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DISTRICT COURT, WATER DIVISION NO. 2,
COLORADO

207 Judicial Building
329 West 10 Street, Rm. 207
Pueblo, CO 81003

**IN THE MATTER OF THE PROPOSED
COMPACT RULES GOVERNING
IMPROVEMENTS TO SURFACE WATER
IRRIGATION SYSTEMS IN THE ARKANSAS
RIVER BASIN IN COLORADO**

In Baca, Bent, Chaffee, Cheyenne, Costilla, Crowley,
Custer, Douglas, El Paso, Elbert, Fremont, Huerfano,
Kiowa, Lake, Las Animas, Lincoln, Otero, Park,
Prowers, Pueblo, Saguache & Teller Counties

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Case No. 09CW110
Water Division 2

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**FINDINGS OF FACT, CONCLUSIONS OF LAW, JUDGMENT AND DECREE
APPROVING THE COMPACT RULES GOVERNING IMPROVEMENTS TO
SURFACE WATER IRRIGATION SYSTEMS IN THE ARKANSAS RIVER BASIN
IN COLORADO**

The Water Court having considered the pleadings, the stipulations of the parties, the evidence, the contents of the Court file, and being fully advised in the premises, does hereby find, conclude and rule as follows:

PROCEDURAL HISTORY

1. The State Engineer filed an “Application to Approve Compact Rules Governing Improvements to Surface Water Irrigation Systems in the Arkansas River Basin in Colorado” on September 30, 2009. Also filed on that date were the proposed Rules, two attachments referenced in the proposed Rules, and a Statement of Basis and Purpose summarizing the State Engineer’s authority for the Rules, the need for the Rules, the public process for developing them, and how they will be implemented.
2. The Rules and their attachments were included in the Division 2 Water Court resume, dated October 2, 2009. The resume included the full text of the proposed Rules. It also identified the two attachments to the Rules (i.e., a map of the H-I Model domain referenced in Rule 5.A.4 and the General Permits referenced in Rule 11.A) and gave notice that these attachments and other related documents could be accessed online at the Division of Water Resources website (<http://water.state.co.us/wateradmin/ArkansasRiver.asp>), or that copies could be obtained from the Office of the Water Clerk or the Office of the Division Engineer.
3. The State Engineer published the resume notice of the proposed Rules (including the complete text of the Rules and the instructions for obtaining the attachments and related documents) in newspapers of general circulation in all 22 counties affected by said Rules during October of 2009. The State Engineer filed affidavits of proof of publication in those 22 newspapers in the record in this case.

4. Protests or statements of opposition were timely filed by twenty two parties (hereafter “Opposers”): two municipalities, one county, seven ditch or canal companies, two ditch associations, one well user association, one water and sanitation district, four conservancy districts, and four individual or incorporated water users. Stipulations or withdrawals have been entered by all Opposers, as follows: (1) Dennis O’Neill; (2) Southeastern Colorado Water Conservancy District; (3) Fountain Mutual Irrigation Company; (4) City of Fountain; (5) Beaver Park Water, Inc.; (6) Board of County Commissioners of Chaffee County; (7) Widefield Water and Sanitation District; (8) Purgatoire River Water Conservancy District; (9) Upper Arkansas Water Conservancy District; (10) Lower Arkansas Water Management Association; (11) Town of Buena Vista; (12) Clifford and Ronnie Verhoeff; (13) Fort Lyon Canal Company; (14) Smith Mutual Ditch Company; (15) Clover Meadow Lateral Company; (16) Amity Mutual Irrigation Company; (17) District 67 Irrigation Canals Association; (18) Tri Lazy W Ranch; (19) Catlin Canal Company; (20) Arkansas Valley Ditch Association; (21) Tri-State Generation and Transmission Assn., Inc.; and (22) Lower Arkansas Valley Water Conservancy District.

5. The State Engineer made minor revisions to the proposed Rules, the General Permits, and the Irrigation System Analysis Model (“ISAM”) during the course of this case. This Order concerns the Rules and their attachments filed on October 22, 2010 which are Exhibit A to this decree (hereafter “Rules”), and the ISAM filed on compact disc and posted on the State Engineer’s website on October 22, 2010. This “initial version of ISAM” as referenced

in Rule 9.B.i.b. is comprised of modules labeled Version 16, Version 6, and Version 5. The General Permits are Attachment 2 to the Rules.

MIXED FINDINGS OF LAW AND FACT

A. Procedures and Standard of Review:

6. Compact rules are promulgated following the same standards and procedures as rules enacted under the State Engineer's water rule authority. C.R.S. § 37-92-501(3)(a) ("Any person desiring to protest a proposed rule and regulation may do so in the same manner as provided in section 37-92-304 for the protest of a ruling of a referee, and the water judge shall hear and dispose of the same as promptly as possible"); see also, Simpson v. Cotton Creek Circles, 181 P.3d at 264 (Colo. 2008); Simpson v. Bijou Irrigation Dist., 69 P.3d 50, 55 (Colo. 2003); Kuiper v. Gould, 583 P.2d 910, 913 (Colo. 1978).

7. Rules and regulations promulgated by the State Engineer are presumed to be valid until shown otherwise by a preponderance of the evidence. Simpson v. Cotton Creek Circles, LLC, 181 P.3d 252, 261 (Colo. 2008); Kuiper v. Well Owners Conservation Assn., 490 P.2d at 268, 277 (Colo. 1971) (overruled on other grounds by Alamosa-La Jara Water Users Protection Assn. v. Gould, 674 P.2d 914 (Colo. 1983)); Findings of Fact, Conclusions of Law, Judgment and Decree, In re Amended Rules and Regulations Governing the Diversion and Use of Tributary Groundwater in the Arkansas River Basin, Colorado, Division 2 Water Court, Case No. 95CW211, at page 22 (Apr. 30, 1996) ("Groundwater Use Rules Decree"). The court's role in conducting the review is to determine whether the opposers, if any, have

met their burden of proof, and whether the rules have a reasonable basis. See, e.g., Alamosa-La Jara Water Users Protection Assn v. Gould, 674 P.2d 914, 925 (Colo. 1983). The courts defer to the State Engineer's policy determinations and findings of fact in Rule-making proceedings. Simpson v. Cotton Creek Circles, LLC, 181 P.3d at 261. This deference does not extend to questions of law. Id.

B. Need for Compliance with Arkansas River Compact:

8. The State of Colorado is bound by various interstate compacts, equitable apportionment decrees, and United States Supreme Court cases interpreting those compacts and decrees. A Compact is both a state and a federal statute, as well as a contract among the States that are a party to the compact. Texas v. New Mexico, 482 U.S. 124, 128 (1987).

9. The Arkansas River Compact is an interstate compact between the State of Colorado and the State of Kansas. It was signed by commissioners appointed by the states and approved by the representative of the United States on December 14, 1948, and was ratified by the legislature of each state and was consented to by Congress by legislation consistent with Article IX of the Compact. Act of May 31, 1949, 63 Stat. 145; codified at § 37-69-101, C.R.S.; see, Kansas v. Colorado, 514 U.S. 673, 678 (1994).

10. The States of Colorado and Kansas had disagreed over the equitable distribution of the Arkansas River, and the Arkansas River Compact was an attempt to end such disagreements. Kansas v. Colorado, 514 U.S. at 678-79. However, despite the best intentions of Colorado and Kansas, there has been a history of disagreements since the

Compact, including a suit by Kansas against Colorado which finally resulted in a judgment regarding Colorado's compliance with the Compact as to ground water pumping. See, Kansas v. Colorado, ___ U.S. ___, 129 S.Ct. 1294 (2009); Groundwater Use Rules Decree at 23 ("For decades now, and in increasing amounts, the irrigation wells subject to these proposed rules have caused Colorado to be in violation of the Arkansas River Compact.").

11. The State Engineer is endeavoring to avoid future conflicts and assure continuing compliance with the Arkansas River Compact into the future, without need for further interstate litigation. See, Kansas v. Colorado, 543 U.S. 86, 125 S.Ct. 526, 540 (2004) (expressing hope that expert discussion, negotiation, and - if necessary - binding arbitration, would lead to resolution of remaining issues and future conflicts.) The two States have had recent success working out technical issues about Compact compliance through informal meetings of their engineering experts. In September of 2005, the Colorado State Engineer and Kansas Chief Engineer were able to resolve a series of technical matters in the "Mission Inn Agreements" that became appendices to the final decree in Kansas v. Colorado. See Fifth Report, Volume 1 at page 24. Special Master Littleworth wrote that "[i]t is to the credit of the respective engineers and experts of the States that so much agreement was reached." Id. Since 2005, the States' experts have worked together to resolve at least seven additional disputed technical issues, via ARCA's "Special Engineering Committee." Most recently, the States were able to agree on complex amendments to the crucial 1980 Operating Agreement,

which controls operations of John Martin Reservoir, in February of 2010. ARCA Resolution 2010-01, dated February 11, 2010.

C. Colorado State Engineer's Coordination with Kansas' Water Officials on Proposed Rules:

12. The State Engineer has promulgated the Irrigation Improvement Rules because he reasonably believes they are necessary for enforcement of the Compact.

13. In 2007, the Kansas Chief Engineer publicly stated that reduced return flows from changes to more efficient irrigation methods is a significant issue under the Compact. In response, the State Engineer's Office reviewed the extent of such irrigation system improvements in Division 2 and conducted a series of computer model runs to determine the potential impact of various irrigation system improvements in Colorado on Stateline flows. The State Engineer concluded that the improvements covered by the Rules do have the potential to materially deplete usable Stateline flows in violation of Article IV-D and must be regulated for Compact compliance purposes.

14. The State Engineer solicited input from Kansas' representatives throughout the development of the proposed Rules, to ensure that the proposed Rules address Kansas's concerns and effectively accomplish their intended purpose. See, e.g., Joint General Expert Report for State Engineer Dick Wolfe, Division Engineer Steve Witte, and Assistant Division Engineer Bill Tyner, at 5 ("Kansas's representatives repeatedly informed us (in their correspondence and the September 2 meeting) of their strong preference for maintenance (of historical seepage losses and return flows) in time, location, and amount, to best prevent a

violation of Article IV-D. We discussed Recommendation G of the Solutions Subcommittee with Kansas' representatives at length, and they agreed that it is protective of Colorado users' interests and will maintain Stateline flow.") Colorado briefed Kansas's Arkansas River Compact Administration (ARCA) representatives on the draft Rules and presented a power-point presentation on the ISAM at the 2008 ARCA Annual meeting. Counsel for Colorado and Kansas exchanged detailed letters regarding Kansas's comments on various drafts of the Rules on November 26, 2008; February 16, 2009; March 17, 2009; and June 12, 2009. The professional staffs and counsel for both states met at the State Engineer's office in Denver on September 2, 2009 to discuss any remaining concerns Kansas had with the Rules. Kansas's representatives sent minor requests for editorial changes to the Statement of Basis and Purpose on September 8, 2009, which Colorado adopted, but did not request any further changes to the text of the Rules or to the ISAM. Kansas's staff continued to monitor Kansas's interests during the pendency of this case, and has received copies of the pleadings, expert reports, and all proposed revisions to the Rules and General Permits.

15. On January 28, 2010, Mr. Wayne Whittaker mailed a letter to the ARCA and the Pueblo Chieftain asking certain questions about the proposed Rules. On June 9, 2010, the federal ARCA representative sent a response, reviewed and approved by the ARCA representatives from both states, answering Mr. Whittaker's questions. It concludes that:

The ARCA representatives do not believe the Rules, as filed with the water court, inappropriately interfere with future beneficial development. To the contrary, the Rules are intended to allow for development in a manner that reduces the potential for future

conflict. Colorado has kept Kansas updated during the development of these proposed Rules, including a presentation at the ARCA 2008 annual meeting. The States' staffs have held meetings concerning the Rules and the Irrigation System Analysis Model (ISAM), and Kansas has provided written comments concerning them. Colorado will continue to keep Kansas updated on any changes that may occur to both the Rules and ISAM. The ARCA representatives believe the passage of the Rules is a proactive effort by Colorado to meet its Compact obligations.

June 9, 2010 ARCA letter at 2.

D. Application of Article IV-D of the Compact to Irrigation System Improvements:

16. Article IV-D of the Compact governs future developments in the Arkansas River Basin in Colorado. It provides that:

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, reservoirs, and other works for the purpose 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 to the water users in Colorado and Kansas under this Compact by such future development or construction.*

Compact, Article IV-D (emphasis added). The State of Colorado and each person or entity using water in the Basin are subject to this Compact. See § 37-69-101, Article VII-A.

17. The United States Supreme Court has interpreted this article of the Compact to mean that post-Compact water development in Colorado, including the improved or prolonged functioning of existing works, may not materially deplete usable Stateline flow. Kansas v. Colorado, 514 U.S. at 684-85, 689-91.

18. The Court finds that improvements as defined in the Rules are “future beneficial development” of the Arkansas River basin and are “improved or prolonged functioning of existing works” within the meaning of Article IV-D of the Compact.

19. The Court finds that improvements as defined in the Rules have the potential to materially deplete usable Stateline flow, as further discussed below, and therefore may be regulated to prevent a Compact violation.

E. State Engineer’s Duty and Authority for Enacting Compact Rules:

20. The State Engineer is the chief official charged with discharging the obligations of the State of Colorado imposed by the Compact. § 37-80-102(1)(a), C.R.S.; see also 37-80-104 and 37-92-501(1), C.R.S.

21. If the terms of a compact are deficient in establishing standards for administration within Colorado, the State Engineer is required to make and enforce such regulations as are necessary to enable the state to meet its compact commitments. See § 37-80-104, C.R.S.; Simpson v. Bijou, 69 P.2d at 69.

22. The Court finds that the Arkansas River Compact does not provide sufficient standards for administration by the State Engineer within Colorado to provide for meeting its terms with respect to improvements to surface water irrigation systems. Therefore, the Court finds that § 37-80-104, C.R.S. (2009) provides the legal authority and duty to the State Engineer to enact and enforce such legal and equitable regulations as are necessary for Compact compliance.

F. State Engineer's Advisory Committee:

23. The State Engineer issued an Order Establishing Advisory Committee for Arkansas River Basin Compact Rules to Govern Improvements to Surface Water Irrigation Systems in the Arkansas River Basin on May 12, 2008, soliciting nominations from a wide and thorough representation of interests and expertise throughout the Basin. Thirty two members and five alternates served on the Committee. The list of members and the organizations they represent is appended to the Statement of Basis and Purpose filed by the State Engineer in this case on September 30, 2009.

24. The committee met regularly between July 9, 2008 and September 21, 2009, in an open process, with public notice, agenda and minutes posted on the SEO website for each meeting. Each meeting resulted in substantive changes to the "working draft" of the rules, which were sent back to Committee members for their review and comment prior to the next meeting.

25. The Advisory Committee process used by the State Engineer was appropriate and productive, and included extensive input from persons subject to or affected by the Rules. *See* Groundwater Use Rules Decree at 20, Finding of Fact # 59 ("The process that led to the promulgation of these rules was . . . very open, lengthy, thorough, geographically widespread, and included a variety of persons and entities affected or with helpful knowledge. Well owners participated and contributed, and their opinions were sought.")

26. The Advisory Committee's Solutions Subcommittee made written recommendations dated February 6, 2009 to the State Engineer concerning implementation of the Rules ("Subcommittee Recommendations"), which were attached as Exhibit B to the State Engineer's Statement of Basis and Purpose for the Proposed Irrigation Improvement Rules in the Arkansas River Basin in Colorado ("Statement of Basis and Purpose"). The Statement of Basis and Purpose, with these Subcommittee Recommendations attached, was filed on September 30, 2009, with the Application in this case.

27. These Subcommittee Recommendations were part of the consensus-building process in the promulgation of the Rules that led to obtaining basin-wide support for the Rules. The Statement of Basis and Purpose, setting forth the State Engineer's intent, provides that, "Many of these Subcommittee Recommendations have already been implemented by the State Engineer, and the State Engineer will continue to follow these Subcommittee Recommendations when implementing the Rules." See Statement of Basis and Purpose, Section III.B. Subcommittee Recommendation G, concerning the locations for providing maintenance flows in Compact Compliance Plans under Rule 10, was of particular importance in reaching consensus of water users with differing interests, and shall be followed in implementing the Rules.

G. Standard and Method for Evaluating Improvements Under the Rules:

28. The Court finds that, under certain circumstances, improvements to surface water irrigation systems within the scope of the Rules can result in increased water consumption by

crops and reduced historical seepage losses and return flows, and further finds that, in some circumstances, such improvements can materially deplete the waters of the Arkansas River in usable quantity or availability to the water users in Colorado and Kansas in violation of Article IV-D of the Compact. See Groundwater Use Rules Decree at 4, Finding of Fact #4 (“The Arkansas River is over-appropriated.”).

29. Not every improvement to a surface water irrigation system will necessarily result in a material depletion to stateline flows in violation of the Compact. However, where such improvements result in additional consumption of water by crops, i.e., where the surface water system was “water short” prior to the implementation of the improvement and historical seepage losses and return flows from such surface water systems were available to water users along the mainstem of the Arkansas River or to water users in Kansas, improvements within the scope of the Rules do have the potential to materially deplete Stateline flows in violation of the Compact.

30. The Rules recognize that such impacts are a possibility, but not an inevitability. See, e.g., Rule 9.B (describing standard and methods for evaluation and approval of an improvement). The Rules require the State and Division Engineers to rely on engineering methods and standards that are commonly relied on and are reasonable for reviewing applications for approval of an improvement and Compact Compliance Plans. See Groundwater Use Rules Decree at 15, Finding of Fact #44 (“Unit response functions are reasonable to use to determine where and when depletions will occur.”); Id. at 20, Finding of

Fact #58 (“The State Engineer will rely on engineering standards that are commonly relied on to administer these rules and in passing on tendered replacement plans.”)

31. Rule 9 describes the standard and methods for the Division Engineer to evaluate applications under Rules 8 and 10. To determine whether an improvement will materially deplete the waters of the Arkansas River in violation of the Compact, the Division Engineer “shall determine whether the improvement will increase consumptive use or will reduce the amount or change the timing or location of historical seepage losses and return flows from waters of the Arkansas River diverted, conveyed, stored, applied, or returned by the surface water irrigation system.” Rule 9.B.

H. Irrigation System Analysis Model (ISAM):

32. The Division Engineer’s office has created the Irrigation System Analysis Model (ISAM) to assist with this determination. Rule 9.B.i. It is a cost-effective and time-saving tool which the Division Engineer’s Office developed in response to water users’ concerns that requiring each applicant to hire an engineer to prepare an individualized engineering report would be cost-prohibitive and impractical. See Statement of Basis and Purpose at 9.

33. The ISAM is a spreadsheet tool that compares the consumptive use and return flows from a farm unit using an irrigation system with an improvement versus without the improvement. See Rule 5.A.8. There are four modules in the initial version of ISAM. The first three modules are used to make the threshold determination whether an improvement will increase consumptive use or will reduce the amount or change the timing or location of

historical seepage losses and return flows, as required in Rule 9.B. They include: (1) ISAM-Sprinkler, which evaluates the effect of replacing gravity irrigation with sprinklers and drip systems; (2) ISAM-Canal Loss, which evaluates the effect of lining a canal; and (3) ISAM-Lateral Loss, which evaluates the effect of lining a lateral. When an application is filed, these modules can be used to determine whether the improvement is likely to cause a change in return flow amounts which needs to be addressed for Compact compliance, and also to determine the magnitude of the amount of predicted change.

34. These three modules (and particularly the one that evaluates sprinklers and drip systems) are also referred to as “ISAM-Historic.” These three modules each use the period 1997-2006 and compare the water balance “with” and “without” the improvement during each of those ten years. The State Engineer chose the period 1997 – 2006 because the hydrology and water supply conditions covered a broad range from very wet to very dry during that short period. See ISAM Documentation at 9, including Table 3-1 (listing and explaining the basis for the classification of each year on a scale from very dry to very wet).

35. The ISAM-Historic output pages display the difference in consumption and return flows in acre feet for each year of those ten years. They also display the ten year average difference for the farm unit, and the minimum, average, and maximum difference in acre feet per acre. If the output page shows that there is a difference in return flow during any of those ten years, the Applicant can address it through either a Rule 8 approval with terms and conditions or a Rule 10 Compact Compliance Plan. If the output page shows there is no

decrease in return flows during any of those ten years, the improvement will be approved under Rule 8.

36. The fourth module of ISAM is ISAM-Operational. ISAM-Operational will assist with ongoing operations of improvements after they have been approved (under Rule 8 with terms and conditions, or in a Rule 10 Plan). It will be used for planning purposes to develop the Rule 10 plans for the upcoming year, and for actual accounting of return flow changes throughout a plan year. Rather than looking back at the ten years from 1997-2006, ISAM-Operational will look at historical periods anticipated to be representative of the upcoming twelve months or immediate past months, depending upon whether the intended use is for planning or operational purposes. ISAM-Operational will perform computations in the same manner as ISAM-Historic, but only for the current plan year. As the actual data become available during the plan year, the operator will input the actual diversions, precipitation, and crop PET into ISAM-Operational for the improvements subject to the Rule 10 Plan.

37. In addition to these four modules, the term "ISAM" also includes the three methods the Division Engineer may use to determine the timing and location of historical and predicted seepage losses and return flows. These are listed in the second paragraph of the definition of ISAM. See Rule 5.A.8.

38. The only information the applicant needs to provide to run any of the three ISAM-Historic modules is the number of acres irrigated by each type of system; any change in acreage due to the improvement (such as drying up corners when converting from flood to

sprinkler irrigation); the surface water right or rights used on that acreage (or the number of ditch shares, if applicable); and whether there is supplemental irrigation from a well. For some of the other parameters necessary for the evaluation, the ISAM incorporates engineering assumptions and data from the H-I Model. These are listed in Rule 5.A.13. In this way, the ISAM saves Applicants time and money by circumventing the need to measure or develop engineering assumptions for those other parameters.

39. However, at the Applicant's choice, all four modules of ISAM may instead be run with farm-specific information provided by the Applicant. Rule 8.A; Rule 9.B; Rule 9.B.i.a. For example, ISAM may be run with farm-specific information provided by the Applicant concerning the amount of water supply that serves the irrigation system (which should include the share distribution at the point of measurement, if applicable); the efficiency of the improved system; or the amount of seepage from any head-stabilization ponds. Rule 10 Plans and Rule 8 approvals may also incorporate farm-specific information.

40. Rule 9.B.i.b. requires the Division Engineer to "update or revise the ISAM as appropriate to incorporate applicable changes to the H-I Model that have been approved in accordance with Section V of Appendix B to the Decree in Kansas v. Colorado and to incorporate new or updated data and/or engineering information for assumptions and data that are not derived from the H-I Model. Such update or revision shall be based on sufficient and reliable engineering and/or scientific information." The Rule further contains detailed provisions concerning notice of proposed changes to the ISAM and opportunity to comment.

See Rule 9.B.i.b. The Court finds that these provisions provide adequate due process to water users and adequate standards for future updates or revisions to the ISAM.

41. The ISAM underwent revisions and updates during the peer review process by the Engineering Subcommittee to the Advisory Committee, and was given a new version number each time it was re-presented to the Committee or to the Opposers in the case. Version 16 of the ISAM-Sprinkler/Drip module, Version 6 of the Canal Loss and Lateral Loss modules, and Version 5 of the Operational module jointly comprise the “initial version of ISAM” under Rule 9.B. In accordance with Rule 9.B.i.b, the State Engineer filed an electronic version of the initial version of ISAM and its documentation with the Court on a compact disc in this Case No. 09CW110 when the State Engineer filed the Proposed Decree.

42. The ISAM and its documentation can be accessed on the SEO’s public website at <http://water.state.co.us/wateradmin/ArkansasRiver.asp>. The State Engineer shall maintain the posting of Version 16 of the ISAM-Sprinkler/Drip module on this website even after future versions are developed under Rule 9.B.i and posted on the website. This will allow comparison to ensure that the procedures and standards for updating or revision of the ISAM have been complied with. See Rule 9.B.i.b. In addition, the compact disc containing the initial version of ISAM and its documentation will remain on file with this Court.

43. The Court finds that the ISAM is reasonably accurate and reliable and is sufficient for its intended uses under the Rules.

44. The Court finds that the ISAM, as defined in Rule 5.A.8, including updates or revisions made in accordance with Rule 9.B.i.b., is properly subject to a rebuttable presumption of accuracy. There shall be a rebuttable presumption that the version of the ISAM in use at the time an application is filed will accurately determine the amount, if any, an improvement will increase consumptive use or will reduce or change the timing or location of historical seepage losses and return flows. See Rule 9.B.i.a.

45. In addition, the Division Engineer is required to consider any farm-specific data or engineering analysis submitted by the applicant that varies from data or assumptions used in the ISAM. Rule 9.B.i.b. The Division Engineer shall utilize such farm-specific data or engineering analysis in the evaluation of the application if the Division Engineer determines that such data or engineering analysis is more accurate for the evaluation of the application than the data or assumptions used in the ISAM and is sufficiently reliable to rebut the presumption of accuracy of the data or assumption it replaces.

I. The State Engineer Shall Develop Appropriate Models or Methods Similar to the ISAM to Cover the Remaining Geographic Scope of the Rules:

46. Some of the data and assumptions used in the ISAM are currently only available for surface water irrigation systems located within the H-I Model Domain, which generally covers the mainstem area from Pueblo Reservoir to the Stateline. See Rule 5.A.4; Rule 9.B.i, and Attachment 1 to the Rules (map of H-I Model Domain). This is because the ISAM incorporates certain information from the H-I Model, such as assumptions on average annual

canal and lateral losses, and data on potential crop evapotranspiration. See Rule 5.A.8. This greatly reduces the cost of evaluating each individual system improvement.

47. For some surface water irrigation systems located outside the H-I Model Domain, the Division Engineer does not presently have the type of data and engineering assumptions that have been developed within the H-I Model Domain. For the remainder of the basin that is outside of the H-I Model Domain, the Rules require the Division Engineer to develop appropriate models or methods which are similar to the ISAM but which use data and information appropriate to the circumstances of the surface water irrigation systems to be evaluated, based upon sufficient and reliable engineering and /or scientific information. Rule 9.B.ii. The State Engineer's Office has asked the Colorado Water Conservation Board (CWCB) to include the types of data and engineering assumptions necessary for use in the ISAM in the new Decision Support System the CWCB is developing for the Arkansas River Basin ("Ark-DSS").

48. Until the necessary data is developed under the Ark-DSS, the State and Division Engineers will assist applicants outside the H-I Domain in their application process by helping them locate the relevant historic diversion record data and acquire the best data and engineering assumptions available from nearby change of water right cases and other engineering reports or study data that have been prepared for comparable areas. Where appropriate, the Engineers will allow an interim evaluation and interim approval for applicants located outside the H-I Domain, with the requirement that a more detailed study

shall be conducted after the future models or methods have been developed under Rule 9.B.ii to cover the area where the improvement is located.

49. The rebuttable presumption described in Rule 9.B.i.a does not apply to such future models or methods developed under Rule 9.B.ii. unless the Division Engineer files an action in this court to establish such a presumption, with notice to all interested persons, and the presumption is established by order of this Court. Rule 9.B.ii.a.

50. The Court finds that the State Engineer's tiered approach to developing tools for evaluating applications located within versus outside the H-I Model Domain is a fair and reasonable approach to the present circumstances.

J. Definition of "Irrigation" and "Surface Water Irrigation System":

51. Rule 5.A.7 defines "irrigation" as "the application of waters of the State in excess of natural precipitation to grow crops or other plant life for production of food, forage, or other uses, including revegetation and sod production but not including lawn irrigation or landscaping."

52. The State Engineer has clarified that this defined term encompasses the application of water to a golf course. By excluding "lawn irrigation or landscaping" from the definition of irrigation, the Rules exclude any surface water irrigation system used for lawn irrigation or landscaping. However, the Rules apply to golf courses, which involve "the application of water" to grow "plant life" for "other uses." Any golf course in Division 2 that desires to

make an “improvement” to a “surface water irrigation system” after the Rules become effective will need to obtain approval from the Division Engineer as required by the Rules.

53. Rule 4.D provides that “[t]hese Rules do not apply to diversions of ground water (except as specified in the definition of “surface water irrigation system” in Rule 5.A.13) or to structures, facilities, equipment, or works used exclusively for the diversion, conveyance, or application of ground water.” This is reasonable and appropriate because the Division 2 Amended Rules and Regulations Governing the Diversion and Use of Tributary Ground Water in the Arkansas River Basin, Colorado (“Use Rules”) address the differences in efficiencies of ground water irrigation systems, and have been utilized to prevent any violation of Article IV.D of the Compact from ground water use since they became effective in 1996. However, when a well or structure is decreed as an alternate point of diversion (APD) for a surface water right, that water use is not subject to the Use Rules. Therefore, the definition of Surface Water Irrigation System clarifies that irrigation systems that receive ground water from a well or structure that is decreed as an APD for a surface water right are included within the scope of the Rules. See Rule 5.A.13.

K. Definition of “Improvement”:

54. The term “improvement to a surface water irrigation system” is defined in Rule 5.A.6. The first paragraph lists the specific “man-made changes to a surface water irrigation system” that are included within the definition, and thus are included within the scope of the Rules. The first four categories are “the installation of pipelines to replace off-farm earthen

ditches or laterals; application of chemicals to reduce canal or off-farm lateral losses; installation of head stabilization ponds and tailwater recovery pits, including those that facilitate reuse of surface water; and installation of sprinkler systems, drip systems, or other irrigation technologies to replace flood and furrow irrigation methods.” These are all activities that are within the scope of Article IV-D and the State Engineer has determined these activities need to be regulated for Compact enforcement purposes because they have the potential to decrease historical seepage losses and return flows from the pre-improved irrigation system. Next, replacement of side-roll irrigation systems with center pivot systems and replacement of impact sprinklers with spray nozzles are also included in the definition, because they can cause a significant difference in consumption and return flow from a sprinkler system. Finally, the definition includes adding surface water as a source of supply to a sprinkler or drip system that only applied ground water prior to the effective date of the Rules, so that any such future new uses of surface water through sprinklers will not escape review under the Rules. Other changes are not within the scope of the Rules.

55. The second paragraph of the definition lists examples of changes that are not within the scope of the Rules. The rule states clearly that the list of example exclusions is not exhaustive. Maintenance activities such as repair or replacement of deteriorated preexisting pipelines; dredging of canals, ditches, laterals and reservoirs; repair or replacement of the existing lining of canals or laterals; and “similar practices” are excluded from the definition because Article IV-D of the Compact is not intended to impede or prevent activities which

simply preserve the status quo of the system. Irrigation scheduling, cultivation, irrigation application of fertilizer, crop selection, crop rotation, changes to plant population, and similar practices are also excluded, because these activities are similarly outside the scope of Article IV-D.

56. In addition, certain on-farm activities are excluded, such as the lining of on-farm ditches and laterals and the installation of on-farm underground pipe or gated pipe. The State Engineer concluded that these on-farm activities cause no net depletion to the waters of the Arkansas River in violation of the Compact. The court finds that the State Engineer has provided a reasonable basis for exclusion of such activities from the scope of the Rules.

57. The Rules apply prospectively to improvements that are made after the Rules become effective, and also apply retrospectively to sprinklers and drip systems installed within the H-I Model Domain after October 1, 1999. The State Engineer determined that October 1, 1999 was the most appropriate and workable date for designating which existing sprinklers and drip systems must be brought within the scope of the Rules. The State Engineer performed an analysis using a version of the ISAM which estimated the predicted impact to the Arkansas River from post-1999 sprinklers and drip systems within the H-I Model Domain, for a period of hydrology like that experienced during the period 1997 – 2006, to be 9,287 acre feet. After the effective date of the Rules, the historical seepage losses and return flows from those surface water irrigation systems will be maintained.

58. The court finds that the State Engineer has presented a rational basis for the scope of the Rules. The definition of improvements and the retrospective application of the Rules to a subcategory of improvements are reasonable and appropriate.

L. Compact Compliance Plans:

59. Compact Compliance Plans under Rule 10 provide financial and administrative benefits by allowing groups of applicants to join forces, rather than all filing individual applications under Rule 8. They are designed to greatly reduce the costs of preparing applications, of maintaining historical return flows and seepage losses as required by the Compact, and of evaluating and processing applications.

60. Such plans will also serve optimum use by allowing applicants to employ other water -- instead of or in addition to the water right that serves their irrigation system -- to maintain the full amount of the historical seepage losses and return flows from each improved irrigation system covered under the Plan. Rule 10 provides that “[a] Compact Compliance Plan may include use of water other than the subject water right to prevent a violation of Article IV-D of the Compact if the other water is imported water or other fully consumable water pursuant to the decree controlling the use of said water.” Rule 10.B.

61. The Rule also provides that if the Division Engineer receives a proposed Compact Compliance Plan which would require an augmentation plan or a change of water right, the applicants must file a separate application in water court and cease using the improvements until a Rule 8 application or SWSP is approved or until the water court has entered a decree approving

the plan for augmentation or change of water right. Rule 10.B. This distinguishes Compact Compliance Plans from those water matters that are beyond the State Engineer's authority because they require water court approval.

62. In Simpson v. Bijou, 69 P.3d 50 (Colo. 2003), proposed rules in Water Division 1 were found to be beyond the State Engineer's rule-making authority because those rules would have allowed the State Engineer to authorize out-of- priority pumping of ground water by approving a replacement plan to replace out-of-priority depletions to prevent injury to senior water rights. The Court held that the Colorado General Assembly intended approval of all out-of-priority uses of water involving replacement water to be approved by the water court, not by the State Engineer's office, except for limited circumstances related to exchanges, gravel pits, substitute water supply plans, and replacement plans under the Use Rules. See, 69 P.3d at 66, citing § § 37-80-120(5) (exchanges), § 37-90-117(11)(b) (gravel pits), § 37-92-308(3), (4), (5), and (7) (substitute water supply plans under H.B. 02-1414); and 69 P.3d at 67 (replacement plans under the Use Rules in Division 2). The Court also held that the State Engineer, when exercising the compact rule authority, is subject to all of the statutory restrictions imposed on the water rule power, including those restrictions on the authority to approve out-of-priority uses of water involving replacement water. 69 P.2d at 55, 70.

63. Unlike augmentation plans and change applications, or the replacement plans proposed in Simpson v. Bijou -- all of which must be approved by the water court -- Compact Compliance

Plans and Rule 8 approvals are within the State Engineer's authority and do not violate any statutory constraints on that authority.

64. Unlike augmentation plans, Compact Compliance Plans do not increase the supply of water and do not authorize or permit any out-of-priority use of water. See 50 P.3d at 60-61 ("An augmentation plan is essentially a water court[-]decreed[-]means by which a junior appropriator or undecreed well user can replace his out-of-priority depletions Therefore, when decreed by the water court, an augmentation plan allows the water user to divert out of priority without threat of curtailment by the State Engineer, so long as adequate replacement water is, in fact, supplied to the senior."); see also § 37-92-103(9). Compact compliance plans are designed solely to maintain "historical seepage losses and return flows" (as defined in Rule 5.A.5) as required by the Compact, not to increase the supply of water for Plan participants or to excuse or replace any out of priority use of water by Plan participants.

65. Unlike changes of water rights, there is no special statutory proceeding or cause of action for seeking water court approval of an improvement to an irrigation system. The definition of a change of water right does not include improvements to water delivery systems. See § 37-92-103(5). Compact Compliance Plans do not involve a change to any decreed aspect of a water right or any terms and conditions in a decree of a water right. The decreed priority date, type of use, place of use, point of diversion, and all other aspects of all water rights that are involved in a Compact Compliance Plan continue to control their use. Moreover, such "other water" may only

be used in a Compact Compliance Plan if it is imported water or other fully consumable water pursuant to the decree controlling the use of said water. Rule 10.A.

66. The court finds that the Compact and the other Colorado statutes are silent on how to prevent a violation of the Compact when a water use is within the terms of its decree but involves improved functioning of existing works that would cause material depletions in violation of Article IV-D. The General Assembly has not created a statutory proceeding or cause of action for water court review or approval of an improvement to an irrigation system. Thus, both the Compact and the general statutes concerning water matters are “deficient in establishing standards for administration within Colorado to provide for meeting its terms.” See 37-80-104.

67. The court finds that Compact Compliance Plans and Rule 8 approvals are both within the State Engineer’s Compact rule-making authority and are an efficient and expedient exercise of the State Engineer’s statutory duty to “make and enforce such regulations with respect to deliveries of water as will enable the state of Colorado to meet its compact commitments.” See § 37-80-104, C.R.S.

M. General Permits:

68. General Permits under Rule 11 allow the State Engineer to streamline the process of Rules compliance for groups of improvements that he determines are within the scope of the Rules but do not need to be evaluated individually because they will not materially deplete the waters of the Arkansas River in violation of Article IV-D of the Arkansas River Compact.

Three such general permits, as included with the Rules attached to this Order, have been approved by the State Engineer, were part of the Application and published resume notice of this case, and are hereby approved together with the Rules.

69. The Rules require resume notice and an opportunity to comment prior to the effective date of the issuance of any additional general permits by the State Engineer, or of the modification or revocation of any general permit. Rule 11.C. They also provide the right to a hearing under the State Engineer's Procedural Regulations for any such action. Rule 13.C.

70. The Engineers and the Advisory Committee shared a concern that water users should be able to make substantial investments in their irrigation systems in reliance on a general permit. They jointly developed the second sentence of 11.B, which provides the due process that allows long-term commitments to be made in reliance on a general permit. Under it, if future data indicates that a permit needs to be more restrictive or to be revoked, then improvements made after the date of the change to the permit will need approval under Rule 8 or Rule 10, but not improvements that were already made in reliance on the permit. There are two exceptions to this rule, listed in the second sentence of Rule 11.B, and both will provide due process. First, if the State Engineer files an application with the water court to amend the Rules to authorize a retroactive change to a permit, the water users covered by the permit will have notice and the right to file a protest in that case. Second, if there is Supreme Court litigation brought against the State of Colorado alleging that the improvements covered under a general permit are in violation of the Compact, the general permit may be modified

or revoked to comply with an order of the United States Supreme Court, as the water users subject to that permit will have had notice of that litigation long before any order of the Supreme Court is issued.

71. The Court finds that the three general permits, and the procedures in the Rules for issuing, modifying or revoking general permits, are reasonable and appropriate.

N. Additional General Findings:

72. The Rules have as their objective the optimum use of the waters of the Arkansas River in a manner consistent with preservation of the priority system of water rights while ensuring that the State of Colorado complies with the terms of the Compact. See Rule 3.B. The Court finds the Rules serve optimum use by enabling irrigators to make improvements to their irrigation systems while staying in compliance with the Compact. The Court finds that the Rules are consistent with the priority system of water rights because they do not authorize out of priority use of water or otherwise interfere with the administration of the prior appropriation system in Colorado to protect vested water rights from injury.

73. The Court finds that the State Engineer has complied with all applicable statutory requirements in enacting the Rules.

74. The Court finds that the State Engineer's modifications to the Rules made during the course of this proceeding do not expand the scope of the Rules and do not prejudice any party to this proceeding or any other water user within Division 2.

75. The Court finds that all protests to the Rules have been withdrawn or resolved through stipulation.

76. Based upon this review of the facts and law before it, the Court further finds that the Rules have a reasonable basis in law and fact and shall be approved.

CONCLUSIONS OF LAW

77. The Court has jurisdiction to hear and dispose of protests to the proposed Rules pursuant to section 37-92-501(3)(a).

78. Notice of the application for approval of the Rules was published in all 22 counties affected by the Rules, as required by statute.

79. The State Engineer has authority to promulgate rules pursuant to the authority granted in § 37-80-102(1)(a); § 37-80-104; and § 37-92-501, C.R.S.

80. The State Engineer's regulation of surface water irrigation system improvements is a proper and necessary implementation of his compact rule authority, and does not treat irrigation system improvements as if they were a change of water rights.

81. All methods for approval under the Rules, including Compact Compliance Plans, are within the State Engineer's Compact Rule authority and do not exceed any statutory limit on the State Engineer's authority.

JUDGMENT AND DECREE OF THE COURT

The foregoing findings and conclusions, together with any exhibits hereto, are incorporated into this Judgment and Decree of the Court.

The Court approves all stipulations referred to in this Decree.

Based upon the foregoing, the Court hereby ORDERS that the Compact Rules Governing Improvements to Surface Water Irrigation Systems in the Arkansas River Basin in Colorado are hereby APPROVED in the form as finally submitted by the State Engineer and attached hereto, and shall become effective on January 1, 2011.

DATED: 10-25-10

BY THE COURT:

A handwritten signature in cursive script, appearing to read "Dennis Maes", written over a horizontal line.

Dennis Maes, Water Judge