated pursuant to the "Fast Track Issue Resolution Procedure."

Colorado states that the Kansas position that water is less usable in July, August and September is contrary to the testimony of their expert, Mr. Franzoy. However, I do not find Mr. Franzoy's testimony to be that definitive. He said that the timely need for irrigation water, and its optimum use, varies widely with the type of crop, its stage of growth, the type of soil, and the climatic conditions. Timing, he said, is critical at each stage of crop development during the growing season. Shortages at one point in the crop growth cycle generally cannot be offset by large deliveries later without significant yield reduction. Fourth Report 69.

Colorado reports that the States appeared to be close to agreement on a delivery schedule, but finally were unable to do so because of issues over evaporation and notice requirements. If the States wish to resume those discussions and reach an agreement, such results would supercede this Order and be used in the final Judgment and Decree. Without such agreement, however, I conclude that Shortfall deliveries should be provided by June 1 of each year.

This Order may indirectly affect some of the other issues that have been listed in Appendix A, for example, the need for a Shortfall sub-account of the Offset Account. The several briefs also indicate that other Appendix A issues were under discussion although an agreement had not yet been reached; that some proposed language had not yet been reviewed by the other State; and on some issues the States appeared to be in agreement, although this is not certain. Accordingly, and in view of this Order, counsel are directed to specify the specific Appendix A issues that remain. It may be advisable to prepare a new draft of Appendix A, showing alternative language as was done for earlier parts of the Decree. However, the issue of whether a Shortfall Account should be established permeates many of the provisions, and if that issue is not decided by this Order or by agreement, then I should probably decide that separately before there is further drafting. In that instance, counsel should provide their arguments as to whether such an account is needed.

Appendix A, Section B, included Kansas' proposal if the Offset Account should be terminated. I do not agree that if Kansas should terminate the Offset Account that Colorado should be required to secure another source of reservoir water. Counsel for Kansas are directed to respond to the Colorado proposals, namely, that the Decree provide that the Offset Account may not be terminated, or in the alternative that the Decree remain silent on the issue of direct deliveries, thereby requiring the States to seek to invoke the Court's retained jurisdiction if the States were in disagreement over direct deliveries.

Responses to this Order shall be provided within 30 days.

Dated: February 7, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 12

ORDER RE DELIVERY OF REPLACEMENT AND SHORTFALL WATER, AND RELATED MATTERS

Order dated 2/16/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE DELIVERY OF REPLACEMENT OF SHORTFALL WATER, AND RELATED MATTERS

I am now in receipt of four major briefs related to various issues in the Fourth Draft of the Judgment and Decree, dated June 16, 2006, some portions of which, however, have been overtaken by events; several letters and additional arguments filed at my request that report upon numerous agreements that have been reached on many issues originally identified, as well as elaborating on certain still outstanding issues; and I have issued Orders on January 25, 2007, February 6, 2007 and February 7, 2007 deciding some of these issues.

However, it is becoming increasingly difficult to continue to work out of the June 16, 2006 Fourth Draft, especially since some of the outstanding issues

cut across several provisions. Accordingly, Kansas is directed to prepare a replacement draft of the provisions of the Judgment and Decree, and Appendix A (including the Tables) and Appendix G, as soon as practicable. There remain issues in other Appendices, but these will be addressed later.

The new replacement draft shall include: (1) all agreements that have been reached since the Fourth Draft; (2) all of my Orders that have been issued that affect these portions of the Judgment and Decree; and (3) whatever changes may be appropriate in order to reflect the conclusions in this Order.

One of the stubborn issues that affects many of the Decree provisions relates to the delivery or Replacement water and water to make up any Shortfall, and whether a separate Shortfall account is required. Kansas argues that there is a fundamental difference between these two kinds of water deliveries that must be recognized in the Decree. Colorado disagrees. I asked for and received additional briefing on this issue. At the heart of the dispute appears to be the time when any Shortfall must be made up. That is, the initial argument is over when any Shortfall determined for the prior ten-year accounting period must be delivered. A corollary of this issue is whether certain provisions in the agreed upon Offset Account Resolution and Offset Account Crediting Agreement relate to delivery of a Shortfall as well as to the monthly deliveries of Replacement water. These provisions concern notice, credit for water released

from the Offset Account, credit for water stored in the Kansas Consumable Subaccount, and transit losses.

In my Order of February 7, I concluded that any Shortfall should be made up by June 1, unless the States agreed to another delivery schedule. If the full amount of any Shortfall is delivered by June 1, that would balance the books for the prior ten years, and I see no need for a separate Shortfall account. Water delivered to make up a Shortfall would be treated like any other delivery of Replacement Water. If, however, the States should agree upon a phased delivery of any Shortfall, then it would seem necessary to account for such deliveries separately from the current monthly deliveries of Replacement Water. In that instance, any agreement reached by the States should be complete with whatever provisions might be necessary to implement the phased delivery schedule.

The States are also in disagreement over the definition of Replacement Water. The Fourth Draft, as prepared by Kansas, currently defines Replacement Water in terms of Acceptable Sources of Water in Appendix G. It also restricts the definition to deliveries to present "current-year depletions." This restriction should be deleted so that all sources of Replacement Water may be used to offset any Shortfall. Kansas currently defines Acceptable Sources as follows:

> "Acceptable sources of water for Replacement and makeup of a Shortfall shall be limited to: 1) transmountain water, 2) precompact

> water rights, and 3) post-compact water rights to the extent that Colorado can demonstrate that the exercise of the right does not deplete Usable Stateline Flows. A pre-compact water right shall be recognized only to the extent that it is included in the H-I Model or, if not included in the H-I Model, to the extent that it was actually used at the time of the adoption of the Compact.
>
> "Credit shall not be allowed for any source of water available from the Dakota and/or Cheyenne aquifers unless pursuant to a decree authorizing the use of said water for augmentation purposes. Furthermore, special water inputs to the H-I Model shall be limited to replacement for depletions caused by wells represented in the H-I Model."

Colorado objects on the grounds that the three named sources are not the only sources that are, or could be, used for replacement or to make up a Shortfall. It provides, as an example, water stored in the Section II accounts in John Martin Reservoir. Kansas, however, responds that such water source would actually be included under the broad categories stated in Appendix G. Kan. Sept. 25, 2006 letter. Colorado also objects that non-tributary groundwater is not included in the Kansas definition. But again, Kansas says that it is. *Id.* The Decree should be free of these kinds of potential ambiguities, and so such Class II account water and non-tributary groundwater should be specifically identified, together with any other examples to which Colorado refers.

Colorado also disagrees with the second sentence of the first paragraph in Appendix G, which states: "A precompact water right shall be recognized only . . . if not included in the H-I model, to the extent that it was actually used at the time of the adoption of the Compact." Colorado argues that under Colorado law a conditional water right can relate back to the date of the Initiation of the appropriation if it is developed with reasonable diligence. Kansas answers that postcompact uses can be considered under the third category of Acceptable Sources, but only to the extent that Colorado can show that such uses do not deplete usable Stateline Flows. I agree. Ultimately, the Compact controls.

Both States agree that the full "Mission Inn Agreement" of September 23, 2005 regarding Cheyenne and Dakota aquifer pumping should be substituted for the second paragraph of Appendix G. I concur.

Finally, Appendix G includes five provisions related to how credits for certain sources of Replacement Water shall be determined and used in the H-I model. Colorado states that it agrees with "some" of these matters, but the extent of its disagreement is not clear. The language objected to in the last sentence of paragraph 3 is not the same as appears in my version of the Fourth Draft of the Decree. Colorado states that this issue has been under discussion, but that the experts have not reached agreement. In any event, the status of this sentence needs to be clarified.

Colorado also specifies an objection to paragraph 5.b of Appendix G which limits the credit of Replacement and Shortfall water to their historical consumptive use at the time of the Compact. Kansas agrees that Colorado has a "good point," apparently with respect to decrees that specifically allow reuse of return flows, such as water from the Fryingpan-Arkansas Project. However, with respect to non-tributary groundwater, and decrees for conditional water rights made absolute after the Compact, Kansas asserts that credit should be allowed only if they do not deplete Usable Stateline Flows. As indicated above, I agree with this condition.

If there are any other parts of paragraphs 1through 5 of Appendix G to which Colorado objects, they should be specifically identified.

Kansas, therefore, shall redraft the indicated portions of the Fourth Draft of the Judgment and Decree in accordance with this Order. Any differences that may still remain, that are not decided herein, should be stated with the reasons therefor. The rights of the States to finally except to matters decided herein are, of course, reserved.

Dated: February 16, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 13

ORDER RE AMITY CANAL'S INTERCEPTION
OF FORT LYON CANAL RETURN FLOWS

Order dated 3/30/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE AMITY CANAL'S INTERCEPTION OF FORT LYON CANAL RETURN FLOWS

The issue in this Order concerns how the Amity Canal's interception of return flows from the Fort Lyon Canal should be represented in the current version of the H-I model. The issue apparently arose when the Kansas results of its January 31, 2006 version of the H-I model for the period 1997-2004 were disclosed. This model run[1] showed a depletion to usable Stateline flow in the year 1997 of 10,139 acre-feet. In sharp contrast, the 2002 version of the H-I model employed by Kansas during the last trial

[1] These results included all updates, improvements and corrections to the model including the effect of trans-mountain diversion data, SWSB depletions, and offset account transit loss credits.

segment showed usable accretions in 1997 of 2,673 acre-feet. (Fourth Report at 28) Colorado contends that the reversal from surplus to shortage is due in large measure to the way in which Kansas' 2006 version of the H-I model simulates the Amity Canal interception of return flows from the Fort Lyon Canal.

The interception of these flows was an issue in the last trial segment. At that time, Kansas simulated the intercepted flows at an average of 8,517 acre-feet annually for the period 1974-99. (Fourth Report at 82) This average resulted from model predictions, determined as a percentage of return flows, so that the average reasonably replicated what the historical records showed, namely, 7,493 acre-feet for the 1974-99 period. (*Id.* at 83) There are three major drains which discharge tail water from Fort Lyon irrigation into the Amity Canal, which water becomes part of its supply. The average amount of 7,493 acre-feet came from records kept by Amity on these three drain flows.

However, Colorado introduced evidence of a field investigation made by Mr. Straw who found more than 40 additional points at which Fort Lyon return flows entered the Amity Canal. These various points were not measured, and there were no records of such flows, but Mr. Straw was of the firm belief that the three measured drains did not capture the full extent of the surface water flowing into the Amity Canal. Mr. Schroeder, another Colorado expert, also testified on this issue. But his calculations changed over time,

varying between 49,000 and 11,000 acre-feet of flow into the Amity Canal. Overall, the Colorado evidence was not sufficiently specific, nor did it seem sufficiently reliable to be used in place of the Kansas average of 8,517 acre-feet. Yet it appeared likely that the Kansas simulated average might be low, although it would take additional studies and measurements to determine a more accurate figure. I concluded, therefore, that based on the limited evidence then before the Court, that "the H-I model should be changed in accord with the recommendations of the Kansas experts." (*Id.* at 83)

In a joint letter dated March 11, 2005, the States outlined a series of issues that still needed to be decided in the final Decree. One of these issues was the "Further investigation of the amount of return flow intercepted by the Amity Canal from the Fort Lyon service area." (Item 6) That letter further stated: "The States agree that this issue [Item 6] will not be addressed before entry of the Decree." (Item 6a) That agreement was confirmed in my Order of October 3, 2005, entitled Order Following Status Conference of September 30, 2005. On this basis, Colorado argues that the average amount of 8,517 acre-feet annually was to be used in the preparation of the Decree, and that the accuracy of that figure would be addressed at a later time.

The Kansas response is that, "It was the simulation methodology, not the number 8,517, that was recommended by the Kansas experts and adopted by the Special Master." (Kansas June 16, 2006 Brief at

13; Kansas June 23, 2006 Brief at 37) Kansas states that there was no intent to "lock in" the average amount of 8,517 acre-feet. The 2006 model results of 10,139 acre-feet of depletions, Kansas states, were simply the outcome of a normal recalibration of the H-I model. That may be so, but I find that Kansas did not have a free hand with respect to this issue.

In the last trial segment, the evidence focused on the *amount* of flow intercepted by the Amity Canal, not on the methodology. My conclusion in the Fourth Report should not be read as an approval of Kansas' methodology, without regard to what the results might be. Moreover, the agreement of the States to defer this issue related to the "amount" of return flow intercepted by the Canal. The Kansas 2006 recalibrated model simulates the flows intercepted by the Amity Canal at an average of 7,868 acre-feet. The reduction from the previous average of 8,517 apparently results from the recalibration process, and perhaps a change in the SEV values. Colorado contends that this reduction is a major factor in the dramatic change in the compliance figures for 1997, namely from accretions of 2,673 acre-feet to depletions of 10,139. Given the evidence in the last trial segment that indicated that the average figure of 8,517 acre-feet itself might be low, it is hard to justify a reduction in that amount, which may have a significant impact on Colorado's overall compact compliance.

Colorado recommended a calibration procedure that involved a separate SEV value for the Fort Lyon Canal, and which resulted in simulated interception

flows close to the 8,517 acre-feet average. However, Kansas indicates that such a change would have other undesirable consequences, causing model results to diverge from observed conditions. The States also spent considerable time attempting to demonstrate that each State has used a superior calibration process, although the results do not seem to vary much except for the year 1997. In any event, this Order does not approve the SEV change suggested by Colorado. Nor does it pass judgment on either States' calibration, except with respect to the impact of this Order. Certainly, the calibration process involves considerable judgment, and is best left to the experts.

THEREFORE, IT IS HEREBY ORDERED that in recalibrating the H-I model to produce final results for the 1997-2004 period, such process should not allow the return flows intercepted by the Amity Canal from the Fort Lyon Canal area to be significantly reduced from the amount simulated in the Kansas 2002 version of the model.

Dated: March 30, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 14

ORDER RE TERMINATION
OF OFFSET ACCOUNT

Order dated 4/10/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE TERMINATION OF OFFSET ACCOUNT

The States, acting through the Arkansas River Compact Administration, adopted an Offset Account Resolution on March 17, 1997. At the same time the States agreed to a Stipulation applying the Resolution in this case. The Stipulation was approved by me on April 3, 1997. The Resolution, which establishes a new storage account of 20,000 acre-feet in John Martin Reservoir, was also approved by the Corps of Engineers as required by law.

The Offset Account is of substantial benefit to both Colorado and Kansas. It allows Colorado to store replacement water in John Martin Reservoir when the water is available, and it allows Kansas to draw upon that storage account when water is needed in Kansas. The Offset Account provides a practical

solution to the sometimes difficult issue of reasonably matching Kansas' need for water with Colorado's delivery of replacement water to the Stateline. The Offset Agreement has been in place since 1987, but it may be terminated by either State on an annual basis.

Considering the problems associated with making timely deliveries direct to the Stateline, Colorado proposes that the Decree preclude either State from terminating the Offset Account. Kansas is in opposition, although there is no indication that either State is thinking of terminating the Account at this time. While the Offset Account is simple in basic concept, the details are more complex. Kansas states that the Account negotiations included trade-offs and compromises, with the right to terminate as a consideration.

Colorado contends that the Court, "in the exercise of its broad equity powers," can impose a condition that neither State may terminate the Offset Account Resolution. However, Colorado cites no authority for this contention. Nor does it provide any example of a situation where the Court has stricken an important provision of an agreement. Kansas cites *Texas v. New Mexico* where the Court held that it had no power to modify a compact to which Congress had consented. However, a compact is also a law of the United States, and unless the compact were somehow unconstitutional, the Court stated that "no court may order relief inconsistent with its express terms." 462 U.S. at 564. Here we are dealing with an agreement

made through the Arkansas River Compact Administration, pursuant to the Compact, and a Stipulation to implement the agreement in this case. These documents do not constitute a law, but I still have grave doubts about the authority of the court to transform the Offset Account into what would be a perpetual agreement.

Apart from the Court's equitable powers, however, and probably more to the point, I do not find a compelling legal reason for such an action. Compliance with the Compact, pursuant to the prior rulings of the Court, requires Colorado to deliver replacement water to the Stateline to offset all depletions of usable Stateline flows. While access to the Offset Account is highly useful to both States, it is not the only way that required replacement deliveries can be or have been made. Indeed, Colorado is not required to use the Offset Account to make necessary deliveries of replacement water.

Both States indicate that the Decree should include conditions for direct deliveries to the Stateline if the Offset Account should be terminated. Colorado offers its termination proposal as a way to "avoid the necessity of drafting conditions for direct deliveries." Colo. 6/20/06 Brief at 35. Kansas says that eliminating the termination possibility still "would not remove the need to set out clearly the rules for direct deliveries to the Stateline." Kan. 3/16/07 Brief at 8. Yet Kansas also states that credits for direct deliveries to the Stateline "have always been handled directly in the H-I Model. Kansas sees

no reason to change that procedure if the Offset Account should not exist." Kan. 6/23/06 Brief at 11.

Both States are now engaged, either through discussions among their experts or between the State and Chief Engineers, in the review of several of the Appendices. The issue of direct deliveries to the Stateline is included in the Appendices, and any details that need to be considered should be addressed within the context of these discussions.

Dated: April 10, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 15

ORDER RE LIMIT ON USABLE FLOW
FOR GROUNDWATER RECHARGE

Order dated 6/20/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE LIMIT ON USABLE FLOW FOR GROUNDWATER RECHARGE

Paragraph 3 in Appendix C.2 is in dispute. The issue is whether the Appendix shall include a 100,000 acre-feet monthly limit on net stream depletions or accretions to Stateline flows that are considered usable for groundwater recharge in Kansas. I ruled earlier that usable flow should be determined using the Durbin approach with Larson's coefficients. Mr. Durbin initially testified that there was no limit on the Stateline flows usable for recharge, but later said there was a limit of 100,000 acre-feet per month. RT Vol. 53 at 135. This corresponds to the monthly limits he placed on diversions. According to Colorado, the 100,000 acre-feet limit was originally included in the Kansas software for the H-I model, and Colorado obtained its usable flow software from the Kansas experts. Apparently Kansas later removed this limit,

but Kansas offers no explanation or reason for the removal in its briefs on this issue.

Kansas takes the position that I did not include such a limit in the discussion of usable flow in my First Report, and no monthly limit should be imposed on recharge at this time. 2 First Report at 291-305. However, the issue was not raised at that time. My order was to use the "Durbin approach" and he did testify that there was a limit on the amount of flow that was usable for groundwater recharge.

Accordingly, I conclude that the 100,000 acre-feet monthly limit on recharge should be included in Appendix C.2.

Dated: June 20, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 16

ORDER RE STANDARD FOR
RECALIBRATION OF THE H-I MODEL

Order dated 6/26/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE STANDARD FOR CALIBRATION OF THE H-I MODEL

Section V of Appendix B deals with future changes to the H-I model, and Section V.B with the recalibration of the model. Unless otherwise agreed upon or decided through the Dispute Resolution Procedure, the States have agreed to use the period 1950-94 for calibration purposes. Kansas now proposes, however, that a "standard" be ordered for any future calibration of the H-I model. Proposed model changes in the future, argues Kansas, "must be measured by some objective standard." Kansas 6/23/06 Brief at 30. The language suggested, to be included in Section V.B of Appendix B, reads: "Proposals to recalibrate the model will not be accepted unless the recognized statistical measures of calibration are at least as good as the last calibration." In

my judgment, this is not an objective test that can be meaningfully applied.

Calibration is an effort to adjust certain model parameters in order to replicate historic conditions as closely as possible. It is not simply a mechanical process, but must include "the judgment and experience of the analyst." RT Vol. 98 at 134. Calibration is not necessarily "unique," that is, calibration can be achieved in different ways by different experts adjusting different model parameters. RT Vol. 151 at 71, 119; RT Vol. 152 at 20. Calibration of the H-I model in the past has included, among other changes, modifying SEV values, diversion reduction factors, WANT factors, monthly Stateline demands, and canal capacities. While the final object is to replicate Stateline flows, calibration statistics include a number of other intermediate comparisons: monthly flows, dry and wet years, irrigation and winter seasons, early and later years, and flows at various reaches along the Arkansas River. All of these measures have been used by the experts in determining the reliability of predicted Stateline flows. In comparing the calibration of one version of the H-I model against another, a model may easily match actual data well in some aspects of the whole calibration process, and do less well in others. In the final analysis, subjective judgment is required to determine which of the various statistical measures are most important. It is possible for opposing experts to calibrate the H-I model so as to produce quite different results of shortages. Second Report at 16.

The reliability of the calibrated H-I model is generally judged by its ability to match predicted streamflows, diversions and reservoir storage with actual measurements. But comparing the results of one version of calibration against another is not simple or straightforward. The importance of each of the various comparisons, and their respective roles, must be evaluated in reaching the best estimates of Stateline flows.

Kansas cites two examples as fact that the standard it now seeks has been applied throughout the trial. Kansas points to the model changes ordered regarding maximum farm efficiency, and to PET. Second Report at 21-37, and Fourth Report at 53-79. I have not reviewed the calibration statistics related to these two model changes, although I expect that they would show improvement. However, each generation of the H-I model has included more data (frequently more accurate data replacing prior estimates) and various other changes. It would be difficult to distinguish how much of any statistical calibration improvement could be attributed to the changes in maximum farm efficiencies and PET as opposed to other additions and changes in the model. Each of the examples of change cited by Kansas stood on its own merits. Those changes may have had a part in improving calibration statistics, but were not ordered because of any such result.

Kansas fears that rejection of its proposed standard may be interpreted to indicate that calibration is "unimportant," or that Colorado's proposal for mere

"satisfactory calibration" is sufficient. Neither such conclusion should be inferred from this Order. Kansas seeks an "objective" calibration standard, but based on the many approaches to calibration over this long trial, and the various statistical results, it does not seem that any single statistical measure can be used. However, while professional judgment will be involved, the experts for the States (or an arbitrator if necessary) should try to achieve the best calibration possible so as to achieve the most reliable determination of Stateline depletions and accretions.

Accordingly, it is hereby ordered that the second and third (partially in brackets) sentences in Section V.B of Appendix B be deleted, and the following sentence be added to the end of the section: "The model, using best professional judgment, shall be recalibrated as required in the future in order to produce the most reliable estimates of Stateline depletions and accretions of usable flows." In Section V.A of Appendix B, the following sentence shall also be deleted: "The version of the model incorporating a change must meet or exceed the degree of calibration achieved by the previous version of the model." These changes shall be included in the next draft of the Judgment and Decree.

Dated: June 26, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 17

ORDER RE CLASSIFICATION OF NEW REPLACEMENT SOURCES REQUIRING MODEL CODE CHANGES

Order dated 6/26/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE CLASSIFICATION OF NEW REPLACEMENT SOURCES REQUIRING MODEL CODE CHANGES

Section V.A of Appendix B classifies changes to the H-I model as either Non-Substantive or Substantive. The practical difference between the two classifications is whether or not the Fast Track procedures apply to any issue submitted to the Dispute Resolution Procedure in Appendix H. Non-Substantive changes fall under the Fast Track procedures. Substantive changes do not.

The States are in agreement that new replacement sources of water that can be represented in the H-I model without code changes will be considered as Non-Substantive changes. However, if a code change in the model is required, Kansas would designate such new replacement source as a Substantive

change. Colorado objects to the distinction, and maintains that new replacement sources should be included in the annual updates to the H-I model, even if "code changes" are the best way to represent such replacement sources. Colo. 6/23/06 Brief at 14.

So in the final analysis, the Colorado proposal would submit any dispute over new replacement sources to the Fast Track procedure, which would also result in binding arbitration. Appendix H, Section IV. The Kansas proposal, on the other hand, would invoke the Dispute Resolution Procedures for Substantive issues, which can take up to 150 days, and the arbitration results are non-binding. Appendix H, Section III(2), Section V.

I conclude that new replacement sources should be classified as Non-Substantive changes, even if a change in the H-I model is required. Kansas offers no persuasive reasons why the advantages of timing and certainty associated with the Fast Track procedures should not apply. Appropriate changes are to be included in the next draft of the Judgment and Decree.

Dated: June 26, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 18

AMENDMENT TO ORDER OF JUNE 26, 2007
RE CLASSIFICATION OF
NEW REPLACEMENT SOURCES

Order dated 8/27/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

AMENDMENT TO ORDER OF JUNE 26, 2007
RE CLASSIFICATION OF
NEW REPLACEMENT SOURCES

The States having agreed to a modification of Section IV of Appendix H, my Order of June 26, 2007 is hereby amended as follows:

Delete the language "which would also result in binding arbitration. Appendix H, Section IV" from the first sentence in the first full paragraph on page 2 of the Order.

Delete the phrase "and the arbitration results are non-binding" at the end of the second sentence of the first full paragraph on page 2, and change the citation from "Appendix H, Section III(2), Section V" to "Appendix H, Section III(7)."

Dated: August 27, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master

APPENDIX – Exhibit 19

ORDER RE TREATMENT OF NATIVE WATER STORED AS FRYINGPAN – ARKANSAS PROJECT WATER

Order dated 10/10/07

IN THE SUPREME COURT
OF THE UNITED STATES

STATE OF KANSAS, Plaintiff, v. STATE OF COLORADO, Defendant, UNITED STATES OF AMERICA, Intervenor.	)	No. 105 Original

ORDER RE TREATMENT OF NATIVE WATER STORED AS FRYINGPAN-ARKANSAS PROJECT WATER

Belatedly, Kansas has raised the issue of whether native water stored as part of the Fryingpan-Arkansas Project should be treated the same as transmountain water in the H-I model. Specifically, the issue concerns Data Set 14, Appendix B, Section III.B.6 of the draft Judgment and Decree.

Under the Kansas view, the residual flows of such native stored water that otherwise would reach the State line should constitute part of Kansas' Compact entitlement, and be available for groundwater recharge or diversion in Kansas. Colorado maintains, however, that native water stored as part of the Fryingpan-Arkansas Project has been treated throughout the trial proceedings as transmountain

water, and, as such, does not need to be replaced. In essence, the Colorado position would allow any such residual flows at the State line to be used as a credit against Colorado depletions.

The Fryingpan-Arkansas Project was authorized by Congress in 1962. First Report at 44, 306-07. The Project imports water from the Colorado River watershed west of the Rocky Mountains into the Arkansas River watershed. But the Project also provided for the reregulation of "winter flows of the Arkansas River that are presently diverted for direct-flow." *Id.* at 307. The States agree that native Arkansas river water has been stored and distributed as part of the Fryingpan-Arkansas Project supplies. The first storage of native water occurred in 1985. However, under Colorado law, the right for such storage comes into priority only when John Martin Reservoir is full and spilling. And Colorado adds, when Arkansas River flows are passing Garden City, Kansas. It appears from the briefs that substantial quantities of native water were stored in the project in 1985 and 1995. However, there was no evidence in the trial on the projected frequencies of future spills from John Martin.

The significance of the issue raised by Kansas, even though it may come into play only occasionally, is that the use of transmountain flows imported by the Fryingpan-Arkansas Project are not limited by the Compact. Kansas acknowledges that Colorado is entitled to use such transmountain waters "to extinction," and the Compact, including Article IV-D, "has

no application." Kan. Opening Br. at 2. On the other hand, the Compact defines "Waters of the Arkansas River" to include the "waters originating in the natural drainage basin of the Arkansas River, including its tributaries." Article III. And postcompact developments of the Arkansas River in Colorado may not cause material depletions of usable Stateline flows into Kansas. Article IV-D. Colorado does not dispute that Article IV-D of the Compact applies to native Fryingpan-Arkansas Project water, but argues that such native water can be used to extinction under Colorado law, and deliveries of native Fryingpan-Arkansas Project water have consistently been included in Data Set 14 of the H-I model, without objection by Kansas until recently. Colo. Reply Br. at 7.

While Colorado points to the federal legislation authorizing the Fryingpan-Arkansas Project as including the storage of native Arkansas River water, and while a Colorado court decree allegedly allows use of Project water to extinction, neither of these authorities can trump the Compact. *Wyoming v. Colorado*, 259 U.S. 419, 466 (1922), *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 102 (1938). A Bureau of Reclamation Report on the Fryingpan-Arkansas Project also states that the proposed storage and reregulation of native flows in Pueblo Reservoir was subject to "agreement among existing water users." RT Vol. 11 at 126, 128-131, Colo. Exh. 643 at 12. The Project Act itself states that Colorado's Compact obligations were not to be

altered. First Report at 308. The basic issue, therefore, is whether the actions of Kansas should now preclude making a change in the H-I Model for the future treatment of native water stored in the Fryingpan-Arkansas Project when John Martin Reservoir is full and spilling. Kansas does not seek to change past model results.

Colorado presents a formidable case of acquiescence and unexplained delay on the part of Kansas. From the outset of the trial, it was undisputed that native winter flows were stored and reregulated in Pueblo Reservoir, a feature of the Fryingpan-Arkansas Project. In fact, the Winter Water Storage Program in Pueblo Reservoir was a major issue in the first segment of the trial. In my First Report, I concluded that Kansas was not barred from contesting the Program because of acquiescence, but that it had simply failed to prove that the Program adversely impacted Stateline flows. First Report at 313, 338. However, it is not clear now from the briefs or evidence whether the modeling under Data Set 14 raises the same issues as those considered in connection with the Winter Water Storage Program.

What is clear, however, is the fact that Kansas was aware in the 2002 trial segment that the transmountain water in Data Set 14 included some native water. Counsel for Kansas himself brought this out in his cross examination of one of Colorado's experts. RT Vol. 219 at 132-34. Yet Kansas did not list this as an issue that remained in the case following remand by the Supreme Court in its December 7, 2004 Opinion.

Nor was the current issue submitted to arbitration in accordance with my Order of February 4, 2005, which required that any issues not resolved by agreement by September 2005 should be submitted to arbitration.

Colorado states that the findings on depletions for 1986-94, 1995-96 and 1997-99 were all based on model results that included native Fryingpan-Arkansas Project water being treated like transmountain water. Moreover, Colorado contends that the States specifically agreed upon the values to be included in Data Set 14 for the period 1997-2006, when admittedly John Martin Reservoir was spilling. Kansas responds, however, that its agreement on Data Set 14 values was made on the understanding that it "would not be cited as precedent against Kansas for purpose of determining as a matter of principle whether native Fryingpan-Arkansas Project water should be treated as if it were transmountain water for replacement purposes." Kan. Letter Br., Sept. 14, 2007 at 2.

Colorado does not dispute that Article IV-D of the Compact applies to native Fryingpan-Arkansas Project water (Colo. Reply Br., Aug. 24, 2007, at 7), but contends that Kansas is now barred by laches from changing Data Set 14. Laches has been applied in cases between states to bar equitable relief. *Ohio v. Kentucky*, 410 U.S. 641 (1972); *Washington v. Oregon*, 247 U.S. 517, 528. Facts demonstrating delay "might well preclude the award of the relief [requested]. But, in any event, they gravely add to the burden [the

plaintiff] would otherwise bear." *Kansas v. Colorado*, 514 U.S. at 687-88. In the Kansas view, however, it is important to get it right for the future, no matter what the past modeling practices may have been.

At stake, substantively, is whether the native storage component of the Fryingpan-Arkansas Project may continue to be reused to extinction, or whether replacement water must be provided by Colorado for any residual flows that would otherwise reach the Stateline if native flows were not treated in the model like transmountain deliveries.

To begin with, it should be noted that the issue arises only when John Martin Reservoir is full and spilling. We do not know when this may again occur, indeed if ever under present projections for climate change. But, of more importance, there are too many factual issues that are either in dispute or require more evidence in order to reach a confident decision as a matter of law. For example, Colorado outlines the reliance of its farmers and the Southeastern Colorado Water Conservancy District on the full reuse of native Fryingpan-Arkansas Project water, and the prejudice that would result if the change sought by Kansas were allowed. Kansas believes, however, that no prejudice of the kind necessary to invoke laches would occur. Kansas states that the Colorado court decree does allow successive use of Fryingpan-Arkansas Project water, but not to extinction. Colorado suggests that the United States may also be prejudiced and needs to be heard. Prejudice also needs to be evaluated under the actual conditions

that will exist when, and if, the issue arises in the future. Kansas says that if its requested change is made, the H-I Model will then calculate the proper amount of residual Stateline flows that would be available for recharge in Kansas, and for which replacement water would be required. But Colorado disagrees, saying that all such flows would not be usable under the criteria presently in the H-I Model. Moreover, Colorado goes back to the negotiations for the Compact alleging that the commissioners indicated that storage of flood flows when John Martin Reservoir was spilling would not be considered to materially deplete usable State line flows.

In short, this issue comes too late to be decided in the drafting of the Decree. It is more properly left to the Dispute Resolution provisions of the Decree if, and when, John Martin Reservoir is again full and spilling, and agreement cannot be reached between the States. For purposes of drafting the Decree, no change should be made in Data Set 14, Appendix B, Section III.B.6, and it should continue to read "Monthly transmountain deliveries (Data Set 14)."

Dated: October 10, 2007.

/s/ Arthur L. Littleworth
Arthur L. Littleworth
Special Master